Nos. 23-1633, 23-1634 and 23-1641

IN THE

United States Court of Appeals

FOR THE THIRD CIRCUIT

DELAWARE STATE SPORTSMEN'S ASSOCIATION INC., ET AL. V. DELAWARE DEPARTMENT OF SAFETY AND HOMELAND SECURITY, ET AL.

ON APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF DELAWARE

Consolidated Case No. 1:22-cv-00951-RGA
The Honorable Richard G. Andrews, United States District Court Judge

DEFENDANTS-APPELLEES' SUPPLEMENTAL APPENDIX VOL. II: SA423 – SA843

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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

DELAWARE STATE SPORTSMEN'S ASSOCIATION, INC; BRIDGEVILLE RIFLE & PISTOL CLUB, LTD.; DELAWARE RIFLE AND PISTOL CLUB; DELAWARE ASSOCIATION OF FEDERAL FIREARMS LICENSEES; MADONNA M. NEDZA; CECIL CURTIS CLEMENTS; JAMES E. HOSFELT, JR; BRUCE C. SMITH; VICKIE LYNN PRICKETT; and FRANK M. NEDZA, Plaintiffs, v. DELAWARE DEPARTMENT OF SAFETY AND HOMELAND SECURITY; NATHANIAL MCQUEEN JR. in his official capacity as Cabinet Secretary, Delaware Department of Safety and Homeland Security; and COL. MELISSA ZEBLEY in her official capacity as superintendent of the Delaware State Police, Defendants.	C.A. No. 1:22-cv-00951-RGA (Consolidated)
GABRIEL GRAY; WILLIAM TAYLOR; DJJAMS LLC; FIREARMS POLICY COALITION, INC. and SECOND AMENDMENT FOUNDATION, Plaintiffs, v. KATHY JENNINGS, Attorney General of Delaware, Defendant.	

DECLARATION OF JAMES E. YURGEALITIS
IN SUPPORT OF DEFENDANTS' OPPOSITION TO
PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION

I, James E. Yurgealitis, the undersigned, declare as follows:

1. I have been engaged by the Delaware Department of Justice to provide research and opinions related to Delaware HB 450 and SS 1 for SB 6. More specifically, I have been asked to provide information and opinions about the banned weapons and accessories, their history, and their uses.

2. This declaration is based on my own personal knowledge, research, and experience, and if I am called to testify as a witness, I could and would testify competently to the truth of the matters discussed in this declaration.

3. I am being compensated at a rate of $400 per hour for my work on this report as well as any additional work required. My travel + work rate is $1600 per day.

I. PERSONAL BACKGROUND AND QUALIFICATIONS

4. I am currently self-employed as a Legal and Forensic Consultant, providing firearms related technical and public policy consulting, testing and training services to corporations, legal counsel, and the public sector. A detailed description of my work experience, education, and training are included in my Curriculum Vitae, which is attached as Exhibit A to this report. I have also included, as Exhibit B, a statement of my qualifications as an expert witness in the areas relevant to my experience.

5. I am a former Senior Special Agent/Program Manager for Forensic Services for the Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF), U.S. Department of Justice, a position I held for nine years prior to my retirement. In that capacity, I was responsible for all ATF firearms and forensic firearms related training and research at the ATF National Laboratory Center (NLC) in Ammendale, MD.

6. Prior to my tenure at the ATF NLC, I was employed as a federal law enforcement officer, in various capacities, for approximately 16 years.

7. As detailed in Exhibits A and B, I have extensive training and experience with respect to firearms in general, as well as their history, manufacture, operation, and use.

8. I have been provided with, and have reviewed, copies of documents filed in this case which I have referenced in doing this work. These documents are listed in my bibliography. Some of them are also enclosed as Exhibits.

9. I have also reviewed current firearms statutes and regulations relative to the transfer and possession of firearms within the State of Delaware.

10. I have also reviewed numerous materials, periodicals, publications, corporate websites, and documents in furtherance of my research and in formulation of my opinion(s) in this case. To further illustrate my opinions, I may rely on photographic and / or video images during any deposition and any subsequent testimony. A listing of the materials I specifically reference in this report is included in my bibliography.

II. GENERAL FIREARMS TERMINOLOGY AND OPERATION

11. In discussing modern firearms, it is important to understand how they are defined under statute, how they function, and the differences between types commonly available to the public.

12. Gun related terminology and usages may vary significantly, particularly in connection with legal definitions adopted in various jurisdictions. For example, under Section 222 (13) of Title 11 of the Delaware Code, a Firearm is defined as follows:

> "Firearm" includes any weapon from which a shot, projectile or other object may be discharged by force of combustion, explosive, gas and/or mechanical means, whether operable or inoperable, loaded or unloaded. It does not include a BB gun."[1]

By contrast, under Section 921(a)(3) of Title 18 of the Federal Code, a Firearm is defined

[1] 11 *Del. C.* § 222(13).

as:

a. Any weapon (including a starter gun) which will or is designed to or may readily be converted to expel a projectile by the action of an explosive; or
b. the frame or receiver of any such weapon; or
c. any firearm muffler or firearm silencer; or
d. any destructive device.[2]

Such term does not include an antique firearm, as defined in Section 921 (a) (16), e.g., an antique ignition system firearm (e.g., matchlock, flintlock, percussion cap, etc.) or a firearm made in or before 1898, etc.

13. In using relevant nomenclature throughout this report, I will adopt the Delaware legal definitions wherever applicable, except that I refer to all non antique or otherwise unregulated guns as "firearms" consistent with federal law. I will define and explain other relevant terms in this and the following section.

14. Modern Firearms operate utilizing the expanding gases generated by the rapidly burning gunpowder contained in modern ammunition. Gunpowder (or smokeless powder) is the propellant contained within metallic cartridges or shotshells utilized by modern firearms. A single cartridge or shotshell is also referred to as a "round" of ammunition. Once a cartridge or shotshell is "chambered" (or loaded) into a modern firearm and the trigger is pulled, the primer at the base of the cartridge or shotshell is struck by a firing mechanism. The primer contains a pressure sensitive explosive compound which ignites when struck. The ignition of the primer, in turn, ignites the main powder charge contained in the case of the cartridge or shotshell. The main powder charge then burns rapidly in what is essentially a contained explosion. This contained explosion generates gases at enormous pressures. The generated gases push the projectile out of the mouth of the cartridge, down the barrel of the firearm and out of the firearm through the muzzle.

[2] 18 U.S.C. § 921(a)(3).

15. More simply defined, a firearm is a weapon which utilizes gas pressure generated by explosively burning gunpowder in a modern ammunition cartridge to propel a projectile through the barrel and out of the firearm through the muzzle.

16. All modern breech loading firearms,[3] no matter the type, operate according to a nine-step process known as the "Cycle of Fire" as identified by the Association of Firearm and Toolmark Examiners (AFTE), a professional organization for Forensic Firearm and Toolmark Examiners that, in conjunction with the U. S. Department of Justice (USDOJ), National Institute of Justice (NIJ), has created a training program for apprentice forensic firearm and toolmark examiners.[4] As these steps will be referenced throughout this report, they are included here for reference:

1) Feeding:

Feeding refers to the process for insertion of cartridges into the chamber; the breech bolt pushes the cartridge into final position. Typically, the incoming round slides across the bolt or breech face during this caroming action. The feeding function can be manual or performed by various kinds of magazines and clips. For example, machine guns use belts of cartridges.

2) Chambering:

Chambering is the insertion of the cartridge into the chamber. If a cartridge of the incorrect length or diameter is used or if there is foreign matter in the chamber, chambering may be obstructed, causing a malfunction. Excess oil or grease in the chamber may cause overpressure, resulting in a ruptured cartridge case and potentially serious accidents.

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[3] A Breech Loading firearm is one in which the cartridge is loaded and fired from the breech (back) end of the barrel as opposed to a Muzzle Loader wherein the propellant / powder and bullet are loaded from the muzzle (front) end.

[4] *Cycle-of-Fire Steps*, Firearm Examiner Training (2008), https://projects.nfstc.org/firearms/module08/fir_m08_t04.htm.

3) Locking:

The breech bolt mechanism locks the cartridge into position in the barrel before firing. Most quality firearms are equipped with an interrupter mechanism that disconnects the trigger from the firing pin, thus making it impossible to fire until the mechanism is safely locked. This critical relationship is referred to as timing. (Blowback mechanisms involve a spring-held bolt; the mechanism is not technically locked, but is held together by spring tension and bolt inertia.)

4) Firing:

When the breech is fully locked, a pull on the trigger mechanically translates to the firing pin release. In the cocked position, the firing pin has a hammer behind it with a spring forcing it towards the primer, restrained only by a sear that is engaged by the trigger. A pull on the trigger trips the sear from the engaging notch in the hammer. The hammer, actuated by a cocked spring, drives the firing pin sharply against the percussion sensitive primer, which ignites the explosive compound and fires the cartridge.

5) Obturation:

Obturation occurs when powder gases under high pressure (e.g., two and one-half tons per square inch in the .30 06 Springfield cartridge) are sealed to prevent them from jetting between primer cup and cartridge case, cartridge case and primer wall, and projectile and bore. Cartridge cases must be sufficiently flexible to expand against the chamber wall and transmit the instantaneous powder pressure to the barrel metal that surrounds the chamber. When the chamber pressure has returned to zero, the cartridge case must also be flexible enough to release itself from the chamber wall (even though it is now pressure form fitted to the chamber). Likewise, the primer cup has been pressure held against the side of the cartridge case and depends upon the face of the breechblock for locked support during the interval of

high chamber pressure. Obturation also occurs with the projectile; bullets are made sufficiently larger than the bore diameter to extrude into the rifling grooves and seal the gases. The sharp hammer action of the instantaneous high pressure and temperature may upset the projectile base, which means the cartridge case must be sufficiently flexible to expand against the chamber wall and transmit the instantaneous power pressure to the barrel metal that surrounds the charge. When the chamber pressure has returned to zero, the cartridge case must also be flexible enough to release itself from the chamber wall (even though it is now pressure form-fitted to the chamber).

6) Unlocking:

This is the reverse of the locking process and is frequently performed in conjunction with extraction.

7) Extraction:

Although cartridge cases do not commonly exceed their elastic limit during firing, they have a tendency to stick to the chamber after firing. After firing, cartridge cases are larger in diameter than before firing. If the fired cartridge case is intended for reloading, it must be full length resized in a reloading die. All cartridge cases are designed with a rim or groove (cannelure) at the base so that an extractor claw can grasp this edge in order to achieve extraction.

8) Ejection:

In the final stages of extraction, the cartridge case encounters a projection that is usually at right angles to the exit portal of the breech. Rotating on the fulcrum of the extractor, the case base is contacted on the opposite side by the ejector, which flips the case out of the actuating mechanism.

9) Cocking:

The hammer spring is usually cocked when the bolt of a rifle, pistol, or repeater shotgun is retracted. An exception to this is the Ml917 Enfield Rifle, which cocks upon forward motion of the bolt. Exposed hammer may be cocked by manual retraction, using the thumb. The Walther series of pistols provides for manual cocking or trigger pull cocking (double action), as do most open hammer revolvers.

17. Additional definitions often used when classifying firearms (in general) are Semiautomatic, Full Automatic and Select Fire:

a. Semiautomatic:

Refers to a repeating / self-loading firearm that fires one shot for each pull of the trigger until the ammunition supply is exhausted. The energy of the fired cartridge is utilized to cycle the mechanism of the firearm to feed and chamber the next shot.

b. Full / Fully Automatic:

Refers to a firearm that will continuously fire successive shots when the trigger is pulled, and will only stop when the trigger is released or the supply of ammunition is exhausted. Commonly referred to as a machine gun.

c. Select Fire:

A firearm capable of switching between and functioning in either fully automatic or semiautomatic fire mode. Alternatively, some firearms can fire in "burst mode" meaning automatically with a mechanical limitation on the number of shots.

18. Also relevant to any discussion regarding firearms in general, and to this report in particular, are the terms Rifling, Caliber and Gauge.

a. Rifling:

Rifling refers to a series of grooves cut or impressed inside the barrel in a spiral

pattern. The "high" portions of this pattern are called "Lands." The "lower" portions of this pattern are called "Grooves." When a projectile (or bullet) is fired in a "rifled" firearm it comes into contact with the lands as it leaves the chamber and begins to travel down the barrel. Because the lands are oriented in a spiral pattern, the rifling imparts a spin to the projectile, which improves stability and accuracy.

b. Caliber:

Caliber is a dimensional measurement of the inside (or bore) of a rifled barrel. In the United States caliber is traditionally expressed in fractions of an inch. For example, a .22 caliber firearm is designed to chamber and fire a projectile which measures .22 inches (or slightly less than a quarter of an inch). A .50 caliber firearm chambers and fires a projectile which is approximately a half inch in diameter.

In Europe, and the majority of other countries utilizing the metric system, caliber has historically been expressed in millimeters (mm). Therefore, a 9mm firearm is designed to chamber and fire a projectile with a diameter of 9mm. European caliber designations may also include measurement of the length of the cartridge case (9x19mm, 7.62x39mm, *etc.*).

A number of firearm calibers widely manufactured have two separate caliber designations, one in inch measurements and one in metric, which are equivalent and interchangeable. For example, .380 caliber ammunition in the US is referred to as 9xl7mm caliber in Europe.

It is important to note for the purposes of this report that the caliber designation of any given ammunition cartridge usually refers only to the diameter of the projectile (bullet) and not the relative "power" of the cartridge itself (in terms of muzzle energy,

effective range and muzzle velocity). For example, there is an important distinction between cartridges commonly referred to as .22 caliber and cartridges commonly referred to as .223 caliber.

.22 caliber ammunition is a popular and relatively low power cartridge developed in the 1880's. It is also known as ".22 rimfire" as the primer mixture in the cartridge is seated in the rim of the cartridge and not contained in a separate primer cup in the cartridge base. It is commonly used for target shooting as well as hunting small game and can be fired from both handguns and rifles chambered in that caliber. Bullet weights for .22 caliber projectiles / bullets are typically between 30-60 grains (0.08 to 0.13 ounces). Muzzle velocities are usually in the 1100-1300 feet per second (fps) range.

.223 caliber ammunition by comparison is a high velocity cartridge developed in the 1950's in part for use in the original AR-15 and M16 rifles. It is a "centerfire cartridge." Although the diameter of the projectile / bullet is only slightly greater (approximately the width of a human hair) than the .22 caliber cartridge mentioned previously, it is a vastly more powerful cartridge in terms of muzzle velocity and range. This caliber ammunition is also somewhat interchangeable with 5.56mm ammunition. Here is a side-by-side comparison of .223 (left) and .22 caliber cartridges (right) with a quarter for size reference:

Common bullet weights for .223 / 5.56mm caliber projectiles are approximately 50 to 62 grains (0.11 to 0.14 ounces)—heavier than .22 caliber projectiles. And common muzzle velocities are approximately 3,200 to 3,500 feet per second—about three times as fast as .22 caliber projectiles. A heavier bullet and increased velocity equate to more of the cartridge's energy being transferred to the target. The National Rifle Association (NRA) *American Rifleman* Magazine tested the U.S. Army's new .223 caliber cartridge (M855Al) in 2014 and the results can be read here: https://www.americanrifleman.org/content/testing-the-army-s-m855a1-standard-ball-cartridge/.[5]

c. Gauge:

Gauge is a dimensional measurement which is traditionally used to denote the bore of a non-rifled or "smoothbore" firearm (i.e. a shotgun). Shotguns were initially designed to fire a mass of round shot as opposed to one solid projectile and therefore, a caliber designation is not readily applicable. Gauge refers to the number of lead spheres which will fit inside the bore and equal one pound. For example, in a 12-gauge

[5] Plaster, John L., *Testing the Army's M855A1 Standard Ball Cartridge*, American Rifleman (May 21, 2014), https://www.americanrifleman.org/content/testing-the-army-s-m855a1-standard-ball-cartridge/.

shotgun you can fit 12 spheres of lead, which are approximately 18.52mm or .73 inches in diameter, the total weight of which will equal one pound. If the diameter of the spheres is increased, it will require less of them to equal one pound. Therefore, the smaller the "gauge," the larger the dimension of the bore. The exception to this measurement system is the .410 gauge shotgun, which is actually a caliber designation.

III. TYPES OF MODERN FIREARMS

19. Modern firearms as currently manufactured for civilian ownership fall into two general types: handguns and long guns (or shoulder weapons).

Handguns:

20. Handguns are generally defined as a firearm having a short stock (grip), and are designed to be held, and fired, with one hand. The term "Handgun" defines two distinct types of modern firearms, the revolver and the pistol.

21. A revolver is a handgun designed and manufactured with a revolving cylinder to contain, chamber and feed multiple rounds of ammunition. In a modern double action revolver, pulling the trigger rotates the cylinder bringing an unfired cartridge of ammunition in line with the barrel and firing pin. Pulling the trigger also cocks the hammer and then releases it either directly (or indirectly via a firing pin) to strike the primer of the cartridge, initiating the firing sequence as stated previously. In this type of revolver, the trigger must again be pulled to rotate the cylinder in order to fire another cartridge. When all cartridges have been fired, the cylinder is unlocked from the frame and swings out to facilitate removal of expended cartridge casings and insertion of unfired cartridges. The cylinder is then closed and relocked within the frame and the handgun is again ready to fire when the trigger is pulled. This animation details the overall operation and key components: https://www.youtube.com/

watch?v=TXliIJ_66FQ

22. A pistol is a handgun designed and manufactured with the firing chamber as an integral part of the barrel and utilizes a "box" magazine to contain and feed multiple rounds of ammunition. In this type of handgun, generally, the box magazine is inserted into the firearm, and the slide or bolt is pulled back and released which springs forward and feeds a cartridge into the chamber. When the trigger is pulled, a firing pin or striker is released, impacting the primer of the cartridge and initiating the firing sequence of the ammunition.

Some pistols have no internal magazine capacity and require the operator to manually reload the firearm after each shot fired. These are called single shot pistols. Many pistols, however, are capable of holding multiple cartridges and can operate semiautomatically in that a portion of the recoil or gas pressure generated by firing the cartridge is utilized to move the slide rearward, extract and eject the expended cartridge case and chamber another round from the magazine. This sequence can be repeated by pulling the trigger once for each shot. The pistol can then be reloaded by removing the empty magazine and inserting a loaded magazine (or refilling a permanently affixed magazine if the pistol is so configured). The overall operation of a Colt 1911 .45 Caliber pistol is illustrated in this animation: https://www.youtube.com/watch?v=EjQrhDKDWFk&t=12s

Long Guns / Shoulder Weapons:

23. In terms of modern firearms, long guns are generally of two distinct types: rifles and shotguns.

24. A rifle is a firearm which is designed and intended to be fired from the shoulder. It fires a single shot through a rifled bore for each pull of the trigger.[6] A shotgun is

[6] Machine guns (any firearm with the capacity to fire more than one shot with each pull of the trigger) are defined separately under federal law.

a firearm which is also designed and intended to be fired from the shoulder. It fires either a number of ball shot (commonly termed "buckshot" or "birdshot") or a single projectile (commonly termed a "slug") through a smooth (non-rifled) bore for each pull of the trigger.

a. Rifles:

In terms of "types" of rifle, there are numerous variations. All of these variations, generally speaking, are defined and distinguished by the way they are loaded and reloaded. For example, single shot rifles fire one shot for each pull of the trigger. They have no internal or external magazine capacity and must be reloaded with a new unfired cartridge by hand for each shot. Many of these have a hinged or "break open" receiver (or frame) to facilitate loading and unloading.

A Pump Action Rifle requires the operator to manually manipulate a forearm piece, which is traditionally found underneath the barrel. After firing the forearm is pulled backward which unlocks the bolt, extracting and ejecting the fired cartridge case. Pushing the slide forward feeds an unfired cartridge from the magazine, cocks the firearm mechanism and locks the bolt for a successive shot. Pump action rifles have been manufactured with both tubular and detachable box magazines. The overall operation of a pump action rifle is illustrated in this animation: https://www.youtube.com/watch?v=jyyQqXGUSx8

Bolt Action Rifles require the operator to manually manipulate the bolt of the rifle. After firing, the bolt is first unlocked from the chamber and then moved rearward. This action also extracts and ejects the expended cartridge case. The bolt is then moved forward which feeds an unfired cartridge from the magazine into the chamber. Once the bolt is then again locked by the operator, it is ready to fire. Bolt

action rifles usually have an internal fixed magazine or tubular magazine which will facilitate reloading via manipulation of the bolt until that capacity is exhausted. Bolt-action rifles were generally the choice of military forces, hunters and sportsmen through the end of World War II. The overall operation of a bolt action rifle is illustrated in this animation: https://www.youtube.com/watch?v=u9Luu7R4WVw

A lever action rifle is similar to the bolt action rifle in that the operator is required to manipulate the mechanism, or "action", of the firearm. A lever at the bottom of the receiver of the rifle is manipulated in an up and down motion in order to unlock the bolt and move it rearward, extract and eject the expended cartridge case, feed an unfired cartridge into the chamber and lock it. The operator's action is required for each shot fired through the rifle. Generally speaking, lever action rifles are manufactured with tubular magazines which will vary in capacity depending on the caliber of the firearm. The overall operation of a lever action rifle is illustrated in this animation: https://www.youtube.com/watch?v=58LbxVd4buo

A semiautomatic rifle utilizes the energy generated by the firing of the cartridge to power the cycle of fire. This is accomplished by siphoning off a portion of the gases generated by firing to operate the mechanism or by utilizing the recoil generated by firing much as in a semiautomatic pistol as described previously.

Once a semiautomatic rifle is loaded, the operation of this cycle of fire is not dependent on the operator to effect any portion of the process other than to pull the trigger. Semiautomatic rifles are, and have been previously, manufactured with both fixed internal magazines and a capacity to accept detachable external magazines. As such this type of rifle is capable of firing with each pull of the trigger until the supply of ammunition is exhausted. The overall operation of a semiautomatic rifle is

illustrated in this animation: https://www.youtube.com/watch?v=jlCV6yellTI

As stated previously, the majority of military firearms until the end of World War II were bolt action. The exception to this rule was the United States entering the war with the semiautomatic Ml (Garand) .30-06 caliber rifle as standard issue. The Garand had a fixed internal magazine with an eight round capacity. As discussed below, since the end of World War II, virtually every military organization across the Globe has adopted a form of semiautomatic or select fire rifle, from among one of a series of designs.

b. Shotguns:

Modern shotguns, as stated previously in regard to rifles, are generally classified and characterized by their operating system (i.e. the manner in which they function, are loaded and reloaded). Shotguns with multiple barrels are defined by placement or orientation of their barrels.

Single Shot shotguns function similarly to the single shot rifle. They may have a hinged receiver which allows the operator to open the action at the chamber area to facilitate loading and unloading of the firearm. There are also single shot models that are loaded and unloaded through a bolt action mechanism and have no additional magazine capacity.

Bolt Action shotguns are manufactured, as stated above, as single shot, or with internal or detachable magazines to facilitate easier and faster reloading. They function in the same way as a bolt action rifle and require manual manipulation of the bolt by the operator to unload and reload.

Lever Action shotguns, again function in the same fashion as a similarly

designed rifle. Manual manipulation of the lever is required for successive shots.

Pump Action Shotguns have the same general operating system as a similarly designed rifle. The "action" of the shotgun must be worked forward and back by the operator to unlock the bolt, extract and eject the expended shotgun shell, reload, and relock the bolt for firing.

Semiautomatic Shotguns, as with their rifle caliber counterparts, utilize energy (either recoil or gas pressure) generated by firing ammunition to "power" the operating system of the firearm. These are manufactured with a number of different magazines, both internal and fixed, as well as external and detachable. They are capable of firing a single shot with each pull of the trigger until the supply of ammunition in the magazine is exhausted.

Break Open, Double Barrel and "Tip Up" Shotguns have a hinged receiver which facilitates access to the rear of the chamber for unloading and reloading. They are manufactured in single shot and double barrel variations. Double barrel variations are further delineated by the placement of their barrels. Side by Side shotguns have two barrels situated next to one another in a horizontal arrangement. Over and Under shotguns have two barrels superimposed upon one another in a vertical plane. The mechanisms in each of these allow staggered firing of each of the two barrels with a separate pull of the trigger. When the hinged action is opened the expended shotgun shell hulls can be manually extracted although more complex designs with auto ejectors perform that function when "opened" without action by the operator. The overall operation of a double barrel break open shotgun is illustrated in this animation: https://www.youtube.com/watch?v=XXOYekeYlPo

Other Types of Firearms:

25. There are additional types and classification of firearms not discussed at length here for brevity and because they are less relevant to my opinions. An example of this type of firearm is a "Drilling" which consists of a shotgun and rifle mounted to the same receiver. Other types of firearms such as smoothbore revolvers, Short Barreled Shotguns, Short Barreled Rifles and Machineguns are regulated by ATF under the auspices of the National Firearms Act (NFA). Manufacture, transfer, and ownership of these "NFA Firearms" is subject to more stringent regulations that include registration in a Federal Database.

IV. DEVELOPMENT OF ASSAULT WEAPONS

26. In recent years there has been an increase in the availability in the United States of semiautomatic rifles, pistols and shotguns with features initially designed (or patterned after those designed) for a military purpose.

27. "Assault Weapons" have been defined at the Federal, State and local levels under various relevant legislation. Under Delaware HB 450 "Assault long guns" are defined as:

> "Any of the following or a copy, regardless of the producer or manufacturer: [a] American Arms Spectre da Semiautomatic carbine. [b] Avtomat Kalashnikov semiautomatic rifle in any format, including the AK-47 in all forms. [c] Algimec AGM-1 type semi-auto. [d] AR 100 type semi-auto. [e] AR 180 type semi-auto. [f] Argentine L.S.R. semi-auto. [g] Australian Automatic Arms SAR type semi-auto. [h] Auto-Ordnance Thompson M1 and 1927 semi-automatics. [i] Barrett light .50 cal. semi-auto. [j] Beretta AR70 type semi-auto. [k] Bushmaster semi-auto rifle. [l] Calico models M-100 and M-900. [m] CIS SR 88 type semi-auto. [n] Claridge HI TEC C-9 carbines. [o] Colt AR-15, CAR-15, and all imitations except Colt AR-15 Sporter H-BAR rifle. [p] Daewoo MAX 1 and MAX 2, aka AR 100, 110C, K-1, and K-2. [q] Dragunov Chinese made semi-auto. [r] Famas semi-auto (.223 caliber). [s] Feather AT-9 semi-auto. [t] FN LAR and FN FAL assault rifle. [u] FNC semi-auto type carbine. [v] F.I.E./Franchi LAW 12 and SPAS 12 assault shotgun. [w] Steyr-

> AUG-SA semi-auto. [x] Galil models AR and ARM semi-auto. [y] Heckler and Koch HK-91 A3, HK-93 A2, HK-94 A2 and A3. [z] Holmes model 88 shotgun. [aa] Manchester Arms 'Commando' MK-45, MK-9. [bb] Mandell TAC-1 semi-auto carbine. [cc] Mossberg model 500 Bullpup assault shotgun. [dd] Sterling Mark 6. [ee] P.A.W.S. carbine. [ff] Ruger mini-14 folding stock model (.223 caliber). [gg] SIG 550/551 assault rifle (.223 caliber). [hh] SKS with detachable magazine. [ii] AP-74 Commando type semi-auto. [jj] Springfield Armory BM-59, SAR-48, G3, SAR-3, M-21 sniper rifle, and M1A, excluding the M1 Garand. [kk] Street sweeper assault type shotgun. [ll] Striker 12 assault shotgun in all formats. [mm] Unique F11 semi-auto type. [nn] Daewoo USAS 12 semi-auto shotgun. [oo] UZI 9mm carbine or rifle. [pp] Valmet M-76 and M-78 semi-auto. [qq] Weaver Arms "Nighthawk" semi-auto carbine. [rr] Wilkinson Arms 9mm semi-auto 'Terry.'"

HB 450 also regulates "Assault Pistols," which are defined as:

> "Any of the following or a copy, regardless of the producer or manufacturer: [a] AA Arms AP-9 pistol. [b] Beretta 93R pistol. [c] Bushmaster pistol. [d] Claridge HI-TEC pistol. [e] D Max Industries pistol. [f] EKO Cobra pistol. [g] Encom MK-IV, MP-9, or MP-45 pistol. [h] Heckler and Koch MP5K, MP7, SP-89, or VP70 pistol. [i] Holmes MP-83 pistol. [j] Ingram MAC 10/11 pistol and variations, including the Partisan Avenger and the SWD Cobray. [k] Intratec TEC-9/DC-9 pistol in any centerfire variation. [l] P.A.W.S. type pistol. [m] Skorpion pistol. [n] Spectre double action pistol (Sile, F.I.E., Mitchell). [o] Stechkin automatic pistol. [p] Steyer tactical pistol. [q] UZI pistol. [r] Weaver Arms Nighthawk pistol. [s] Wilkinson 'Linda' pistol."

Delaware HB 450 also regulates other similar copycat assault weapons containing features shared by Assault Long Guns and Assault Pistols.

Development of Assault Rifles:

28. It is generally recognized that the first "Assault Rifle" or "Assault Weapon" is the German StG 44 (Sturmgewehr Model 1944) which appeared in production form late in World War II. Noted firearms historian and expert Ian Hogg referred to it as:

"The Father of all today's assault rifles"[7]:

[7] Hogg, Ian V. & Weeks, John S., MILITARY SMALL ARMS OF THE 20TH CENTURY, at 243 (7th ed. 2000) (Exhibit C). A brief history is also documented in Long, Duncan, THE COMPLETE AR-15/M16 SOURCEBOOK, WHAT EVERY SHOOTER NEEDS TO KNOW, at 4 (2001) (Exhibit D).

(image source: https://www.recoilweb.com/sturmgewehr-the-first-assault-rifle-100907.html). Earlier pre-production variants included the MP 42 and MP 43 (Machinenpistol 1942 and 1943, respectively). The Germans termed the rifle "Sturmgewehr," literally "Storm Rifle," and a number of the features included utilization of a portion of the gas generated by the burning cartridge propellant to reload and operate the rifle, extensive use of steel stampings in its construction, a detachable magazine, a separate pistol style grip (not integrated with the shoulder stock), a barrel shroud, a bayonet mounting lug and a threaded barrel to facilitate the attachment of a grenade launcher. It fired a cartridge that was smaller dimensionally and less "powerful" (in terms of muzzle velocity and foot pounds of energy) than the standard 8mm Mauser cartridge in use by the German Army in their standard issue bolt action Mauser K98 rifles.

29. It is important to note that the features designed into the German StG 44 were intended to increase potential ease of carry & lethality in battle:

Gas-powered semiautomatic fire: this feature enabled far more rapid fire than

was possible using the previous standard-issue bolt action rifles.

Steel stampings: as previous standard issue firearms used machined steel, this feature made for a substantially less heavy gun, increasing maneuverability.

Detachable magazine: because detachable magazines allow for the replenishment of multiple cartridges with one motion, this feature allowed for more rapid re-loading than previous standard issue firearms.

Separate pistol style grip: this feature greatly enhanced the ability of combat soldiers to quickly maneuver their firearms into firing position and retain stable control and aim while firing rapidly.

Barrel shroud: this feature encircles and protects the end of the barrel, keeping the barrel safe from damage caused by collision with objects and giving the soldier using the firearm an auxiliary grip on the barrel without burning his hand.

Bayonet mounting lug: this feature provided combat soldiers with an additional weapon for use in close combat.

Threaded barrel for attachment of grenade launcher: this feature also provided combat soldiers with an additional weapon, albeit for use at a greater distance.

It is widely accepted that in the design of military small arms, "form follows function." Each of these innovations primarily served to increase the firepower and lethality of the individual combatant.

30. Following the end of the war, captured StG 44s were analyzed by the Allies, as well as the Soviets, and although there was reluctance to move to a smaller caliber cartridge a number of the features of the StG 44 found favor in the design of successive European, American and Eastern Bloc military rifles. Noted firearm expert and historian Jim Supica

wrote in his forward to the book "Guns":

> "Most military establishments hesitated to "downsize" the range and power of their primary rifles in the early Cold War years. The semi-auto detachable magazine concept was an obvious success and there was something to be said for full auto capability."[8]

As Lewis, Campbell, and Steele explain, allied and Eastern Bloc powers were realizing that:

> "Warfare favoring static defenses was a thing of the past. … Rapid deployment forces and superior firepower were … the watchwords of the future."[9]

As Supica further writes:

> "The assault rifle concept wouldn't go away. The Soviet Union accepted the lower power round idea in its fixed magazine semi-auto chambered for an intermediate power 7.62 x 39 mm round in 1945, the SKS, which saw wide distribution and production in Soviet client states."[10]

Two years later in 1947 the USSR followed the SKS with what Supica terms "The quintessential assault rifle – the Kalashnikov designed AK-47."

31. The design of the AK-47 carried forward a number of the features introduced on the German StG 44. These features include a gas powered operating system, use of steel stampings in its construction, a separate pistol grip, separate shoulder stock, a detachable magazine, a bayonet lug, and provision for attachment of a grenade launcher. Due to the separate stock and pistol grip, the AK, much like the StG 44, also utilized a barrel shroud at the forward third of the rifle. Some variations of the early AK-47's (AKM) also featured a compensator at the muzzle that deflected gas upward and to the right to "compensate" for the rifle's tendency to kick up and to the right with every shot.

32. In the 1950's numerous Nations sought to replace World War I and World War

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[8] Supica, Jim, Introduction, GUNS, at 26 & 28 (2005) (Exhibit E).

[9] Lewis, Jack, Campbell, Robert K & Steele, David Eds., THE GUN DIGEST BOOK OF ASSAULT WEAPONS, at 78 (7th ed. 2007) (Exhibit F).

[10] Supica, Jim, Introduction, GUNS, at 26 & 28 (2005) (Exhibit E).

II vintage bolt action and semiautomatic rifles with these newer and more effective designs. With the birth of the North Atlantic Treaty Organization (NATO), however, utilization of Soviet Bloc AK or SKS Assault Rifles was not possible. Accordingly, a number of firearms manufacturers outside the Soviet sphere of influence developed military rifles which carried forward these same features to one extent or another. Fabrique Nationale (FN) of Herstal, Belgium and Heckler Koch (HK) of Oberndorf, Germany are two noteworthy examples.

33. FN developed the FN-FAL (Fusil Automatique Leger) and HK the G3, which found a ready market amongst nations that did not favor the Soviet AK type designs. Both incorporated features which, like the AK, were derived directly from the StG 44. Their designs featured some parts made from metal stampings as opposed to heavier and more expensive machined steel pieces. A separate pistol grip, shoulder stock, detachable magazine and barrel shroud followed the basic design of the StG 44. As noted in paragraph 29, all of these features were designed by the Germans to maximize effectiveness in combat. A flash hider and / or muzzle brake also appeared in production variations of both the FN-FAL and HK G3 rifles. These rifles were destined from inception to become widely exported, as the domestic market in both countries was relatively limited. The FN- FAL and G3 have been in production since the 1950's and both FN and HK have licensed production to numerous countries in South America, Africa and the Middle East.

34. By the late 1950's through the late 1960's most nations who could afford to do so had replaced early 20th century rifle designs with these newer and more effective rifles for their military forces.

35. In the United States, progress in this arena moved at a significantly slower pace. The prevailing wisdom here was to stay away from lighter, smaller rifle calibers and cartridges as the .30-06 cartridge used in the M1 Garand Rifle during World War II had proven to be

more than successful. The United States' answer to the burgeoning move towards Assault Rifles was a variation of the basic M1 Garand operating system, the T44, or M-14. Outwardly, the M-14 retained a full length wood stock as did the Garand, but it featured a detachable magazine, select fire (both semiautomatic and full automatic) capability, and a flash hider. It competed directly against the FN-FAL (designated T88) in U.S. Army trials and was selected in 1957.

36. In the mid 1950's, ArmaLite Corporation's chief engineer, Eugene Stoner, developed a number of lightweight assault rifle designs which resulted in the AR-10 in .308 caliber. Its design closely paralleled what was now becoming standard assault rifle design: light weight (aluminum forged receivers as opposed to machined steel), separate pistol grip and shoulder stock, foregrip / barrel shroud, detachable magazine, and numerous flash hider / muzzle brake variations. ArmaLite continued to refine the basic design of the AR-10, which resulted in the AR-15.

37. In 1961, the Department of Defense purchased a quantity of AR-15 rifles from Colt for evaluation. A number of these were subsequently shipped to US Army advisors in Vietnam to further test their suitability for issue to South Vietnamese Army forces. Following the field evaluation, the Department of Defense Advanced Research Projects Agency prepared a report[11] summarizing the results. Amongst the data compiled via surveys of the US Army Advisors are a number of comments regarding actual use of the AR-15 in the field and the resulting lethal injuries:

[11] *Final Report of ASD / ARPA Research and Development Field Unit – Vietnam* (Aug. 20, 1962) (declassified at AD343778) (Exhibit G).

9. (C) Remarks. Unit Commanders' and Advisors' remarks concerning the value of the AR-15 to Vietnamese Units and its worth as a combat weapon in the war in South Vietnam as opposed to existing weapons were also requested. Generally, the comments were extremely favorable to the AR-15. All of the comments received are presented below in their entirety and in the form in which they were received.

(1) (C) "On 160900 June 62, one platoon from the 340 Ranger Company was on an operation vic. YT260750 and contacted 3 armed VC in heavily forested jungle. Two VC had carbines, grenades, mines, and one had a

4

ANNEX "A"

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SMG. At a distance of approximately 15 meters, one Ranger fired an AR-15 full automatic hitting one VC with 3 rounds with the first burst. One round in the head-took it completely off. Another in the right arm, took it completely off, too. One round hit him in the right side, causing a hole about five inches in diameter. It cannot be determined which round killed the VC but it can be assumed that any one of the three would have caused death. The other 2 VC ran, leaving the dead VC with 1 carbine, 1 grenade and 2 mines." (Rangers)

(2.) (C) "On 9 June a Ranger Platoon from the 40th Inf Regt was given the mission of ambushing an estimated VC Company. The details are as follows:

a. Number of VC killed: 5
b. Number of AR-15's employed: 5
c. Range of engagement: 30-100 meters
d. Type wounds:
   1. Back wound, which caused the thoracic cavity to explode.
   2. Stomach wound, which caused the abdominal cavity to explode.
   3. Buttock wound, which destroyed all tissue of both buttocks.
   4. Chest wound from right to left, destroyed the thoracic cavity.
   5. Heel wound, the projectile entered the bottom of the right foot causing the leg to split from the foot to the hip.

These deaths were inflicted by the AR-15 and all were instantaneous except the buttock wound. He lived approximately five minutes.

38. The AR-15s were also shipped to the Navy SEALs for testing. As with the Army troops, the SEALs found the AR-15 to be an effective and lethal weapon. Both sets of

troops reported on the AR-15's light weight and low recoil, making it instantly popular.[12] In fact, the AR-15 was so effective that the U.S. Army concluded that it was:

> "Found by its users and by MAAG advisors to be **superior in virtually all respects to … [the] Thompson sub-machine gun and [the] Browning automatic rifle**."[13]

39. Part of what made (and makes) the AR-15 so effective in certain combat settings was that it was (and is) designed to chamber and fire the 5.56 x 45mm cartridge (somewhat interchangeable with .223 Remington caliber). It is therefore important to note the respective characteristics of the 5.56mm / .223 caliber cartridge that influenced the US Military's decision to switch over from the 7.62 x 51mm / .308 caliber round used in the preceding model M-14 rifles.

40. Dimensionally the 7.62 x 51mm cartridge is 71mm (2.8 inches) long overall and weighs approximately 0.9 ounces. By comparison, the 5.56mm cartridge is 57mm (2.24 inches) long overall and weighs approximately 0.4 ounces:

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[12] Long, Duncan, THE COMPLETE AR-15/M16 SOURCEBOOK, WHAT EVERY SHOOTER NEEDS TO KNOW, at 19 ("popular with troops") (Exhibit D); Dockery, Kevin, SPECIAL WARFARE: SPECIAL WEAPONS, THE ARMS & EQUIPMENT OF THE UDT AND SEALS FROM 1943 TO THE PRESENT, at 127 (Emperor's Press 2001) (SEALs "enthusiastically" using AR-15s) (Exhibit H).

[13] *Final Report of ASD / ARPA Research and Development Field Unit – Vietnam*, ¶ 3 (Aug. 20, 1962) (declassified at AD343778) (Exhibit G).

(image source: https://www.intherabbithole.com/e176/). Five pounds (80 oz.) of 7.62 ammunition consists of 89 cartridges. Five pounds of 5.56 consists of 200 cartridges. The lighter weight and smaller dimensions of a 5.56 / .223 caliber cartridge allowed more ammunition to be carried by an individual combatant for an equivalent weight. The shorter overall dimensions of the 5.56 also commensurately allowed for smaller detachable magazines and / or larger Capacity magazines for the same size. A 30-round magazine for a 5.56mm AR-15 rifle is smaller than a 20 round magazine for a 7.62mm M-14 rifle.

41. Performance in terms of muzzle velocity was also a consideration. The 7.62x51mm cartridge has a muzzle velocity of approximately 3200 feet per second (fps). The 5.56 cartridge has approximately the same velocity (for reference a 9mm pistol cartridge has a muzzle velocity of approximately 1100 fps). But upon contacting tissue, 5.56mm bullets will "yaw." A bullet "yaws" when its nose begins to turn away from its direction of travel, contributing to the creation of large wound cavities. By comparison, because they are heavier

and travel at a lower velocity, handgun bullets do not typically yaw upon contact with tissue and do not create as large a wound cavity or commensurate destruction of tissue. The yaw movement of a 5.56/.223 bullet can also cause it to fragment upon striking bone, which contributes to additional tissue damage not immediately adjacent to the cavity itself.

42. Noted Wound Ballistics expert Vincent DiMaio writes in "Gunshot Wounds,"

> "As the bullet enters the body, there is 'tail splash' or backward hurling of injured tissue. This material may be ejected from the entrance. The bullet passes through the target, creating a large temporary cavity whose maximum diameter is up to 11-12.5 times the diameter of the projectile. The maximum diameter of the cavity occurs at the point at which the maximum rate of loss of kinetic energy occurs. This occurs at the point where the bullet is at maximum yaw, i.e., turned sideways (at a 90-degree angle to the path) and / or when it fragments. If fragmentation does not occur and the path is long enough, the yawing continues until the bullet rotates 180 degrees and ends up in a base-forward position. The bullet will continue traveling base first with little or no yaw as this position puts the center of mass forward.
>
> The temporary cavity will undulate for 5-10 msec before coming to rest as a permanent track. Positive and negative pressures alternate in the wound track, with resultant sucking of foreign material and bacteria into the track from both entrance and exit. In high-velocity centerfire rifle wounds, the expanding walls of the temporary cavity are capable of doing severe damage. There is compression, stretching and shearing of the displaced tissue. Injuries to blood vessels, nerves,or organs not struck by the bullet, and a distance from the path, can occur as can fractures of bones, though, in the case of fractures, this is relatively rare. In the author's experience, fractures usually occur when the bullet perforates an intercostal space fracturing ribs above and below the bullet path."[14]

DiMaio further states,

> "Projectile fragmentation can amplify the effects of the temporary cavity increasing the severity of a wound. This is the reason for the effectiveness of the 5.56 x 45-mm cartridge and the M-16 rifle. For the M-193 55-gr. bullet, on the average, the yaw becomes significant at 12 cm with marked tissue disruption occurring most commonly at 15-25 cm due principally to

[14] DiMaio, Vincent J.M., *Gunshot Wounds, Second Edition,* CRC Press, New York, NY, 1999 (Exhibit I).

bullet fragmentation."[15]

The animation in the following video illustrates the temporary wound cavity DiMaio describes: https://www.youtube.com/watch?v=8HM96wpPVoQ

43. Despite some initial reliability problems due to improper maintenance by operators, the AR-15 was adopted as standard issue by the US Army in the mid 1960's. The production of the rifle had been licensed to Colt and initially the model designation was, as produced, AR-15:

(image source: Ezell & Stevens, *The Black Rifle*, at 95[16]). Shortly thereafter, Colt made a series of minor engineering adjustments requested by the U.S. military (aimed at improving reliability), and the AR-15 was designated standard by the U.S. military under the name M16. The rifle proved to be as reliable and accurate as the AK type rifles deployed by the opposing forces in the Vietnam Conflict.

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15 DiMaio, Vincent J.M., *Gunshot Wounds, Second Edition,* CRC Press, New York, NY, 1999 (Exhibit I).

16 Ezell, Edward C. & Stevens, Blake R., THE BLACK RIFLE, at 95 (2004) (Exhibit J).

Development of Assault Pistols:

44. Like Assault Rifles, Assault Pistols derive from firearms initially designed and intended for use by the military in combat. Specifically, the modern assault pistol is based on submachinegun designs.

45. A submachine gun can generally be defined as a short or compact shoulder fired firearm which chambers and fires pistol caliber ammunition in select fire or fully automatic mode. They are a pistol caliber (i.e. "subcaliber") machinegun.

46. Submachineguns share many construction and design features with assault rifles, including the StG44. Like the StG44, submachine guns arose from World War II. Nazi Germany entered the war with the innovative "MP38" (Maschinenpistole 38). It was chambered in 9mm and later, after several engineering changes, re designated the "MP40." Like the Sturmgewehr rifle, its design features, commonly found in modern assault weapons, included an adjustable stock, separate pistol grip, detachable magazine, and use of steel stampings in its construction.

47. While the United States initially entered World War II with a military variant of the Thompson .45 caliber submachinegun, it was heavy and expensive to manufacture, as a number of the major components were machined from solid steel. Before the end of the war, the Thompson had been supplemented by the M3 "Greasegun" initially produced by General Motors. The receiver was a stamped and welded sheet metal assembly with an adjustable sliding shoulder stock. Like the MP38 the MP40, it had a separate pistol grip, a sliding / adjustable shoulder stock, and a detachable box magazine with a 30 round capacity. In a utilitarian sense it was as effective as the Thompson, and at approximately $20, it was less than half as expensive for the US Government to purchase.

48. The United Kingdom produced over one million Sten Submachine guns during World War II. A rugged and reliable firearm made largely from welded steel stampings, it was utility and ease of manufacture both combined and perfected. Features shared with the M3 and MP40 included an adjustable and / or collapsible shoulder stock, a detachable box magazine and, on some variations, a barrel shroud allowing the operator to utilize the area surrounding the barrel as an auxiliary grip point without coming into contact with a heated barrel.

49. Prior to and during World War II a number of other nations developed submachine guns, which followed the same design and construction philosophy. Notable examples include the Soviet PPSH41, the Italian Beretta Model 38/42, and the Swedish Carl Gustav Model 45.

50. Following World War II, most new submachine gun designs continued the design philosophy which combined utility, ease of manufacture and the features of wartime firearms. In the early 1960's, HK introduced the MP5, which became an immensely popular choice for military and Law Enforcement agencies worldwide due to its inherent reliability and accuracy. Israeli military Industries also successfully marketed their UZI and Mini Uzi submachineguns for export.

V. DEVELOPMENT OF LARGE-CAPACITY MAGAZINES

51. The term "Large Capacity Magazine" (LCM) under Delaware Law refers to any magazine with a capacity exceeding seventeen (17) rounds, subject to certain exceptions.

52. Modern semiautomatic rifles that are designed, manufactured and marketed as "hunting rifles" traditionally have had an internal magazine capacity of less than 10 rounds depending on caliber. For example, the Browning BAR, as manufactured, has an internal magazine capacity of 4 rounds. Modern assault weapons, including rifles and pistols, also do

not require large capacity magazines to operate. In fact, based on my training, knowledge, and experience, I am not aware of a single firearm that requires a large-capacity magazine, as defined in SB 1 for SB 6, to operate.

53. Large capacity magazines were not initially designed or intended for the civilian marketplace. Instead, as with assault rifles and pistol caliber assault weapons, the lineage of high capacity detachable magazines can be traced directly to a military heritage. World War I introduced numerous magazine fed light machine guns to combat, and the trend continued through World War II. As far as the individual infantryman's rifle was concerned, in World War II the standard issue semiautomatic rifle for the US Army as well as the US Marine Corps was the M1 "Garand" chambered in .30-06. The M1 has an internal (non detachable) magazine with a capacity of eight (8) rounds. It was not until the mid 1950's with the adoption of the M-14 that a rifle with a detachable magazine was approved for general issue to the US Military. Loading and unloading of a M1 rifle is detailed here: https://www.youtube.com/watch?v=q9JPKQqiEL4

54. From 1911 until 1985, the standard issue US Army handgun / sidearm was the Colt Model 1911. The US Marine Corps and Navy also adopted the pistol in 1913. Chambered in .45, it has a standard magazine capacity of seven (7) rounds. It was replaced in 1985 by the Beretta 92 in a smaller caliber (9mm), which has a standard capacity of fifteen (15) rounds. A brief Colt Model 1911 pistol animation is shown here: https://www.youtube.com/watch?v=SMC_gfza6Mk

55. Magazine fed light machine guns developed or deployed prior to, during, and after World War I, and thereafter refined, improved the capability and reliability of this type of feeding mechanism on a large scale. The ability to fire an increased quantity of cartridges without reloading increases the lethality and effectiveness of small arms in combat. Less time

required to reload can equate to more time spent acquiring targets or shooting.

VI. PROLIFERATION OF THE ASSAULT WEAPON PLATFORMS

56. In the 1950s and 1960s, the move towards adoption of semiautomatic and select fire rifles by military forces became a global phenomenon. Soviet Bloc nations rearmed with AK type rifles (and their variants), while NATO Nations adopted a number of designs from Colt, HK and FN, as stated previously, around a standardized caliber rifle cartridge.

57. Colt sought to capitalize on the military acceptance of the AR-15 / M16 and soon proposed production of these rifles for sale to the civilian market. Colt submitted a sample to the Treasury Department on October 23, 1963 for approval. The sole difference between the military and civilian versions was removal of fully automatic capability. This modification was achieved through nine changes to the fire control system. These modifications did not change the general overall appearance or semiautomatic rate of fire of the rifle:

> "1. Removal of the automatic sear.
> 2. Elimination of the automatic sear hole in the lower receiver.
> 3. Elimination of the automatic sear well in the lower receiver.
> 4. Removal of the automatic sear hook on the hammer.
> 5. Removal of the automatic sear trip notch from the bottom rear portion of the bolt carrier.
> 6. Modification of the selector to eliminate the automatic setting.
> 7. Elimination of the "AUTO" position identification marking on the lower receiver.
> 8. Mechanical restriction of selector lever movement to two positions only: SAFE and FIRE.
> 9. Enlargement of the front pivot pin holes in both the upper and lower receivers, and use of a larger-diameter front pivot pin."[17]

The U.S. Treasury Department approved Colt's semiautomatic version of the rifle, called the Model R6000 Colt AR-15 SP-1, in December 1963.

[17] Bartocci, Christopher R., THE BLACK RIFLE II, at 234 (2004) (Exhibit K).

58. All of the other features on these rifles that enhanced their capability as combat military firearms remained. For example, the civilian versions retained the performance capacities of the military weapons they were based on, including the effective range, muzzle velocity and semiautomatic rate of fire. In addition, the weapons retained the capability to accommodate large capacity magazines (more than ten rounds) as originally issued for military use. The R6000 Colt AR-15 SP-1 even included the bayonet lug and flash hider. As Popular Science magazine reported in 1965:

> "Out of the jungles of Vietnam comes a powerful, battle-proven rifle …. The sport version is an exact duplicate of the military weapon except for one alteration."[18]

The animation in this video illustrates the function of both semiautomatic and full automatic AR type rifles. Note that the difference between the two consists of only a few parts in the trigger control group. The same basic configuration and function of the military rifle, including its cartridge and firing velocity, is shared with the semiautomatic models: https://www.youtube.com/watch?v=omv85cLfmxU

59. Like their assault rifle counterparts, post-World War II submachine gun manufacturers also created semiautomatic pistol versions. HK's MP5, introduced in the early 1960s, included a pistol variant without a provision for a shoulder stock (HK SP89) (image source: https://www.gunsinternational.com/guns-for-sale-online/pistols/9mm-pistols/excellent-condition-factory-german-hk-sp89-9mm-pistol.cfm?gun_id=101037518):

[18] *Popular Science*, at 171 (Feb. 1965) (Exhibit L).

Israeli military Industries also successfully marketed their UZI and Mini Uzi submachineguns for export in civilian semiautomatic pistol variants (image source: https://www.military-today.com/firearms/uzi_pistol.htm):

60. Additionally, a number of submachine gun designs proved unsuccessful in terms of Military and Government sales but nonetheless found a ready market when marketed as a semiautomatic pistol. Notable examples include the Cobray MAC-10 (and successive variants) and the Intratec TEC-9, which began life as a Swedish designed submachine gun, the

Interdynamic MP-9 (image sources: https://www.armslist.com/posts/11522946/st-louis-missouri-handguns-for-sale--vulcan-mac-10; https://www.egunner.com/intratec-tec-dc9-9mmpara,name,11952922,auction_id,auction_details):

These assault-type pistols derive directly from their military counterparts.

61. From the start, firearms manufacturers and their marketing agents promoted the similarities between the semiautomatic civilian and full / select fire military versions of their assault weapons:

COLT ARMALITE AR-15 for today and tomorrow

Controlled FIREPOWER...

ACCURATE, POWERFUL AT LONG RANGE

Unsurpassed as a Sniper Rifle both accurate and lethal, at 500 yards the AR-15 makes a complete penetration of 10 gauge steel, or both sides of a steel combat helmet. On impact the tumbling action of the .223 caliber ammunition increases effectiveness.

GRENADE LAUNCHER

Converts instantly without the use of supplementary attachments or adjustments with complete interchangeability of grenade launching or combat ammunition.

MANUFACTURED UNDER LICENSE FROM FAIRCHILD ENGINE AND AIRPLANE CORPORATION AND FAIRCHILD ARMS INTERNATIONAL LIMITED

BY COLT'S PATENT FIRE ARMS MANUFACTURING COMPANY, INC.,

HARTFORD 15, CONNECTICUT, U.S.A. PATENTS PENDING.

CABLE "COLT" HARTFORD, U S A

117. From the first Colt AR-15 brochure, produced in a desperate attempt to interest somebody - anybody - in the merits of the AR-15's "unmatched superiority".

COLT AR-15 SPORTER SEMI-AUTOMATIC RIFLE

.223 CALIBER

Colt's answer to the demand for a semi-automatic version of the AR-15 automatic rifle purchased by The United States Armed Forces. Painstaking engineering redesign efforts have resulted in a Government-approved conversion of the Colt AR-15 automatic rifle without sacrificing any performance or weight characteristics. The semi-automatic AR-15 Sporter weighs only 6.3 pounds. Its recoil is light and barrel rise minimal.

Lightweight • Extremely accurate • Easy to handle • Straight line construction — barrel, bolt, recoil buffer unit and stock assembled in a straight line • Rapid semi-automatic fire is more controllable than with rifles of commercial design • Simple to maintain.

MODEL R-6000 — **RETAIL PRICE* $189.50**

CALIBER	BARREL LENGTH	OVERALL LENGTH	CAPACITY	SIGHTS	SAFETY	WEIGHT
.223	21"	39"	5 rounds	Double tang rear peep sight adjustable for windage. Post type front sight adjustable for elevation.	Rotary safety—selector lever	Approx. 6¾ lbs.

*The suggested retail price of the Sporter is $189.50 and includes two magazines (each blocked for five rounds), sling, flash suppressor, rubber recoil pad, cleaning rod assembly, cleaning brush, and the Colt AR-15 Sporter Operation and Maintenance manual.

(image sources: https://gearsofguns.com/old-ar-15-ads/; Ezell & Stevens, *The Black Rifle*, at 98[19]; 1964 Colt Catalogue[20]). In the advertisements, Colt repeatedly advertised the AR-15 as its "answer to the demand for a semi-automatic version of the AR-15 automatic rifle purchased by the United States Armed Forces" that did not "sacrifice[e] any performance."[21]

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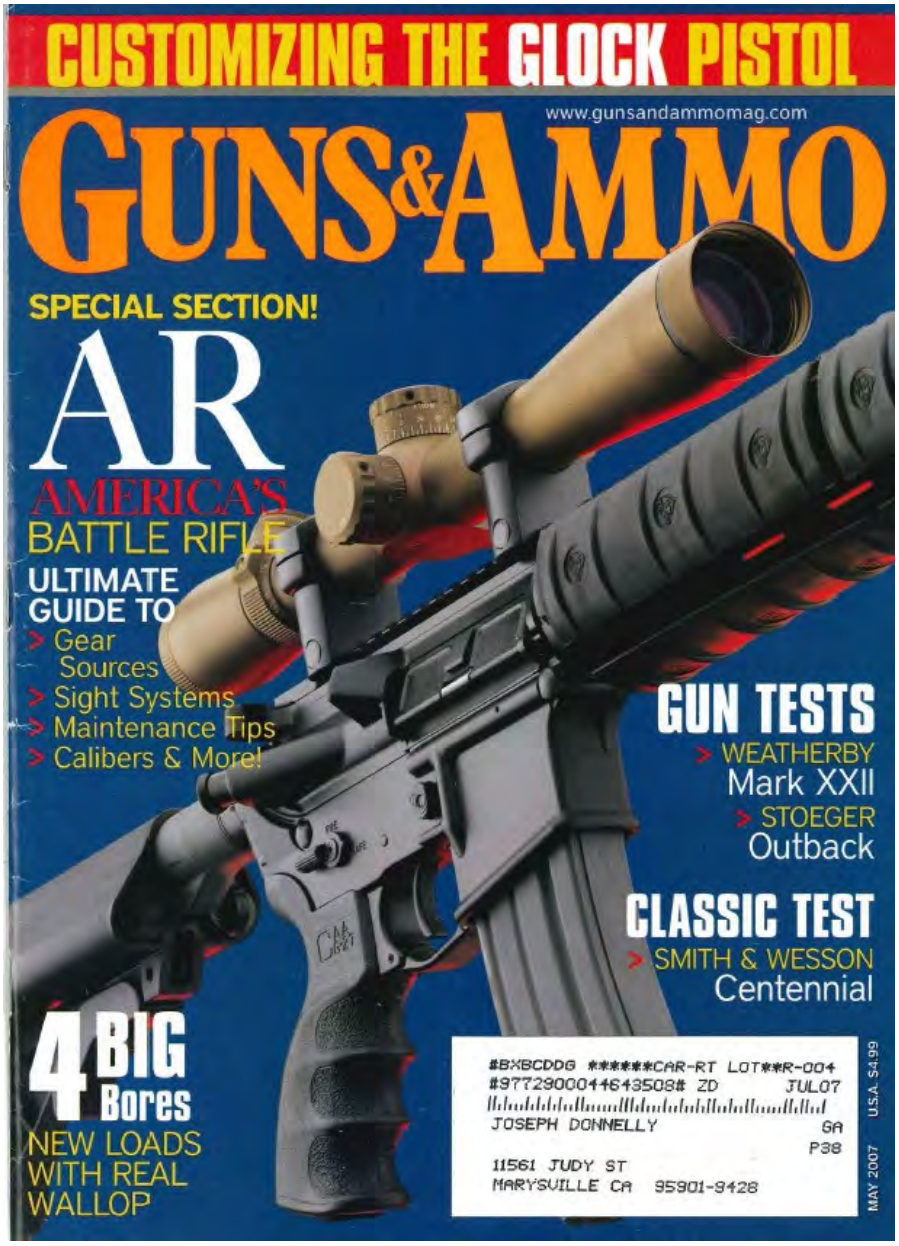
19 Ezell, Edward C. & Stevens, Blake R., THE BLACK RIFLE, at 98 (2004) (Exhibit J).

20 1964 Colt Catalogue (Exhibit M).

21 1964 Colt Catalogue (Exhibit M). Colt's 1970 advertisement said substantially the same thing (Exhibit N), as did its 1978 advertisement (Exhibit O) ("The semi-automatic version of the U.S. Military M16A1 which meets the highest standards of function and dependability."). Importantly, Colt's 1964 Colt also advertises the AR-15 for use with five-round magazines. As noted previously in paragraph 52, no firearm, including assault weapons

62. The firearms industry has continued to highlight their respective assault weapons' military origins throughout the ensuing decades. For example[22]:



This includes manufacturers of assault pistols, who advertise their firearms as such[23]:

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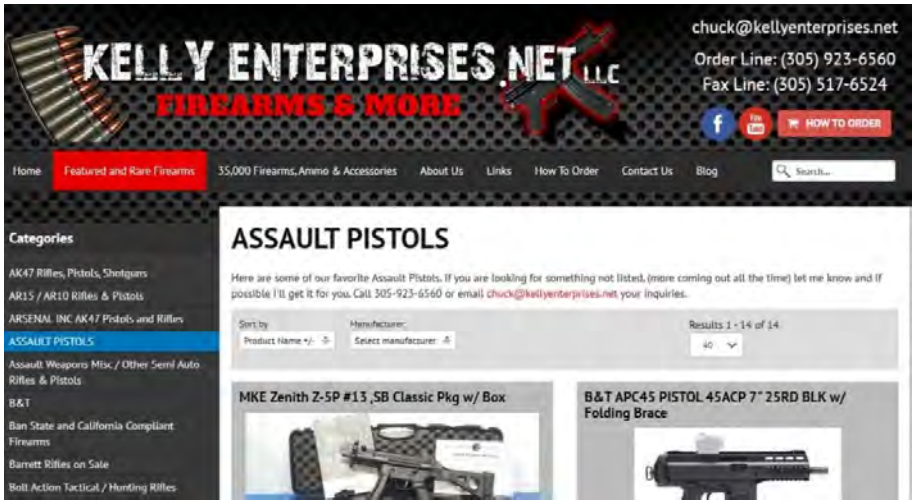
like AR-15s, needs a large capacity magazine to operate.

22 *Guns & Ammo Magazine* (July 2007).

23 Kelly Enterprises, https://www.kellyenterprises.net/firearms/assault-pistols.html.



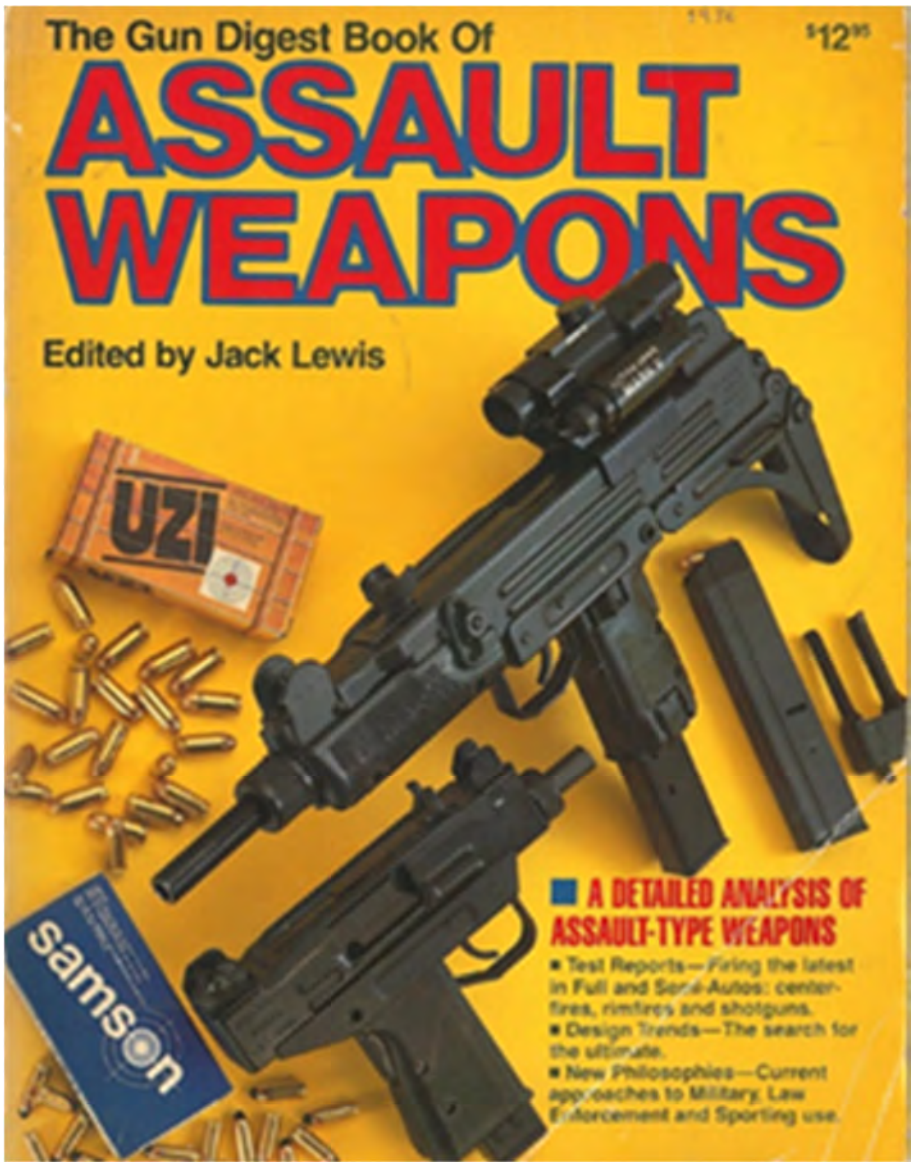
63. On page 15 of their Amended Complaint for Declaratory and Injunctive Relief, the plaintiffs incorrectly claim:

> "35. The State of Delaware mislabels scores of common rifles, common shotguns, common pistols, and "copycat' weapons with a misnomer of "assault weapons."

They again claim on page 24:

> "What is more, the designation "assault weapons" is a complete misnomer, developed by anti-gun publicists" in their crusade against lawful firearm ownership."

Contrary to the plaintiffs' claim of political contrivance, the term "assault weapon" derives directly from the StG 44 sturmgewehr, which literally means "storm rifle," or "assault rifle." The AR-15 was advertised as such consistently through the 1960s, 1970s, and 1980s, by which point references to "assault weapons" were common in the firearms community. Consider the 1986 first edition of the "Gun Digest Book of Assault Weapons":



In the book, which contains "detailed analysis of Assault Type Weapons," editor Jack Lewis reviewed and test fired the Springfield SAR-48 (among other firearms), which is a reproduction of the Fabrique Nationale (FN) FAL rifle. He found it to be "a weapon of war."[24]

64. Following the passage of the Federal and numerous State and local Assault Weapon Bans in the 1990's, the firearm industry via the National Shooting Sports Foundation

[24] Lewis, Jack, Gun Digest Book of Assault Weapons, at 88-93 (1st ed. 1986) (Exhibit P).

(NSSF, a firearm industry trade and lobbying organization) reversed course and coined the moniker "Modern Sporting Rifle" to describe semiautomatic variants of the fully automatic / select fire M16. But the semiautomatic variants of the select fire M16 are not sporting rifles at all. Instead, assault weapons are semiautomatic copies of fully automatic (or select fire) firearms designed and intended for use by the military. They retain features and performance characteristics (in terms of muzzle velocity, range etc.) originally designed and intended for use on the battlefield.

VII. PROLIFERATION OF COPYCATS

65. The expiration of Colt's patents in the late 1970's naturally spawned competition in the marketplace, and that competition accelerated in the years following the 2004 expiration of the federal assault weapons ban. Yet the basic configuration, appearance, construction, and operation of the internal gas operating system (as designed) has remained unchanged since its initial design and introduction as a military weapon. Their specifications similarly remain standardized industry wide. In fact, due to their modular construction, AR type rifles are easily constructed / configured with parts made by other manufacturers to suit the owner's personal preference. The rifle receiver itself (i.e., its frame) is designed as a two-piece unit, and the "upper receiver" and "lower receiver" can be swapped out for other interchangeable pieces made by the same or another manufacturer with ease. The design also facilitates replacement of internal fire control components and assemblies, which are generally completely interchangeable between military M16's manufactured in the 1960's by Colt and an AR-15 type rifle produced today by any one of hundreds of U.S. manufacturers that produce either receivers or internal operating parts. For example, a Bolt Carrier manufactured in 1967 by Colt will fit, and function as designed, in an AR copy manufactured in 2023.

66. The same is true of the overall configuration of "copycat" AR rifles, which

remain essentially identical to the original production design of the early 1960's. The basic design configuration is exactly the same: a two piece hinged receiver frame, a shoulder stock in line with the chamber and barrel, an identically placed magazine, and the same external switches and other features. The following video illustrates how the rifle's hinged two-piece upper and lower receiver can be swapped out for other similar pieces with relative ease and facilitates replacement of internal fire control components and assemblies: https://www.youtube.com/watch?v=F00FEJZbrb0

67. While employed at the ATF NLC, I was a custodian of the Laboratory's Firearms Reference Collection. The firearms in the collection were regularly used by students in the National Firearms Examiner Academy and often required repair. I have personally replaced internal parts in older Colt AR type rifles and Eastern Bloc manufactured AK rifles with recently manufactured parts from aftermarket vendors. The parts fit without issue and the firearms functioned as designed after the repair.

68. In fact, individual component pieces are so standardized and interchangeable that an individual can build a custom AR type rifle from the "ground up" as opposed to purchasing a complete firearm.[25] A good illustration of this ease of customization, and the plethora of interchangeable parts and accessories, is the fact that Brownell's Inc., an established gun supply retailer in Iowa, currently devotes the first 107 pages of their "Big Book" (74th edition) catalog of parts and accessories to AR type rifles alone: https://www.brownells.com/.aspx/bapid=835/ClientPage/brownells-catalog-74-pdfs.

69. The same holds true for AK type rifles and, more recently, pistols available in the civilian market. Although the design (and variants) of the AK-47 are more numerous

[25] Under Federal Law, the lower receiver of the AR platform is considered the "firearm" and requires a serial number. Thus, a background check is required to purchase a completed lower receiver, but it is not required to purchase other components.

than the AR type rifle (as far as military production and use is concerned), it lags behind the AR in regard to domestic civilian popularity. Nonetheless whether the AK Type rifle is of Russian, Chinese or other former Eastern Bloc manufacture, there is a robust secondary market in the United States for accessories, parts, sub- assemblies etc. Although not as easily modified as an AR style rifle due to its less "modular" design, there are customization options available, including a variety of shoulder stocks, sighting and illumination, etc.

70. Additionally, much as with AR type rifles, there are numerous vendors selling all the necessary component parts needed for an individual to build an AK style rifle from "the ground up" as opposed to purchasing a complete rifle and subsequently modifying the firearm. In actuality, the receiver of many AK rifles is simply a stamped metal "flat" which is available from numerous vendors online for as little as $14.99 (image source: https://www.buymilsurp.com/ak-receiver-flat-and-rails-p-3028.html):

71. The AK 'flat' is bent into the correct configuration using a jig which can also be found from numerous vendors (image source: https://ak-builder.com/images/detailed/1/ak_builder_flat_bending_die_set.jpg):

72. As with the AR, the general configuration and specifications of internal AK operating parts and assemblies have remained consistent. Regardless of the place of manufacture, there are numerous internal fire control, feeding and gas operating system components that are interchangeable between AK rifles produced by manufacturers over the past 40-plus years. Again, as with AR type rifles, the overall configuration of the AK rifle receiver, internal operating systems and their parts, and performance (in terms of semiautomatic rate of fire, muzzle velocity, range etc.) are comparable to the military versions from which they evolved.

73. As stated previously, the expiration of Colt's AR patent in the late 1970's spawned numerous "copycat" rifles from other vendors. A similar situation occurred with respect to AK type rifles on an international scale. These foreign manufacturers, including Norinco (China), Romarm (Romania) and Valmet (Finland), were or still are state owned enterprises, and tens of thousands of complete AK copies were imported into the U.S. by a number of foreign manufacturers before additional Federal regulation, Title 18, Section 922(r), required that a certain percentage of the rifle's parts be manufactured domestically.

74. Regulation of imports, however, has not slowed the development of AK

"copycat rifles," and numerous domestic manufacturers are producing rifles in the U.S. based on the original design and operating system.

75. As with the assault rifles, the performance characteristics of pistol caliber assault weapons in regard to semiautomatic rate of fire, muzzle velocity, and effective range have not changed since their initial incarnation as military weapons, and their copycats likewise remain remarkably similar to the originals.

VIII. PREVIOUS ASSAULT WEAPONS LEGISLATION

76. Following previous longstanding legislation such as the 1934 Firearms Act, the 1968 Gun Control Act, and the 1986 follow-up ban on machine guns, in September 1994 Congress passed, and President Clinton signed, the "Public Safety and Recreational Firearms Act," which was part of a larger omnibus crime reduction act. Commonly known as the Federal "Assault Weapons Ban" (AWB), the act banned the possession, transfer or importation of "semiautomatic assault weapons," defined as:

a. any of the firearms, or copies or duplicates of the firearms, known as—
   i. Norinco, Mitchell, and Poly Technologies Avtomat Kalashnikovs (all models)
   ii. Action Arms Israeli Military Industries UZI and Galil
   iii. Beretta AR-70 (SC-70)
   iv. Colt AR-15
   v. Fabrique National FN/FAL, FN/LAR, and NC
   vi. SWD M-10, M-11, M-11/9, and M-12
   vii. Steyr AUG
   viii. INTRATEC TEC-9, TEC-DC9 and TEC-22; and
   ix. revolving cylinder shotguns, such as (or similar to) the Street Sweeper and Striker 12

b. a semiautomatic rifle that has an ability to accept a detachable magazine and has at least 2 of—
   i. a folding or telescoping stock
   ii. a pistol grip that protrudes conspicuously beneath the action of the

weapon

iii. a bayonet mount

iv. a flash suppressor or threaded barrel designed to accommodate a flash suppressor; and

v. a grenade launcher

c. a semiautomatic pistol that has an ability to accept a detachable magazine and has at least 2 of—

i. an ammunition magazine that attaches to the pistol outside of the pistol grip

ii. a threaded barrel capable of accepting a barrel extender, flash suppressor, forward handgrip, or silencer

iii. a shroud that is attached to, or partially or completely encircles, the barrel and that permits the shooter to hold the firearm with the nontrigger hand without being burned

iv. a manufactured weight of 50 ounces or more when the pistol is unloaded; and

v. a semiautomatic version of an automatic firearm; and

d. a semiautomatic shotgun that has at least 2 of--

i. a folding or telescoping stock

ii. a pistol grip that protrudes conspicuously beneath the action of the weapon

iii. a fixed magazine capacity in excess of 5 rounds; and

iv. an ability to accept a detachable magazine

77. The Federal AWB list of "named" firearms (specific models) (Part A of the above definition) and their "copies or duplicates" can be described as the "named firearms" list. The firearms defined by review of their features were banned based on an evaluation that has often been called the "features" test. Because of the conjunction "and" in the statute, both the named firearms (together their copies or duplicates) and firearms with certain features were banned.

78. Subsequent to the passage of the Federal Assault Weapons Ban (AWB), firearm manufacturers and importers implemented modifications to a number of their firearms that were now banned under the "features test." The majority of these modifications were of a

cosmetic nature only in order to pass the test. For example, features of a ‘‘pre ban” Colt AR-15 rifle could easily be removed / modified to meet the features test by removal of the bayonet lug, affixing a non-folding / collapsible or “fixed” shoulder stock, removal of the flash hider and removal of any attachment to accommodate a grenade launcher. Modifications such as these had no appreciable effect on the operation and performance specifications of the banned firearms in terms of ammunition capacity, accuracy, semiautomatic rate of fire, effective range, or potential muzzle velocity of projectiles etc. Cosmetically the rifles were different, but the lethal performance characteristics designed into these firearms when initially designed for battle remained identical.

79. The larger crime reduction bill included a sunset provision for the AWB wherein the restrictions on named firearms, and those subject to the ban based on features, would expire in September 2004 unless extended by subsequent legislation. The Federal AWB expired in September of 2004 and was not replaced or renewed by any subsequent Congressional legislation.

80. For the purposes of this report it is important to emphasize two provisions in the State’s legislation. First, as with the Federal AWB, it contains a list of “enumerated” (by make and model) banned firearms. Second, the statute also bans “copies or duplicates” of those same specific enumerated firearms. Third, state law also bans firearms that meet the features test which incorporates the same characteristics as had been present in federal law. Based on my training, knowledge, and experience, the enumerated firearms and copycats share specific features designed for military combat, described at length above, that are reflected in the features test portion of the regulation.

IX. RIFLE CALIBER ASSAULT WEAPONS AND SPORTING, HUNTING, AND SELF / HOME DEFENSE

81. At numerous points throughout their complaint the Plaintiffs claim (without any supportive statistical data) that self defense is one of the primary reasons for the purchase of a banned firearm. It is my opinion that an AR, AK or other banned assault weapon is a poor choice for this task.

82. I have been asked on numerous occasions during my career what I would recommend for home or self-defense. My recommendation is based upon my inquiry in return regarding the individual's (and their family members') personal experience and comfort level with firearms. In over 25-plus years I have never recommended an AR, AK or other similar assault rifle as a home defense weapon.

83. Home defense and / or self-defense situations are rarely, if ever, lengthy shootouts at long ranges with extensive exchanges of gunfire. Banned assault weapons were designed to be effective at battlefield ranges of up to 500 yards. The typical muzzle velocity of a .223 caliber bullet is 3,200 feet per second (+ or -). Common muzzle velocities for 9mm or .38 caliber handgun bullets are less than half of that. Projectiles travelling at such high velocities pose a serious risk of over-penetration in most home construction materials such as gypsum board / sheet rock, and typical 2x4 lumber. When this cartridge was designed for the AR-15 / M16, it was intended to kill or incapacitate enemy combatants at distances of hundreds of yards, not dozens of feet.

In August 2014, the National Rifle Association's "American Rifleman" published an article by Stanton Wormley called "The AR-15 for Home Defense: Penetration Tests."[26] Wormley conducted penetration tests on nine different types of .223 / 5.56mm ammunition by

[26] American Rifleman, *The AR-15 for Home Defense: Penetration Tests* (Aug. 5, 2014), https://www.americanrifleman.org/content/the-ar-15-for-home-defense-penetration-tests/.

firing them through simulated wall sections constructed of gypsum board / sheet rock and wooden 2x4 studs. When fired at a 90-degree angle to the walls all nine (including "frangible" rounds designed to disintegrate when hitting a hard surface) easily penetrated the wall section as well as water jugs placed three feet behind:

> "But just how much energy did the penetrating projectiles carry? All the loads, including the Glaser, exploded one-gallon water jugs placed 3 feet behind the wall sections."[27]

The tests conducted by Wormley also included firing longitudinally through the wall sections resulting in the penetration of three successive 2" thick 2x4 studs by a number of the projectiles. These tests vividly highlight the inherent dangers of utilizing assault weapons with high velocity ammunition in a home defense scenario.

84. In reference to the NRA American Rifleman article mentioned in paragraph 18(b), current U.S. Army issue .223 caliber ammunition is capable of penetrating 3/8" hardened steel at 350 yards. Potential over-penetration in a confined environment is problematic in terms of risk to bystanders or family members outside the target location. Most jacketed, commercially available 5.56mm ammunition has impressive penetration capabilities in this regard. Additionally, the (former) NATO issue M855 SS109 5.56mm is readily available for purchase by civilians. This ammunition was designed to penetrate up to 3mm of "soft", (non-hardened) steel.

85. During a stressful situation such as a home invasion or break in, there may be multiple steps required by the operator to bring the weapon from a safe condition to a firing condition. Manipulation of a charging handle, safety switch, or inserting a magazine may be difficult to accomplish under stress, particularly if the operator has not adequately trained or

[27] American Rifleman, *The AR-15 for Home Defense: Penetration Tests* (Aug. 5, 2014), https://www.americanrifleman.org/articles/2014/8/5/the-ar-15-for-home-defense-penetration-tests/.

practiced with their firearm. Other family members may not be familiar with bringing the weapon to a firing condition or fail to complete adequate steps to do so under duress.

86. While I was employed as a Special Agent with ATF in the early 2000's, the agency transitioned to an AR type rifle. Each Agent was required to attend, and successfully complete, a one week / 40 plus hour transition training class in order to familiarize themselves, and qualify, with the firearm. The training included repetitive live fire drills under stressful conditions. Additionally, we were required to requalify with these firearms quarterly and repeat the same drills as during the initial transition training. Nonetheless I witnessed Agents make errors during those drills, although they had performed them repeatedly under stress, that resulted in a failure of the weapon to fire. It is worth noting here that the M4 carbines issued to ATF Field Offices were select fire rifles (i.e. machineguns capable of full automatic fire) that were converted to semiautomatic fire only.

87. In terms of home defense and personal protection, I am of the opinion that assault weapons, whether in the form of a rifle or a pistol, are a poor choice for either purpose. Due to their weight and length many Assault Pistols enumerated in HB 450 require two hands to effectively aim and shoot. Certainly the same can be said for a rifle. In a home defense situation an individual may be required to use one hand to call 911 while attempting to operate a "two handed" firearm with one hand. Such a situation would also preclude the homeowner from utilizing their "non gun hand" to pick up or guide a small child during such an event.

88. It is also my opinion, based upon my training, knowledge, experience and research, that assault weapons were not designed for, are not well suited for, and are generally not preferred for traditional hunting purposes. Neither was the .223 caliber cartridge developed for civilian hunting applications. Because of the .223 caliber / 5.56 mm round's proven record of causing significant damage upon impacting living tissue (when fired from an

AR type rifle), it is a counterintuitive choice. There are numerous other traditional sporting rifles (and in fact military surplus rifles such as the Ml Garand) that are not banned by HB 450 and are chambered in a caliber more suitable for hunting than .223 caliber / 5.56.mm. The ATF found similarly in 1989 and again in 1998 when at the request of the Department of the Treasury it reviewed the features, characteristics, design, and capabilities of "assault-type rifles" and determined that those weapons should not be importable under federal law because they were not suitable for sporting purposes, including hunting and target shooting. The ATF instead found that the assault weapons were "designed and intended to be particularly suitable for combat."[28]

89. If the individual seeking a home defense firearm has a preference for shoulder weapons, I have recommended a pump action 12 or 20 gauge shotgun (Remington 870, Mossberg 500 etc.) loaded and stored with the "hammer dropped" on an empty chamber, safety off. The only action required to bring the shotgun from a safe unloaded condition to a firing condition is to work the pump action of the shotgun. The advantages of this type of firearm and storage condition are unmatched stopping power, low probability of over penetration (as compared to rifle caliber and velocity projectiles), and little manipulation of safety mechanisms required in a high-stress situation. The loading / chambering process itself is an audible deterrent. Training and familiarization with this type of a firearm is simple and straightforward.

90. For a handgun, my first inclination is to recommend an eight shot revolver in

[28] Department of the Treasury: Bureau of Alcohol, Tobacco, and Firearms, REPORT AND RECOMMENDATION ON THE IMPORTABILITY OF CERTAIN SEMIAUTOMATIC RIFLES, at 12 (Jul. 6, 1989) (Exhibit Q). The ATF concluded similarly in 1998 (Department of the Treasury, THE SPORTING SUITABILITY OF MODIFIED SEMIAUTOMATIC RIFLES (April 1998)) (Exhibit R), and again as to assault shotguns in 2011. (Department of the Treasury: Bureau of Alcohol, Tobacco, and Firearms, STUDY ON THE IMPORTABILITY OF CERTAIN SHOTGUNS (2011)) (Exhibit S).

.38 caliber or .357 Magnum (Similar to S&W Model 627, Taurus Model 608, etc.) loaded with hollow point bullets. As with my rationale for recommending a pump action shotgun, there are no complicated safety mechanisms to manipulate in a high stress situation, low probability of over penetration and ease of reloading with a speed loader should more than eight shots be required. Revolvers are also easier and less complicated for other family members to learn to operate especially if they have less familiarity with firearms.

91. In terms of a carry handgun, I value concealability over ammunition capacity. The advantage of concealed carry is protection without broadcasting the fact. In a street robbery scenario, I believe the best course of action is to quickly extricate yourself from the "kill zone" and not engage in a protracted gunfight. When I was employed as a Special Agent with ATF we were issued a Sig Sauer P229 in .40 S&W caliber as a primary duty weapon. We were also given the choice of a Sig SauerP239 in .40 S&W or a five shot Smith and Wesson Model 640 in .357 Magnum as a backup firearm. When off duty I carried the S&W 640 and a speed loader extensively as opposed to the P229. I found it easy to conceal and am of the opinion that ten (10) rounds was an adequate amount of ammunition to enable me, or myself and my child, to extricate myself from a street or retail location robbery should I encounter one. Consequently, I have most often recommended either a lightweight small revolver (S&W Bodyguard, Ruger LCR, Smith and Wesson Model 36,640 or variant) carried with a speed loader or a low profile small semiautomatic pistol (Sig Sauer P236, Ruger LCP, Colt Pocketlite etc.) with a spare magazine.

92. The types of firearms classified as assault weapons under the HB 450 are direct developmental descendants of military weapons designed for use in combat. The "civilian" AR-15 type retains the same performance characteristics (in terms of muzzle velocity, range etc.) as does the Military M16 and its variants (M16A2, M-4 etc.). According to the US Army

Rifle Marksmanship M16A1, M-16A2/3, M16A4, and M4 Carbine Manual,[29] the maximum range of these rifles is 2650-3000 meters. They were not designed, nor are they particularly suitable, for home defense in short range close quarter situations.

FM 3-22.9(FM 23-9)

CHAPTER 2

CHARACTERISTICS, AMMUNITION, AND ACCESSORIES

This chapter describes the general components, characteristics, ammunition, and accessories for the M16- and M4-series weapons to include a brief explanation of how to mount the various accessories.

2-1. CHARACTERISTICS

The M16-/M4-series weapons are 5.56-mm, magazine-fed, gas-operated, air-cooled, shoulder-fired weapons. This section describes the general characteristics (Table 2-1) and the components of the M16-/M4-series weapons. Table 2-2 (page 2-2) shows the characteristics of various accessories.

CHARACTERISTIC	M16A1	M16A2/A3	M16A4	M4
WEIGHT (pounds):				
Without magazine and sling	6.35	7.78	9.08	6.49
With sling and loaded:				
20-round magazine	6.75	8.48	9.78	7.19
30-round magazine	7.06	8.79	10.09	7.50
Bayonet knife, M9	1.50	1.50	1.50	1.50
Scabbard	0.30	0.30	0.30	0.30
Sling, M1	0.40	0.40	0.40	0.40
LENGTH (inches):				
Rifle w/bayonet knife	44.25	44.88	44.88	N/A
Overall rifle length	30.00	39.63	39.63	N/A
Buttstock closed	N/A	N/A	N/A	29.75
Buttstock open	N/A	N/A	N/A	33.0
OPERATIONAL CHARACTERISTICS:				
Barrel rifling-right hand 1 twist (inches)	12	7	7	7
Muzzle velocity (feet per second)	3,250	3,100	3,100	2,970
Cyclic rate of fire (rounds per minute)	700-800	700-900	800	700-900
MAXIMUM EFFECTIVE RATE OF FIRE:				
Semiautomatic (rounds per minute)	45-65	45	45	45
Burst (3-round bursts) (rounds per minute)	N/A	90	90	90
Automatic (rounds per minute)	150-200	150-200 A3	N/A	N/A
Sustained (rounds per minute)	12-15	12-15	12-15	12-15
RANGE (meters):				
Maximum range	2,653	3,600	3,600	3,600
Maximum effective range				
Point target	460	550	550	500
Area target	N/A	800	600	600

Table 2-1. Characteristics of the M16-/M4-series weapons.

NOTE: For further technical information, refer to TM 9-1005-319-10 and TM 9-1005-249-10.

2-1

X. ASSAULT WEAPONS AS A GENERAL THREAT TO PUBLIC SAFETY

97. As mentioned previously in this report, many of the firearms prohibited by statute directly trace their origins to those developed for use in combat. As such, they were never initially intended for general distribution / sale to the public.

As tragically demonstrated by recent mass shootings such as the Pulse Nightclub in Orlando Florida in 2016 (49 fatalities, 50+ wounded), the 2017 Las Vegas shooting (60 fatalities, 400+ wounded), the 2022 Uvalde Texas School shooting (21 fatalities + 17

[29] U.S. Army Manual FM 3-22.9 on Rifle Marksmanship M16A1, M16A2/3, M16A34 & M4 Carbine, at 2-1 (April 2003) (Exhibit T).

wounded), and the July 4th 2022 shooting in Highland Park (7 fatalities + 48 wounded), the assault weapons (in conjunction with high capacity magazines) identified in the statutes are capable of inflicting significant carnage upon civilians in a short period of time.

98. Assault weapons as prohibited under HB 450 pose a significant risk to Law Enforcement Officers. It has been my experience that soft body armor issued to most Uniformed Officers has a "Level II" or "Level IIIA" National Institute of Justice (NIJ) protection rating. These two ratings are suitable for protection against most handgun bullets as those projectiles range up to a 1200FPS (+ or -) velocity. Rifle caliber assault weapons (AR & AK type) can, as stated previously in this report, achieve muzzle velocities of 3200FPS (+ or -), which can readily penetrate Level II & IIIA Body Armor (as well as some Level III hard body armor, which is not universal standard issue amongst Law Enforcement Agencies nationwide). Not only do these firearms pose a threat to overall public safety, they increase the likelihood that first responders charged with stopping such a threat, or attending to wounded citizens, may be injured or killed in the performance of their duty.

This online video illustrates the capability of commonly available .223 / 5.56mm caliber ammunition to penetrate Level III body armor. The author / narrator states that this test was performed at a distance of "about seven yards": https://www.youtube.com/watch?v=oMYkEMhPsO8.

99. The argument that commercially available AR type rifles are somehow less dangerous or lethal simply because they fire only in semiautomatic mode is misleading. They retain the identical performance capabilities and characteristics (save full automatic capability) as initially intended for use in combat. With even minimal training, an operator can fire 40-50 shots per minute in semiautomatic mode, which is the U.S. Army's standard

"rapid fire" rate in combat scenarios.[30] According to the U.S. Army's Field Manual, the most effective use of the M16 at ranges beyond 25 yards is rapid semiautomatic fire.[31] Not full automatic fire:

7-8. RAPID SEMIAUTOMATIC FIRE

The most important firing technique during modern, fast moving combat is rapid semiautomatic fire. Rapid-fire techniques are the key to hitting the short exposure, multiple, or moving targets described previously. If properly applied, rapid semiautomatic fire delivers a large volume of effective fire into a target area. The soldier intentionally fires a quick series of shots into the target area to assure a high probability of a hit. (Figure 7-10, page 7-8 shows the current training program for rapid semiautomatic fire.)

Figure 7-10. Rapid semiautomatic fire training program.

a. **Effectiveness of Rapid Fire.** When a soldier uses rapid semiautomatic fire properly, he sacrifices some accuracy to deliver a greater volume of effective fire to hit more targets. It is surprising how devastatingly accurate rapid fire can be. At ranges beyond 25 meters, rapid semiautomatic fire is superior to automatic fire in all measures (shots per target, trigger pulls per hit, and even time to hit). The decrease in accuracy when firing faster is reduced with proper training and repeated practice.

Such capability, combined with the performance characteristics of .223 / 5.56 ammunition originally intended for combat, can, and have, resulted in catastrophic civilian mass casualty events.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on January 29, 2023

James E. Yurgealitis

30 U.S. Army Rifle & Carbine Manual, at 8-17 through 8-22 (2016) (Exhibit U).

31 U.S. Army Manual FM 3-22.9 on Rifle Marksmanship M16A1, M16A2/3, M16A34 & M4 Carbine, at 7-8 (April 2003) (Exhibit T). In fact, the U.S. Marine Corps adopted the M16A4 in 1998, which replaced fully automatic fire capabilities with a three-round burst. Military Today, *M16 Assault Rifle*, http://www.military-today.com/firearms/m16.htm.

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Exhibit A

James E. Yurgealitis

SUMMARY:

Self employed as a Legal and Public Policy Consultant providing Technical Firearms and Forensic Consulting, Testing and Policy Research / Training Services to Corporations, Legal Counsel and the Public Sector

EDUCATION:

B.A., Political Science and Psychology, St. John Fisher University, Rochester, New York – May 1985

PROFESSIONAL EXPERIENCE:

December 2012 to Present: Independent Legal and Policy Consultant / Subject Matter Expert

Currently provide independent consulting services to Corporations, Legal Counsel and Governmental entities in regard to Public Policy and Technical matters relating to Firearms, Firearms Policy, Forensics and Law Enforcement. Current and former clients include the Office of the District Attorney for Cook County Illinois, The City of Sunnyvale, California, The City of Highland Park, Illinois, The Office of the Attorney General for the Commonwealth of Massachusetts and the Center for American Progress, Washington D.C. I have provided sound policy and technical assistance for my clients to include expert testimony which successfully endured the opposition's legal appeals to the U.S. Circuit Court of Appeals and the U.S. Supreme Court.

December 2003 to December 2012: Senior Special Agent / Program Manager for Forensic Services ATF National Laboratory Center (NLC), Beltsville, Maryland. U. S Department of Justice, Bureau of Alcohol, Tobacco, Firearms and Explosives (ATF)

Directed the administration and management of ATF's Forensic Training Programs to include the National Firearms Examiner Academy (NFEA) a 12-month training program for State and Local Forensic Firearm Examiner Trainees. Also managed two additional forensic training programs. Administered a $1M + budget in accordance with strict ATF and National Institute of Justice (NIJ) guidelines and reporting requirements. Responsible for oversight of all Forensic Firearms related research at the NLC. Supervised a full and part time cadre of fifty-two (52) instructors and administrative personnel. Maintained liaison with commercial firearms and ammunition manufacturers and subject matter experts and ensure that lesson plans and curriculum reflected the latest technical developments in firearms manufacture, forensics and their application to federal and state law. Applied for, received and managed in excess of $2M in external grants to facilitate uninterrupted delivery of training during internal budget shortfalls. Detailed to the Department of Homeland Security Command Center in 2005 with overall responsibility to coordinate and direct Federal, State and Local Law Enforcement assets during and following Hurricanes "Irene" and "Katrina" and again in 2010 for "Andrew" and "Danielle".

June 1997 - December 2003: Special Agent / Violent Crime Coordinator, ATF Baltimore Field Division, Baltimore, Maryland

Responsible for management of ATF's "Project Disarm", a joint law enforcement initiative between ATF, The United States Attorney's office for the District of Maryland (USAO), the Baltimore City Police Department, the Baltimore City States Attorney's Office and the Maryland State Police. Duties included reviewing over 400 state and local firearms related arrests annually for subsequent referral to the USAO and Federal Prosecution. Managed a caseload of 75 – 100 criminal cases annually. Responsible for selection, referral, follow - up investigation and subsequent indictment and prosecution of armed career criminals. Testified in front of Federal Grand Juries in excess of 75 times annually. Was recognized, and testified, as an expert witness in the Identification, Operability and origin of Firearms and Ammunition in three Federal Judicial Districts. Toured over 25 firearms and ammunition manufacturing facilities in Europe and the United States. Temporarily assigned in 2001 for three months to the 9-11 Task Force investigation in conjunction with FBI Assets. Temporarily assigned to the D.C. Sniper Task Force Intelligence Group in 2002 for two months.

June 1990 – June 1997:
Special Agent, ATF Baltimore Field Division, Baltimore, Maryland

Served in various capacities as a street-level Special Agent. Acted as Group Supervisor and Assistant Special Agent in Charge on numerous occasions. Served on the Washington – Baltimore High Intensity Drug Trafficking Area (HIDTA) task force from 1995 – 1999. Investigated armed narcotics trafficking organizations, seized assets, authored and executed Federal and state search and arrest warrants, conducted surveillance, interviews / interrogations, testified in Federal and state courts as a fact witness, purchased firearms, explosives and narcotics while in an undercover capacity, investigated fatal bombings and arsons, firearms trafficking, alcohol and tobacco trafficking, homicide, fraud and gun store burglaries. Also while detailed for 8 months as the Public Information Officer authored press releases, provided interviews to local and national print and television media outlets and made presentations to local and national public and special interest groups and associations.

April 1989 – June 1990 and July 1986 – March 1987: Special Agent, United States Department of State, Diplomatic Security Service (DSS), Washington Field Office, Rossyln, VA

Conducted investigations of violations of Federal Law under the department's purview to include Passport and Visa Fraud, Illegal trafficking of restricted firearms and war materials to prohibited countries, human trafficking, seized assets, authored and executed State, local and Federal Arrest and Search Warrants, testified in Federal Court as a fact witness, detailed on an as needed basis to the Dignitary Protection Division as Agent in Charge of multiple protective details for visiting and resident foreign dignitaries, temporarily assigned to support Physical and Personal Protective Security in various U.S. Embassies overseas on an as needed basis, detailed to the Secretary of State Protective Division on an as needed basis to supervise agents assigned to augment the permanent protective detail.

March 1987-February 1989: Special Agent, DSS, Secretary of State Protective Division, Washington, DC

Served in various capacities as Acting Agent in Charge, Acting Shift Leader, Lead Advance Agent and Shift Agent. Responsibilities included close personal protection of the Secretary of State both domestically and overseas, extensive foreign travel to facilitate and prepare security arrangements for overseas visits to include Presidential Summit meetings, liaison with foreign host government officials to plan and solicit assistance with security arrangements, supervision of agents temporarily assigned to augment the detail, liaison with U.S Government Intelligence Agencies and other Federal, State and Local Law Enforcement Agencies to identify and protect against potential threats to the Secretary of State.

CLEARANCES: Top Secret March 1986 valid through February 2015. Numerous prior SCI Clearances.

TEACHING EXPERIENCE:

- Instructed at the Federal Law Enforcement Training Center (FLETC), for ATF and other Federal Law Enforcement Agencies
- Instructed at the International Law Enforcement Academy (ILEA) in Budapest, Hungary
- Instructed for numerous State, local and / or regional law enforcement agencies both in the United States, Canada and Central America

LINKEDIN PROFILE AND ENDORSEMENTS:

https://www.linkedin.com/in/james-jim-yurgealitis-68618464?trk=nav_responsive_tab_profile_pic

REFERENCES:

Available upon request

Exhibit B

Professional Qualifications of James E. Yurgealitis
Independent Legal, Public Policy and Forensic Consultant

I, James E. Yurgealitis, being duly sworn, depose and state:

1.) That I was previously employed as a Senior Special Agent / Program Manager with the Bureau of Alcohol, Tobacco Firearms & Explosives, (ATF) United States Department of Justice, and had been so employed since 1990. Prior to 1990 I was employed as a Special Agent with the Bureau of Diplomatic Security, (DSS) United States Department of State and had been so employed since 1986.

2.) I have a Bachelor of Arts Degree in Political Science and Psychology from St. John Fisher College, Rochester, New York.

3.) I am a graduate of the Federal Law Enforcement Training Center, Glynco, Georgia, the Criminal Investigator Training Program, Bureau of Diplomatic Security New Agent Training, and the Bureau of ATF New Agent Training Program.

4.) I have completed the Firearms Interstate Nexus Training Program conducted by the Firearms Technology Branch, ATF Headquarters, Washington, D.C.

5.) I have completed both Advanced Interstate and European Nexus Training conducted by ATF in conjunction with several domestic and European firearm manufacturers.

6.) I have testified in excess of 200 times before Federal Grand Juries regarding the classification, operability, and commerce of firearms and / or ammunition.

7.) I have previously qualified as an expert witness regarding the origin, operability / classification and interstate movement of firearms and ammunition in U.S. District Court for the District of Maryland, U.S. District Court for the District of Delaware and the Circuit Court For Baltimore City, Maryland.

8.) I have conducted regular training for local, state and federal law enforcement agencies both domestically and overseas regarding firearms classification, operability and firearms statutes.

9.) I maintain a personal library of books, printed material and documents that relate to the field of firearms, ammunition, and firearms classification, attend local and national trade shows and professional association meetings, and regularly review periodicals relating to firearms and ammunition.

10.) I attend trade shows, maintain contact with, and regularly consult with other persons, to include published authors and recognized experts in the origin, identification and classification of firearms and ammunition.

11.) I have, during my tenure with ATF, personally examined in excess of five thousand

Qualifications Of James E. Yurgealitis contd.

firearms to determine their origin and classification and operability, and to facilitate the tracing of those firearms.

I have toured production facilities for numerous firearms and ammunition manufacturers. The tours were conducted by corporate historians, corporate officers, or production engineering personnel.

Domestic Firearm Manufacturers:
Bushmaster Firearms, Ilion, NY, USA
Colt, New Haven CT, USA (4x)
H&R 1871 Inc., Chicopee, MA, USA (2x)
Marlin, North Haven CT, USA (4x)
O.F. Mossberg & Sons, North Haven, CT, USA (4x)
Remington Firearms, Ilion, NY, USA
Savage Arms Inc., Westfield, MA, USA (4x)
Sig-Sauer / SIGARMS Inc., Exeter, NH, USA (3x)
Smith and Wesson, Springfield, MA, USA (4x)
Sturm Ruger, Newport, NH, USA (4x)
Yankee Hill Machining, Florence, MA, USA

Foreign Firearm Manufacturers:
Carl Walther GmbH, Ulm, Germany
Ceska Zbrojovka (CZ), Uhersky Brod, Czech Republic
Fegarmy (FEG), Budapest, Hungary
F.N Herstal S.A., Herstal, Belgium
Glock GmbH, Deutsch-Wagram, Austria
Heckler & Koch GmbH, Oberndorf au Neckar, Germany
J.P. Sauer & Sohn GmbH, Eckernforde, Germany

Domestic Ammunition Manufacturers:
Fiocchi Ammunition, Ozark, MO, USA
PMC, Boulder City, NV, USA
Remington, Lonoke, AR, USA (4x)
Sierra, Sedalia, MO, USA
Starline Brass, Sedalia, MO, USA

European Proof Houses
Beschussamt Ulm, (Ulm Proofhouse) Ulm, Germany
Beschusstelle Eckernforde, (Eckernforde Proofhouse) Eckernforde, Germany
Czech Republic Proofhouse, Uhersky Brod, Czech Republic
Liege Proofhouse, Liege, Belgium

Qualifications Of James E. Yurgealitis contd.

I have been allowed regular access to the following reference collections:
Bureau of Alcohol, Tobacco Firearms and Explosives Reference Collection, Martinsburg, West Virginia, USA consisting of 5,000+ firearms

Liege Proofhouse, Liege, Belgium consisting of 1,000+ ammunition cartridges

Springfield Armory National Historic Site Firearms Collection, Springfield, MA, USA consisting of 10,000+ Firearms

Smithsonian Institution (Museum of American History) Firearms Reference Collection Washington, DC, USA, consisting of 4000+ firearms

Wertechnische Studiensammlung des BWB, (Federal Defense Procurement Bureau Museum) Koblenz, Germany consisting of 10,000+ Firearms

I have toured the following museums:
Heeresgeschichtliches Museum, (Museum of Military History), Vienna, Austria
Hungarian Military Museum, Budapest, Hungary
Springfield Armory National Historic Site, Springfield, MA, USA
United States Air Force Museum, Dayton, OH, USA
United States Army Ordnance Museum, Aberdeen Proving Ground, Aberdeen, MD, USA
United States Military Academy Museum, West Point, NY, USA
United States Naval Academy Museum, Annapolis, MD, USA
Wertechnische Studiensammlung des BWB, (Federal Defense Procurement Bureau Museum) Koblenz, Germany

Membership in Professional Organizations:

Member, International Ammunition Association (IAA)
Technical Advisor (pending approval), Association of Firearm and Toolmark Examiners (AFTE)
Member, Federal Law Enforcement Officers Association (FLEOA)

Exhibit C

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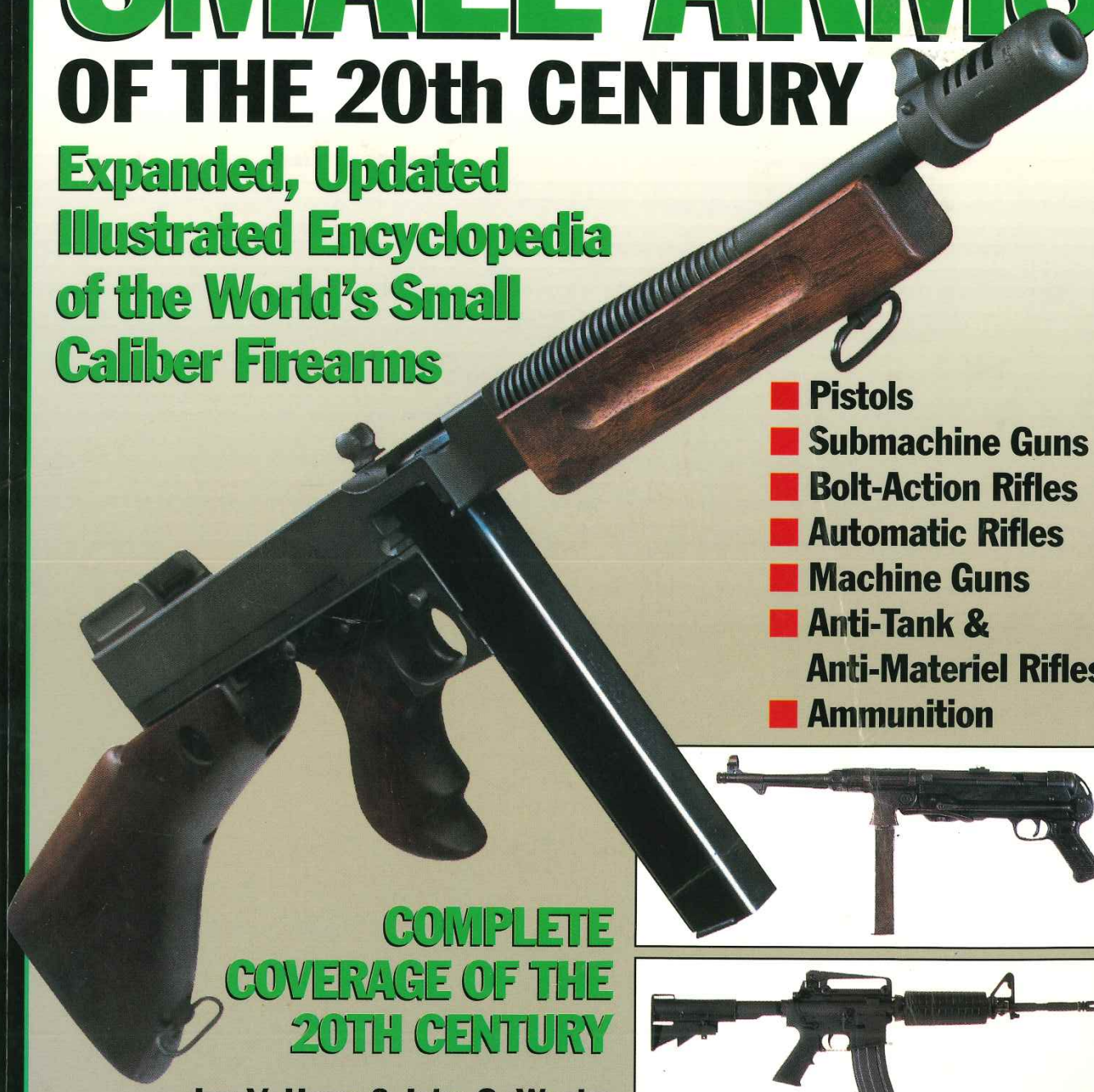

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Ian V. Hogg & John S. Weeks

MILITARY SMALL ARMS OF THE 20th CENTURY

7th Edition

Ian V. Hogg & John S. Weeks

About Our Covers.....

Front Cover - The Thompson submachine gun, in several models, served the U.S. military and the military arms of other nations. Below, the German MP40 submachine gun and Colt's new M4 carbine.

Back Cover - Legendary U.S. arms of the WWII era. Top, the Browning Automatic Rifle (BAR); M1 Garand rifle; Thompson submachine gun and the M3 submachine gun, also known as the "Grease Gun".

These illustrations were made possible through the generous assistance of Charles Justmann, Bob Pucci, Ray Farrell and Colt's Manufacturing Company, Inc. -- and we thank them.

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Printed in the United States of America

Steyr 7.65mm M1909, based on Pieper's patents.

• Steyr Model 1908

Osterreichische Waffenfabrik-Gesellschaft, Steyr

7.65mm automatic pistol (32 ACP)

This peculiar weapon was designed by the Pieper company of Liege, who also manufactured a small number under their own name, but the principal manufacture was done at Steyr and the gun was issued in some numbers to the Austrian police. Some later saw emergency service in World War I.

It appears to be a highly ingenious design until careful thought robs the unusual features of some of their attraction. In the first place, the gun has a thumb-catch on the left side which, when pressed, allows the barrel to hinge forward so that a cartridge can be loaded directly into the chamber. This movement also disconnects the above-barrel recoil spring from the breechblock so that the block can be drawn back and pushed forward to cock the internal hammer—but this should only be done when the magazine is either empty or withdrawn, otherwise the action feeds the top round out of the magazine and on to the ground. There is no extractor fitted as the design relies on residual gas pressure to blow out the spent case as it drives the breechblock back, until the ejector deflects the case through the side port. This means that ammunition malfunctions—especially misfires or stuck cases—cannot be cleared by operating the slide since this will only try to load a fresh round and compound the mischief. Pieper had a habit of coming up with odd designs, but it is a little surprising to find that Steyr should bother producing one of them.

Length: 6.38in (162mm). **Weight unloaded:** 1lb 6oz (620g). **Barrel:** 3.63in (92mm), 6 grooves, right-hand twist. **Magazine:** 7-round detachable box. **Muzzle velocity:** c.900 ft/sec (274 m/sec).

• Steyr M12 ('Steyr-Hahn,)

Osterreichische Waffenfabrik-Gesellschaft, Steyr

9x23mm Steyr M12; 9mm Parabellum

This became the Austro-Hungarian side-arm for elements other than cavalry in 1912. Like the Roth-Steyr, it used a rotating barrel to lock the breech, but the system was much simpler, using a conventional type of slide. Barrel and slide recoiled together for a short distance, during which lugs on the barrel engaged in cam grooves on the frame to turn the barrel through 20 degrees. This disengaged an upper lug from a groove in the slide, so that the barrel halted and the slide was free to recoil. The motion was reversed on the return of the slide. As with other Steyr designs the magazine is an integral box, loaded by means of a charger, and the cartridge is a unique and powerful 9mm cartridge. The 'Steyr-Hahn' (Steyr with hammer—since it used an external hammer instead of the striker of the earlier design) was made in considerable numbers between 1911 and 1918, and was adopted in Romania and Chile as well as being sold commercially. It remained the standard Austrian pistol after 1918, and when the Austrian Army was absorbed into the Wehrmacht in 1938 some 200,000 or so were re-barreled to 9mm Parabellum so as to standardize with the German Army ammunition system. These are marked 'P-08' on the left side of the slide. Although the grip is somewhat square to the frame, the Model 1912 is an excellent pistol, strong and reliable, and it is possible that had it been made originally in a more common caliber it would have achieved greater success.

Length: 8.50in (216mm). **Weight unloaded:** 2lb 3oz (990g). **Barrel:** 5.10in (128mm), 4 grooves, right-hand twist. **Magazine:** 8-round fixed. **Muzzle velocity:** c.1100 ft/sec (335 m/sec).

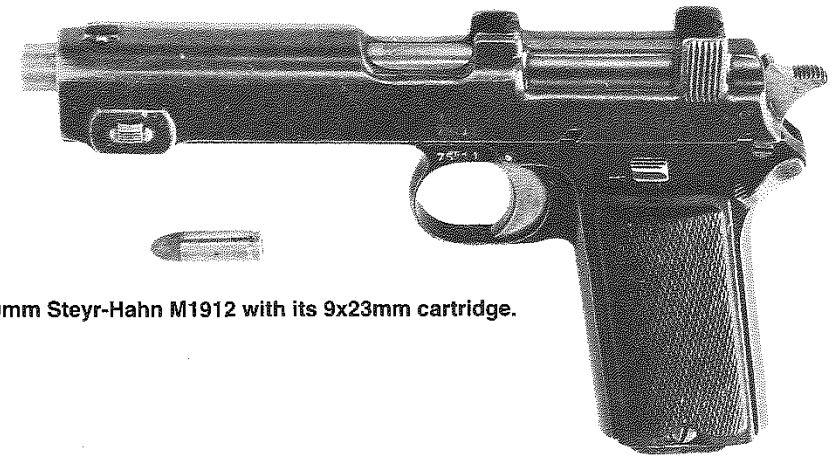
• Steyr GB

Steyr-Daimler-Puch AG, Steyr Austria

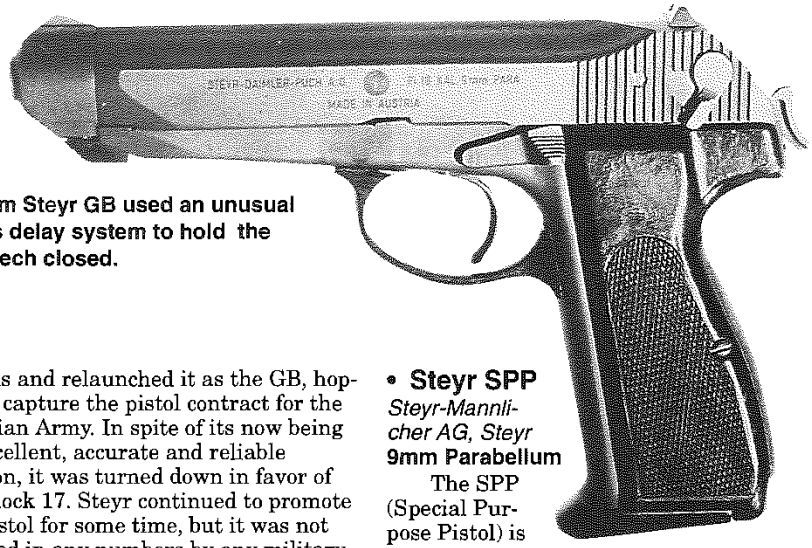
9mm Parabellum

The Steyr GB was a delayed blowback pistol, the delay being obtained by tapping a small amount of gas from the chamber and leading it to the interior of the slide, where it entered an annular expansion chamber formed by the slide surrounding the barrel. Here the pressure built up resisted the opening action of the slide for a long enough period to allow the bullet to clear the barrel and the breech pressure to drop to a safe level. The system is akin to that pioneered by Barnitske of Gustloff-werke in the VG1-5 Volkssturmgewehr and in the Volkspistole. The trigger mechanism was double action, using an external hammer, and the barrel was rifled in the polygonal form, which is also that used by Heckler & Koch in their P9 pistol.

Developed in the mid-1970s and originally known as the Pi 18, this pistol was first developed with the option of automatic fire; used with a stock and a 36-round extended magazine it could function as a form of submachine-gun. This option, however, was soon dropped. It was then made under license in the USA by Rogac Inc., and sold as the LES P-18. Unfortunately the quality control was poor, the pistol acquired a reputation for malfunction, and the license was rescinded. Steyr then made some modifi-



9mm Steyr-Hahn M1912 with its 9x23mm cartridge.



9mm Steyr GB used an unusual gas delay system to hold the breech closed.

cations and relaunched it as the GB, hoping to capture the pistol contract for the Austrian Army. In spite of its now being an excellent, accurate and reliable weapon, it was turned down in favor of the Glock 17. Steyr continued to promote the pistol for some time, but it was not adopted in any numbers by any military force and production ended in 1989.

Length: 8.5in (216mm). **Weight unloaded:** 1lb 14oz (840g). **Barrel.** 5.35in (136mm), 4 grooves, right-hand twist, polygonal. **Magazine:** 18-round detachable box. **Muzzle velocity:** c.1275 ft/sec (388 m/sec).

• Steyr SPP

Steyr-Mannlicher AG, Steyr
9mm Parabellum

The SPP (Special Purpose Pistol) is a semi-automatic version of the TMP (Tactical Machine Pistol) submachine gun. It uses the same synthetic frame and receiver and operates in the same delayed blowback mode by means of a rotating barrel. The principal difference is that the pistol has no forward handgrip and a slightly greater length of exposed barrel and jacket in front of the receiver.

Length: 12.68in (322mm). **Weight unloaded:** 2lb 14oz (1300g). **Barrel:** 5.12in (130mm); 6 grooves, right-hand twist. **Magazine:** 15- or 30-round detachable box. **Muzzle velocity:** c.1246 ft/sec (380 m/sec).

The Steyr Special Purpose Pistol.

The Glock Model 17L, showing the safety spur on the trigger.

• Glock Model 17 Pistol

Glock GmbH, Deutsch Wagram,
9mm Parabellum

This pistol was adopted by the Austrian Army in 1983, 25,000 being ordered. It is a recoil-operated semi-automatic, using a cam-controlled dropping barrel to lock slide and barrel together. Firing is by means of a striker controlled by the trigger; the first 5mm of trigger travel cocks the striker and releases the firing pin lock, and the next 2.5mm of travel releases the striker. The pressure required to actuate the trigger can be adjusted. There is no manual safety catch since the integral firing pin lock will prevent the pistol firing unless the trigger is properly operated. The Glock 17 is of simple design, there being only 32 components including the magazine.

The **Model 17L** is similar to the basic Model 17 but has a longer barrel, for target shooting. The **Model 17C** is also similar to the Model 17 but has an integrated muzzle compensator which is claimed to reduce muzzle climb by up to 30 percent.

Length: 7.40in (188mm). **Weight unloaded:** 1lb 7oz (625g). **Barrel:** 4.49in (114mm); 6 grooves, polygonal, right-hand twist. **Magazine:** 17-round detachable box. **Muzzle velocity:** c.1263 ft/sec (385 m/sec).

• Glock 18 and 18C

Glock GmbH, Deutsche Wagram
9mm Parabellum

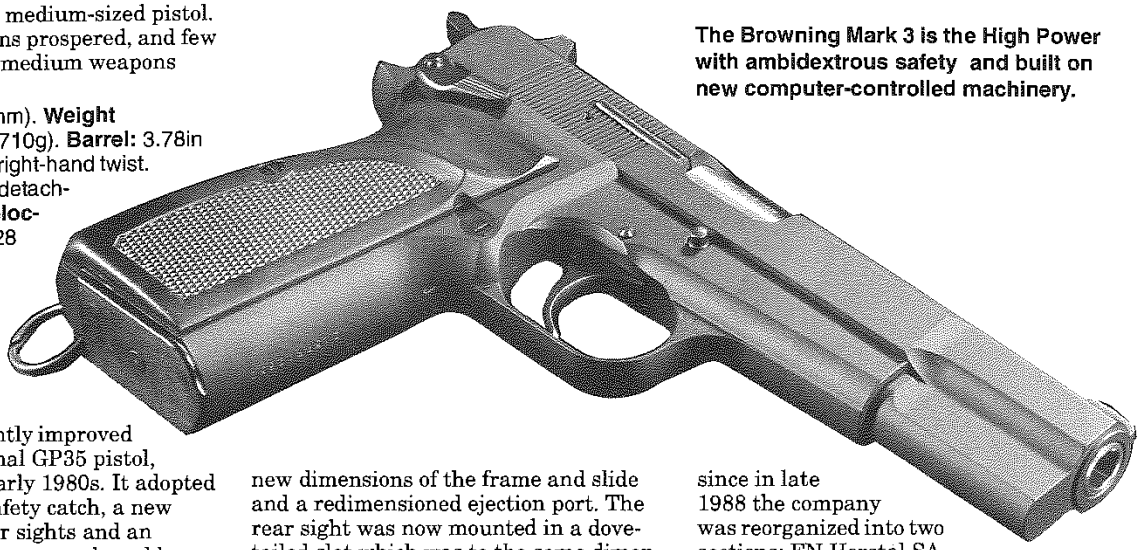
The Glock Model 18 was basically the same as the Model 17 but with a selective fire capability, allowing automatic fire or single shots, and an enlarged magazine. For obvious reasons the principal mechanical components of the Models 17 and 18 are not interchangeable, and its sale is restricted to official bodies.

The Model 18 was replaced in production by the Model 18C; this is exactly the same but for the provision of a muzzle compensator. Four slots in the muzzle and a slot in the slide allow an upward escape of gas and thus helps to keep the weapon stable, particularly when firing in the automatic mode.

Length: 7.32in (186mm). **Weight unloaded:** 1lb 5oz (586g). **Barrel:** 4.49in (114mm); 6 grooves, polygonal, right-hand twist. **Magazine:** 17- or 19-round detachable box. **Muzzle velocity:** c.1115 ft/sec (340 m/sec).

frame, to produce a medium-sized pistol. None of these designs prospered, and few of the compact and medium weapons were ever made.

Length: 6.8in (173mm). **Weight unloaded:** 1lb 9oz (710g). **Barrel:** 3.78in (96mm), 4 grooves, right-hand twist. **Magazine:** 7-round detachable box. **Muzzle velocity:** c.1000 ft/sec (328 m/sec).



The Browning Mark 3 is the High Power with ambidextrous safety and built on new computer-controlled machinery.

• Browning Mk 2

Fabrique Nationale, Herstal-lez-Liege
9mm Parabellum

This was a slightly improved version of the original GP35 pistol, introduced in the early 1980s. It adopted an ambidextrous safety catch, a new design of grip, wider sights and an anti-glare finish. It was purchased by a number of military forces, but in relatively small numbers and in the face of very strong competition from more modern designs. There were also complaints of failures from some quarters, which led FN to withdraw it in 1987 and set about retooling their production line and developing the Mark 3 (below). The dimensions and data are exactly the same as those for the GP35.

• Browning Mk 3 and 3S

FN Herstal SA (Mk 3)
Browning SA (Mk 3S)
9mm Parabellum

These pistols were introduced in January 1989 and were essentially the Browning Mk 2 but manufactured to a higher standard, using new computer-controlled machinery, and with new dimensions of the frame and slide and a redimensioned ejection port. The rear sight was now mounted in a dovetailed slot which was to the same dimensions as that of the Target GP35, so that owners wishing to improve the sights could easily have the target sights fitted. There were also recesses for the addition of Tritium night sighting spots alongside the rear sight and in the front sight blade. The safety catch was ambidextrous and the grips were newly designed to a better anatomical shape. The Mark 3 was the standard single-action weapon; the Mark 3S was a special version produced for police use and incorporated an automatic firing pin safety system in which the firing pin is positively locked against any movement except during the final pressure of the trigger. A mechanism linked to the sear bar then releases the firing pin in time for it to be struck by the falling hammer. The Mark 3S was produced under the Browning name, since in late 1988 the company was reorganized into two sections: FN Herstal SA dealt with military business, while Browning SA attended to police and commercial sales. Within six months of its announcement, 25,000 of the Mark 3S had been sold to European police forces.

The Browning Mark 2 reverted to single action and was simply an up-to-date M1935.

• FN BDA 9

FN Herstal SA
9mm Parabellum

The BDA 9 is a further development of the High-Power and functions in the same way, differing in having a double-action trigger and a hammer decocking lever in place of the safety catch. The decocking lever is duplicated on both sides of the frame and can thus be used with either hand. The magazine release is normally fitted for right-hand use but can easily be removed and reversed to suit left-handed use. The pistol is loaded in the usual manner by pulling back and releasing the slide. It can then be fired or, by pressing the de-cocking lever, the hammer can be lowered. Operation of the lever inserts a safety device between the hammer and the firing pin, and a braking lever slows down the hammer's fall. There is also an automatic firing pin safety system which keeps the firing pin securely locked except during the final movement of the trigger when firing. Once the hammer has been lowered the pistol can be carried with a round in the chamber in perfect safety and can be instantly fired by simply pulling the trigger through.

Length: 7.87In (200mm). **Weight empty:** 1lb 15oz (905g). **Barrel:** 4.65in (118mm), 6 grooves, right-hand twist. **Magazine:** 14-shot detachable box. **Muzzle velocity:** 1,148 ft/sec (350 m/sec).

The BDA9 is the High Power updated to double action.

• FN BDAO

FN Herstal SA
9mm Parabellum

The BDAO is the same as the BDA9 except that it is self-cocking only (or double-action only, as you prefer) and for that reason there is no cocking spur on the hammer. As the slide goes forward after cocking, and after each shot, so the hammer follows it but is arrested before it can strike the firing pin. An automatic firing pin safety system ensures that the pistol cannot fire unless the trigger is pulled completely through to the full-cock position, so that accidental discharges are practically impossible.

Length: 7.87in (200mm). **Weight empty:** 1lb 14oz (870g). **Barrel:** 4.65in (118mm), 6 grooves, right-hand twist. **Magazine:** 14-shot detachable box. **Muzzle velocity:** 1,148 ft/sec (350 m/sec).

• FN Five-seveN

FN Herstal SA, Liege.
5.7x28mm

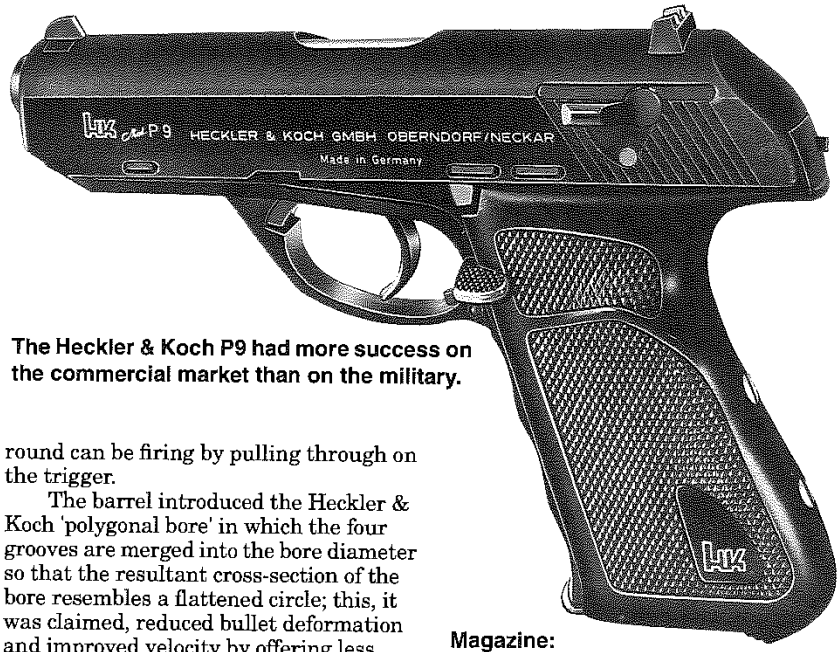
This is a self-cocking semi-automatic firing the same cartridge as the P-90 personal defense weapon (described in the Submachine Gun section). The trigger action is rather unusual in that pressure on the trigger first loads the firing pin spring and then releases the firing pin. Unless the trigger is pressed, the firing pin is never under any sort of pressure, and thus there is no safety catch of the normal type.

The Five-seveN field-stripped; don't be fooled by the lug, this is a delayed blowback pistol.

The FN Five-seveN fires a new high-velocity cartridge to give long range and superior penetration.

The FN Five-seveN with silencer fitted.

Surprisingly, for a weapon of such power, the Five-seveN operates on the delayed blowback principle. The slide carries two notches on its under-surface. Set into the frame is a cross-shaft carrying two connected lugs. The barrel is a loose fit in the slide, and when the barrel and slide are assembled to the frame, a slotted lug beneath the chamber is so placed that the slot lines up with the cross-shaft. On firing, the pressure in the chamber forces the bullet up the barrel, and the friction and torque of the bullet's movement tends to thrust the barrel forward. At the same time the gas pressure forces the cartridge case back and puts pressure on the slide to move to the rear. Barrel and slide move rearward together about 3mm, at which point the slide



The Heckler & Koch P9 had more success on the commercial market than on the military.

round can be firing by pulling through on the trigger.

The barrel introduced the Heckler & Koch 'polygonal bore' in which the four grooves are merged into the bore diameter so that the resultant cross-section of the bore resembles a flattened circle; this, it was claimed, reduced bullet deformation and improved velocity by offering less resistance to the passage of the bullet.

While the P9 and P9S were basically conceived as military pistols, and were taken into use by the German Border Police and other police forces, it was also offered as a potential competition pistol. Alternative barrel lengths of 5 and 5.5-inch were available, together with muzzle balance weights, adjustable sights, a trigger stop and fine adjustment of the trigger travel.

Length: 7.56in (192mm). **Weight unloaded:** 2lb 0oz (950g). **Barrel:** 4.0in (102mm), 4 grooves, right-hand, polygonal. **Magazine:** 9-round detachable box (7.65mm = 8 rounds). **Muzzle velocity:** c. 1150 ft/sec (350 m/sec) (7.65: 1200/370).

• Heckler & Koch VP-70

Heckler & Koch GmbH, Oberndorf-am-Neckar

9mm Parabellum

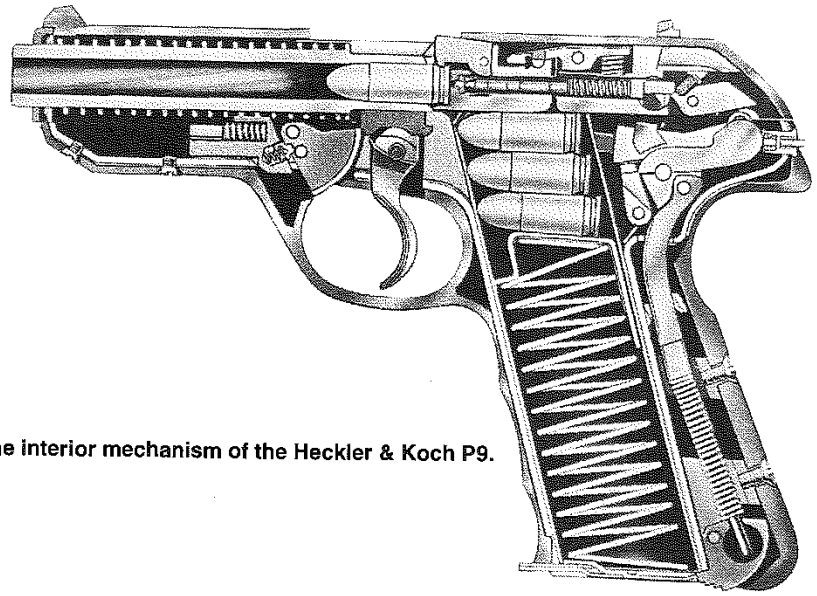
This is a blowback pistol with some unusual features. The magazine, in the butt, carries the remarkable number of 18 rounds, and the pistol can only be fired in the self-cocking mode, by means of a striker. Pulling the trigger first cocks and then releases the striker, and the trigger movement gives a distinct 'first pressure' as the cocking action takes place, where upon further pressure fires the cartridge. This system removes most of the objection to double-action-only systems since it allows a steady aim to be taken and the minimum disturbance of aim at the point of striker release. Since this self-cocking system allows the pistol to be carried loaded quite safely, a safety catch is not normally fitted, but one could be provided (a push-button behind the trigger) if the purchaser so desired.

A holster-stock unit could be fitted; once this was done, a connection with the lockwork allowed the firing of single shots or three-round bursts for each operation of the trigger. This burst facility, another innovative idea, removed the principal objections to the conversion of a pistol into a submachine gun; in such cases only the first few rounds normally have any effect on the target, after which the gun climbs uncontrollably. The Heckler & Koch burst facility ensured that the first few rounds of the burst were the only ones, so that accuracy in automatic fire was guaranteed.

The VP-70 is also of interest in that it used the most modern approach to manufacturing; the receiver is of plastic, with a molded-in barrel support, a construction which is easy to make, resistant to damage, and demanding the minimum maintenance in the field.

The pistol enjoyed commercial sales to African and Asian countries and was adopted by a few military forces, but it was never as successful as the company had hoped and production ceased in the mid-1980s.

Length: 8.03in (204mm). **Weight unloaded:** 1lb 13oz (920g). **Barrel:** 4.57in (116mm). **Magazine:** 18-round detachable box. **Muzzle velocity:** c.1180 ft/sec (360 m/sec).



The interior mechanism of the Heckler & Koch P9.

• Heckler & Koch P7

Heckler & Koch GmbH, Oberndorf-am-Neckar

9mm Parabellum

The P7 family was developed to satisfy a demand from the Federal German Police for a pistol which would be entirely safe to carry loaded but which could be brought into action with the minimum delay. This requirement has been satisfied by the adoption of a cocking lever which forms the front edge of the grip. Assuming the pistol to be empty, with the slide held open after the last shot, on inserting the magazine and squeezing the grip, the slide is released to run forward and chamber a round. Squeezing the grip will now cock the firing pin and pulling the trigger will release the firing pin and fire a shot.

The PA-63 was more or less the Walam for military consumption. There are a few minor changes but the parentage remains obvious.

an ornate star and wreath badge on the grips. Later production was disposed of through a number of West German dealers and may be found with their trade names stamped on the frame.

Length: 6.89in (175mm). **Weight unloaded:** 1lb 8.5oz (700g). **Barrel:** 3.90in (100mm), 6 grooves, right-hand twist. **Magazine:** 8-round detachable box. **Muzzle velocity:** c.965 ft/sec (295 m/sec).

• Pistol PA-63

State Arsenals
9x18mm Makarov

This is another copy of the Walther PP, developed for the Hungarian Army in the late 1950s. The dimensions differ slightly, and the weapon is lighter than the Walther due to extensive use of light alloy in the construction. It is also manufactured in 7.65mm caliber, probably for police use.

Length: 6.89in (175mm). **Weight unloaded:** 1lb 5oz (595g). **Barrel:** 3.94in (100mm), 6 grooves, right-hand twist. **Magazine:** 7-round detachable box. **Muzzle velocity:** c.965 ft/sec (295 m/sec).

• Pistol Model 48

State Arsenals
7.62x25mm Soviet M30

This is simply the standard Soviet TT33 Tokarev pistol made under license in Hungary. The Hungarian version can be distinguished by the crest on the grip (a star, wheatsheaf and hammer surrounded by a wreath) and by the vertical finger-grip cuts on the slide which are narrower and more uniform than those on Soviet weapons. Dimensions, etc., are exactly as for the Tokarev.

ISRAEL

• Uzi Pistol

Israel Military Industries, Ramat Hasharon
9x19mm Parabellum

The Uzi pistol is simply a shortened, lightened and simplified version of the Uzi submachine gun. It has the same general outline, with the magazine housing in the pistol grip at the center of balance and with the cocking handle on top of the receiver, but it has no automatic fire capability and is so designed that attempting to convert it to automatic fire would be virtually impossible. It may look cumbersome, but the weight sits well in the hand and makes the weapon very stable when fired. It is, of course, a blowback weapon, firing from a closed breech, and was originally proposed commercially as a weapon for home defense use, but it has obvious military and security applications and has been seen in the hands of such forces and also fitted with silencers and laser sights.

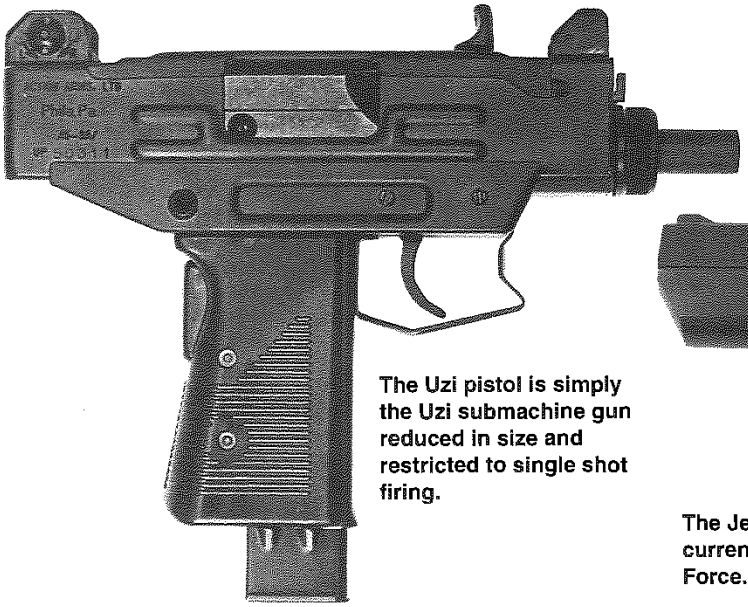
Length: 9.45in (240mm). **Weight unloaded:** 3lb 12oz (1700g). **Barrel:** 4.53in (115mm), 4 grooves, right-hand twist. **Magazine:** 20-, 25- or 30-round detachable box. **Muzzle velocity:** c.1132 ft/sec (345 m/sec).

• Jericho 941

Israel Military Industries, Ramat Hasharon
9x19mm Parabellum and others

The Jericho is a conventional locked-breech pistol using a dropping barrel which locks into the ejection opening in the slide. Hammer-fired and double action, the slide runs on internal frame rails, improving the accuracy. The pistol is normally in 9mm caliber but by replacing the barrel, return spring and magazine it can be made to fire 40 Smith & Wesson or 41 Action Express cartridges. It is also available with various options such as single-action only or double-action only, ambidextrous safety catch, and a butt-mounted safety lock. A compact model is also made. It has been adopted by various Israeli police and security agencies.

Length: 8.14in (207mm). **Weight unloaded:** 2lb 6oz (1090g). **Barrel:** 4.72in (120mm), 6 grooves, polygonal, right-hand twist. **Magazine:** 16-round detachable box. **Muzzle velocity:** c.1132 ft/sec (360 m/sec).



The Uzi pistol is simply the Uzi submachine gun reduced in size and restricted to single shot firing.

The Jericho, a simple and elegant design currently in use by the Israeli Defense Force.

Beretta jumped ahead of the competition in the late 1970s when they introduced the double-action Model 92 with a high-capacity magazine.

Length: 8.54in (217mm). **Weight unloaded:** 2lb 2oz (950g). **Barrel:** 4.92in (125mm), 6 grooves, right-hand twist. **Magazine:** 15-round detachable box. **Muzzle velocity:** c.1280 ft/sec (390 m/sec).

• Beretta Model 92SB

Pietro Beretta SpA, Gardone Val Trompia
9mm Parabellum

In 1980 the US Army began trials to find a pistol to replace the Colt M1911A1, and Beretta modified their Model 92 to suit the US specification, resulting in the Model 92SB. It differed from the 92 in having a safety catch on both sides of the slide, a magazine catch behind the triggerguard, where it can be moved to either side as desired, and a new system of safeties including an automatic firing pin lock. The hammer was given a half-cock notch, and the butt is grooved at the rear to improve grip. The dimensions, etc., are exactly as for the Model 92, except that the weight is now 2lb 3oz (980g).

• Beretta Model 92F

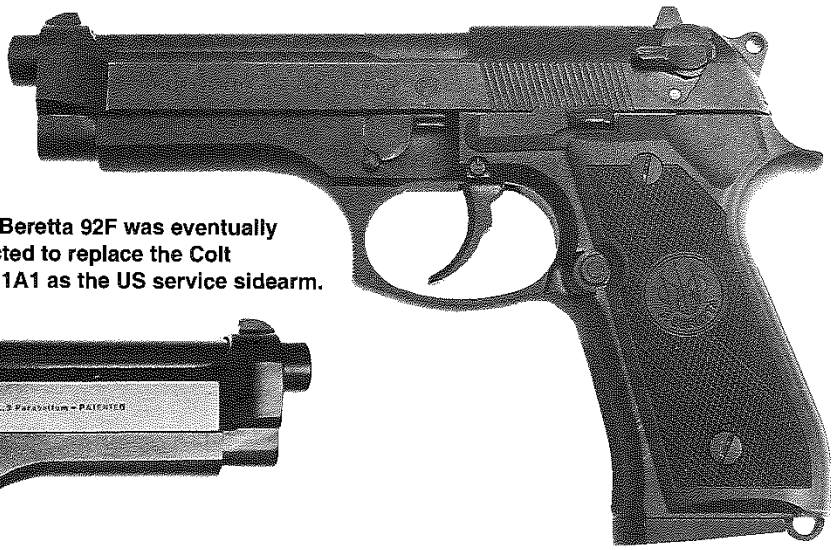
Pietro Beretta SpA, Gardone Val Trompia
9mm Parabellum

The Model 92SB walked away with the US trials, but the Army required some minor changes before accepting it as the Pistol M9. The triggerguard was reshaped to suit the two-handed grip, the magazine had its base extended to improve the grip and the butt front edge was curved at the toe, new grip plates and lanyard ring were fitted. The barrel is chromed internally and the external finish is 'Bruniton', a Teflon-type material. After adoption by the US Army the Model 92F was taken into use by many military and police forces throughout the world. The dimensions, etc., are as for the Model 92SB.

• Beretta Model 93R

Pietro Beretta SpA, Gardone Val Trompia
9mm Parabellum

This is really the 951R brought up-to-date, a selective-fire pistol with a three-round burst facility and several other refinements aimed at turning it into a passable machine pistol. The basic weapon is almost identical to the Model 92. There is a front grip which can be folded down to be grasped by the firer's free hand, giving better support than the fashionable two-handed grip usually used. For more deliberate work a folding stock can be attached to the butt. A fire selector lever on the left side of the frame allows selection of single shots or three-round bursts, and this facility is best used with the stock in place. Another accessory is an extended 20-shot magazine, useful when the burst-fire facility is used. A muzzle brake adds to



This Beretta 92F was eventually selected to replace the Colt M1911A1 as the US service sidearm.

The Beretta lent itself to a wide range of variations; this is the 92SB, specifically designed to meet the US specification for a new service pistol.

The Steyr MPi 81 had a conventional cocking handle.

vehicles fitted with firing ports for the occupants. The receiver is fitted with the optical sight of the AUG rifle, and the barrel is extended and fitted with a special collar which locks into the standard pattern of firing port. The sight is positioned, by a special bracket, so that it can be used with the vision blocks fitted above the firing ports.

• Steyr AUG 9mm Para

Steyr-Mannlicher AG, Steyr, Austria
9mm Parabellum

This is a submachine gun version of the standard AUG assault rifle. It uses the existing butt and receiver units of the rifle, with carrying handle and optical sight, but is fitted with a 9mm caliber barrel, a special blowback bolt group, a magazine adapter and a magazine. The adapter fits into the normal 5.56mm magazine housing in the stock, and the 9mm magazine then fits into the adapter.

Length: 26.18in (665mm). **Weight unloaded:** 7lb 11oz (3.5kg). **Barrel:** 16.54in (420mm), 6 grooves, right-hand twist. **Magazine:** 25- or 32-round box magazine. **Rate of fire:** 670-770 rds/min. **Muzzle velocity:** c.1312 ft/sec (400 m/sec).

• Steyr Tactical Machine Pistol (TMP)

Steyr-Mannlicher AG, Steyr
9mm Parabellum

This weapon, introduced in 1989, consists of a synthetic butt and frame, synthetic receiver top, and a steel barrel and breechblock combination. It is hammer-fired, the firing mechanism being modified from that of the AUG rifle. The weapon works on the delayed blowback principle, the delay being performed by a rotating barrel which owes a good deal to the Steyr 1912 pistol. The barrel lies inside a casing which fits into the top cover and acts as a guide for the bolt. On firing, bolt and barrel recoil 10-12mm or so and then a lug on the barrel, having moved down a slot, hits a cam surface and rotates the barrel about 45° clockwise. This unlocks the bolt, the barrel stops and the bolt goes rearwards. A spring drives the bolt back to collect a fresh round and chamber it and then drives the bolt into the barrel and the barrel forward again, rotating it so as to lock the bolt before it goes into battery. Semiauto or auto fire can be selected by a cross-bolt safety/selector or by trigger pressure, as in the MPi 69. There are 41 parts, and only one screw, the lateral adjustment for the rear sight. There is no stock, but a grip in front of the trigger-guard can be folded down to give a two-handed hold.

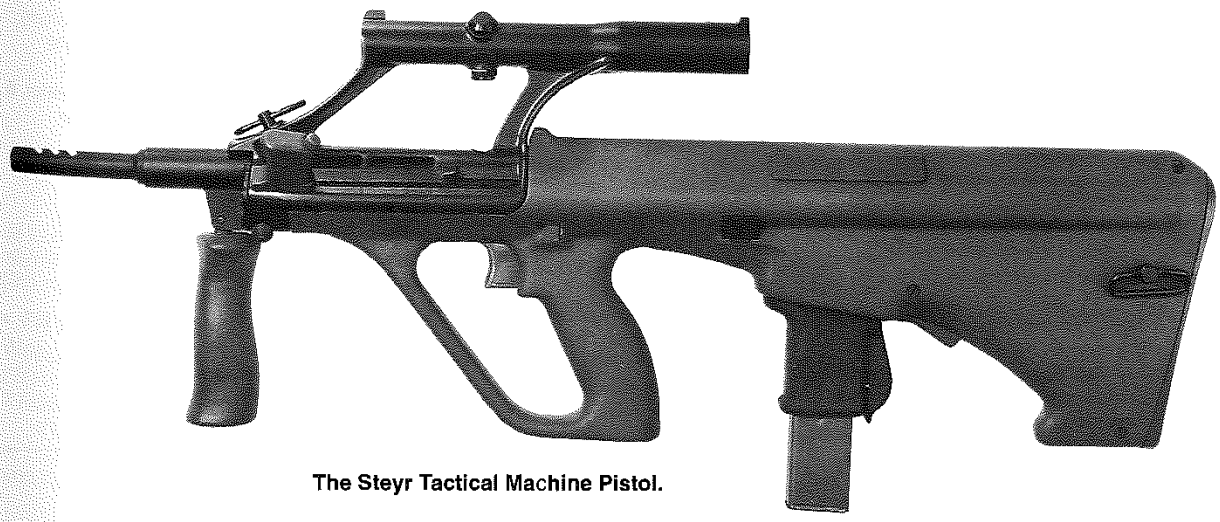
Length: 11.10in (282mm). **Weight unloaded:** 2lb 14oz (1.30kg). **Barrel:** 5.12in (130mm), 6 grooves, right-hand twist. **Magazine:** 15- or 30-round box magazine. **Rate of fire:** 900 rds/min. **Muzzle velocity:** c.1247 ft/sec (380 m/sec).

BELGIUM

• Mitraillette RAN

Société Anonyme Belge Répousemetal, Brussels
9mm Parabellum

The RAN was never taken into military service in any country, although it was offered to any interested buyer in the early and middle 1950s. It had, however, several unusual features and illustrates a line of thought which although not suc-



The Steyr Tactical Machine Pistol.

The Hungarian KGP-9 is a much more basic weapon than Kiraly's designs.

• **KGP-9**
Fegyver és Gáz-készülékgyär, Budapest
9mm Parabellum

This was first revealed in the latter 1980s and is the standard submachine gun of the Hungarian military and police forces. It is a conventional blowback weapon, principally assembled from pressed steel components stiffened with castings. It fires from an open bolt, but the bolt carries a floating firing pin and the firing is done by a hammer mechanism. An unusual feature is that the standard barrel can be removed and replaced by a longer one, presumably to convert the weapon into a form of carbine with a longer range.

Length, butt extended: 24.21in (615mm). **Length,** butt folded: 13.97in (355mm). **Weight unloaded:** 6lb 1oz (2.75kg). **Barrel:** 7.48in (190mm), 6 grooves, right-hand twist (250mm optional). **Magazine:** 25-round detachable box. **Cyclic rate:** 900 rds/min. **Muzzle velocity:** c.1280 ft/sec (390 m/sec).

ISRAEL

• **Submachine Gun 9mm Uzi**
Israel Military Industries, Ramat Ha Sharon, and Fabrique Nationale d'Armes de Guerre, Herstal-lez-Liége, Belgium
9mm Parabellum

First designed in the early 1950s and based on the Czech 23 series, the Uzi is one of the best and most satisfactory submachine guns in service today. As soon as Israel became independent in 1948 urgent steps were taken to develop a national arms industry and the Uzi was one of the first products. It has been extensively used in the border clashes between Israel and her neighbors, as well as in the various desert wars. It is an extremely compact weapon, achieving its short length by having the bolt recessed to take the face of the breech and so having the main mass of the bolt forward of the breech; the idea was not entirely novel when the Uzi was designed, but it was among the first guns to use the principle so successfully. The magazine housing forms the pistol grip and the whole gun balances so well that single-handed firing is perfectly possible. There is a fire selector switch and safety catch above the pistol grip, and a grip safety let into its rear edge. Early models had a wooden butt, but all of current production are fitted with a neat and strong folding butt which enables the gun to be carried by vehicle crews. West Germany adopted the Uzi (as did the Netherlands) and it was made in Belgium under license by Fabrique Nationale d'Armes de Guerre of Herstal, who supplied them to many South American armies. The weapon is also in wide use by police and security forces throughout the world.

The original Uzi, with wooden butt.

The Uzi with folding butt.

Length, butt extended: 25.00in (635mm); butt folded: 17.00in (432mm). **Weight unloaded:** 7lb 10oz (3.46kg). **Barrel:** 10.25in (260mm), 4 grooves, right-hand twist. **Magazine:** 25-, 32- or 40-round detachable box. **Cyclic rate:** 600 rds/min. **Muzzle velocity:** c.1250 ft/sec (381 m/sec).

• Submachine Gun 9mm Mini-Uzi

Israel Military Industries, Ramat Ha Sharon
9mm Parabellum

This was developed in response to a request for a smaller weapon. In all respects it is identical with the Uzi except that it is smaller and, due to this, has different ballistic characteristics. The muzzle has compensating ports cut into its upper surface in order to assist control of the weapon. A special 20-round magazine is provided, but it will also accept the normal 25- and 32-round Uzi magazines.

Length, butt extended: 23.6in (600mm); butt folded: 14.2in (360mm). **Weight unloaded:** 5lb 15oz (2.70kg). **Barrel:** 7.75in (197mm), 4 grooves, right-hand twist. **Magazine:** 20-, 25- or 32-round detachable box. **Cyclic rate:** 950 rds/min. **Muzzle velocity:** c.1150 ft/sec (350 m/sec).

• Micro-Uzi

Israel Military Industries, Ramat Ha Sharon
9mm Parabellum

This is an even smaller version of the Uzi, the design reduced to its absolute minimum. It is marginally larger than a heavy pistol, and in an attempt to keep the rate of fire down to a practical figure, the bolt has been given a tungsten insert in order to increase the mass. The folding stock is a much simpler pattern than that of the larger weapons, and folds sideways so that the shoulder piece can act as a front grip when firing from the hip. This model is also available in 45 ACP caliber, with a special 16-shot magazine.

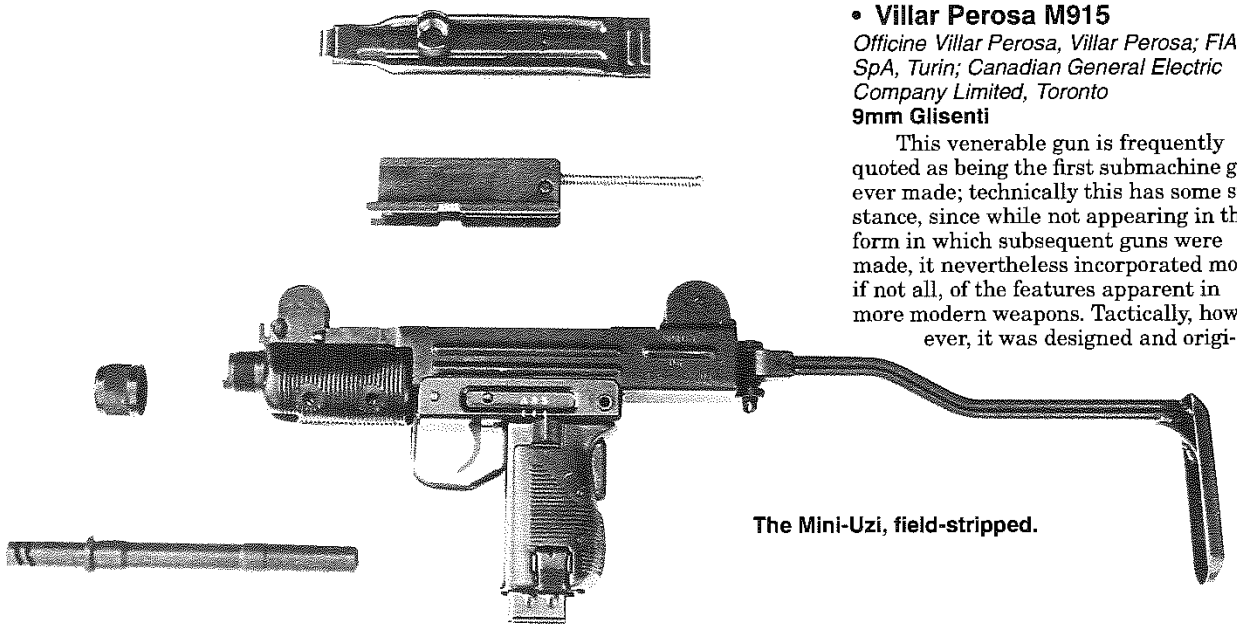
Length, butt extended: 18.11in (460mm); butt folded: 9.84in (250mm). **Weight unloaded:** 4lb 5oz (1.95kg). **Barrel:** 4.61in (117mm), 4 grooves, right-hand twist. **Magazine:** 20-round detachable box. **Cyclic rate:** 1250 rds/min. **Muzzle velocity:** c.1150 ft/sec (350 m/sec).

ITALY

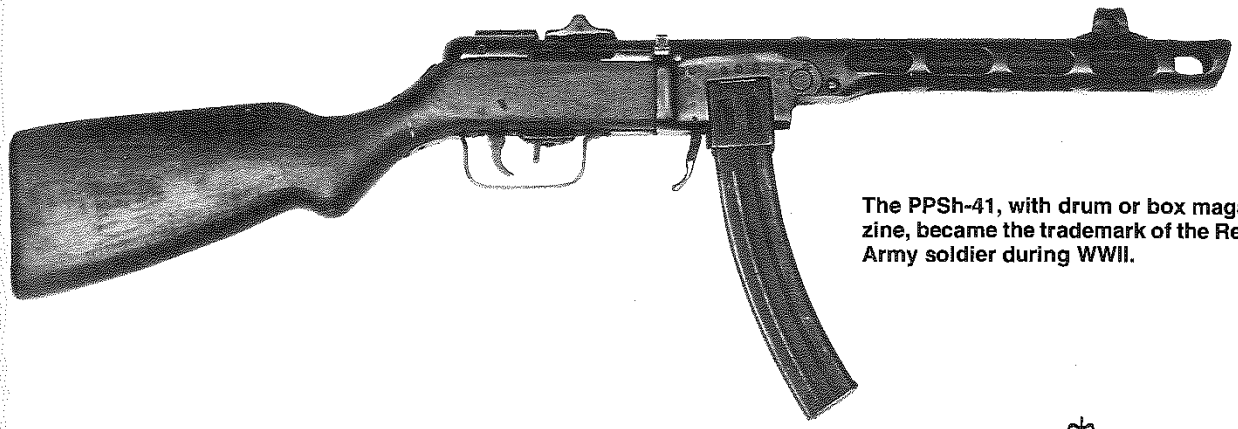
• Villar Perosa M915

Officine Villar Perosa, Villar Perosa; FIAT SpA, Turin; Canadian General Electric Company Limited, Toronto
9mm Glisenti

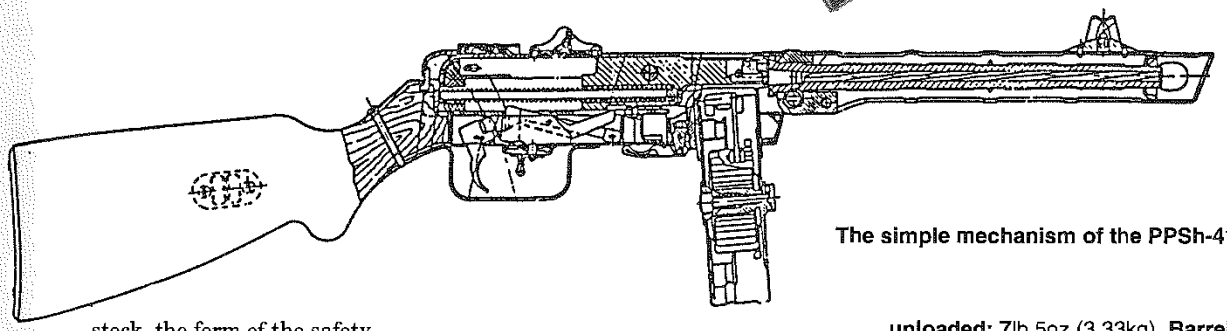
This venerable gun is frequently quoted as being the first submachine gun ever made; technically this has some substance, since while not appearing in the form in which subsequent guns were made, it nevertheless incorporated most, if not all, of the features apparent in more modern weapons. Tactically, however, it was designed and origi-



The Mini-Uzi, field-stripped.



The PPSh-41, with drum or box magazine, became the trademark of the Red Army soldier during WWII.



The simple mechanism of the PPSh-41.

stock, the form of the safety catch and in the barrel jacket (which, in the first model, had a vertical joint in front of the magazine housing). In all, about one million of the PPS were made, and they continued in service for a few years after the war.

Unusually for a Soviet gun, the PPS used a box magazine holding 35 rounds and it was never adapted to take the more popular drum, Despite its extreme simplicity bordering on crudity, the PPS was highly effective. It has now disappeared, having been rarely offered to other Communist countries, though it was widely used by the Chinese forces in Korea in 1951-52. The Finnish m/44 and m/44-46 series, and the Spanish/German DUX guns, were derived from the PPS design. It is generally believed that the virtual suppression of the PPS in post-war years was due to a political decision by Stalin; the siege of Leningrad became something of a national legend of heroism and the leaders of that siege appeared to be gaining too much political influence in post-war years; they were all replaced, and the gun that reminded everyone of the siege was removed from public view.

(PPS42)

Length, butt extended: 35.31in (897mm); butt folded: 24.88in (632mm). **Weigh unloaded:** 6lb 7oz (2.93kg). **Barrel:** 10.75in (273mm), 4 grooves, right-hand twist. **Magazine:** 35-round detachable box. **Cyclic rate:** 700 rds/min. **Muzzle velocity:** c.1600 ft/sec (488 m/sec).

(PPS43)

Length: butt extended 31.81in (808mm); butt folded: 23.85in (606mm). **Weight unloaded:** 7lb 5oz (3.33kg). **Barrel:** 10.00in (254mm), 4 grooves, right-hand twist. **Magazine:** 35-round detachable box. **Cyclic rate:** 700 rds/min. **Muzzle velocity:** c.1600 ft/sec (488 m/sec).

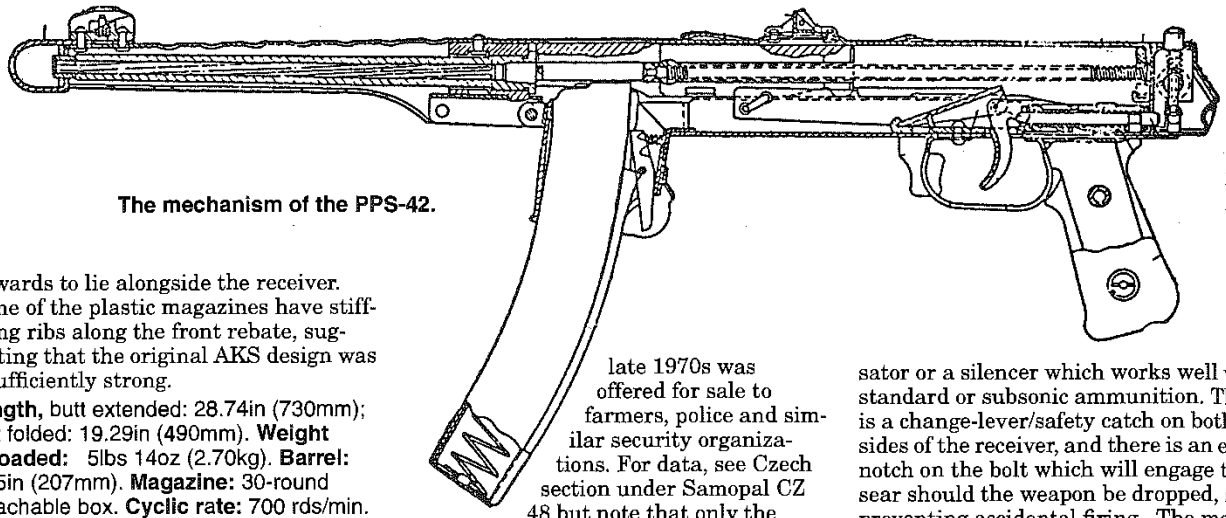
• AKS-74U

State Arsenals

5.45x39.5mm Soviet M1974

This weapon was first reported from Afghanistan late in 1983 and is a shortened version of the AKS 5.45mm assault rifle. The barrel and gas tube are much shorter and in order to reduce the violence of the gas action there is a cylindrical expansion chamber attached to the muzzle and fitted with a bell-shaped flash hider. The receiver top is slightly different from that of the normal AK series in that it is hinged at the front end and lifts forward on opening. There is a steel butt-stock which folds sideways and

The PPS-42, born in the siege of Leningrad.



The mechanism of the PPS-42.

forwards to lie alongside the receiver. Some of the plastic magazines have stiffening ribs along the front rebate, suggesting that the original AKS design was insufficiently strong.

Length, butt extended: 28.74in (730mm); butt folded: 19.29in (490mm). **Weight unloaded:** 5lbs 14oz (2.70kg). **Barrel:** 8.15in (207mm). **Magazine:** 30-round detachable box. **Cyclic rate:** 700 rds/min. **Muzzle velocity:** 2410 ft/sec (735 m/sec)

SOUTH AFRICA

• Sanna 77

Dan Pienaar Enterprise (Pty) Ltd, Johannesburg.

9mm Parabellum

This was actually the Czech vz/25 (qv) sold in South Africa as the 'Sanna'. It is not entirely clear whether this weapon was bought in from Czechoslovakia, assembled in South Africa from Czech-supplied parts, or completely made in South Africa. It had the automatic fire capability removed, so that it could only fire single shots, and in the late 1970s was offered for sale to farmers, police and similar security organizations. For data, see Czech section under Samopal CZ 48 but note that only the 40-round box magazine was offered.

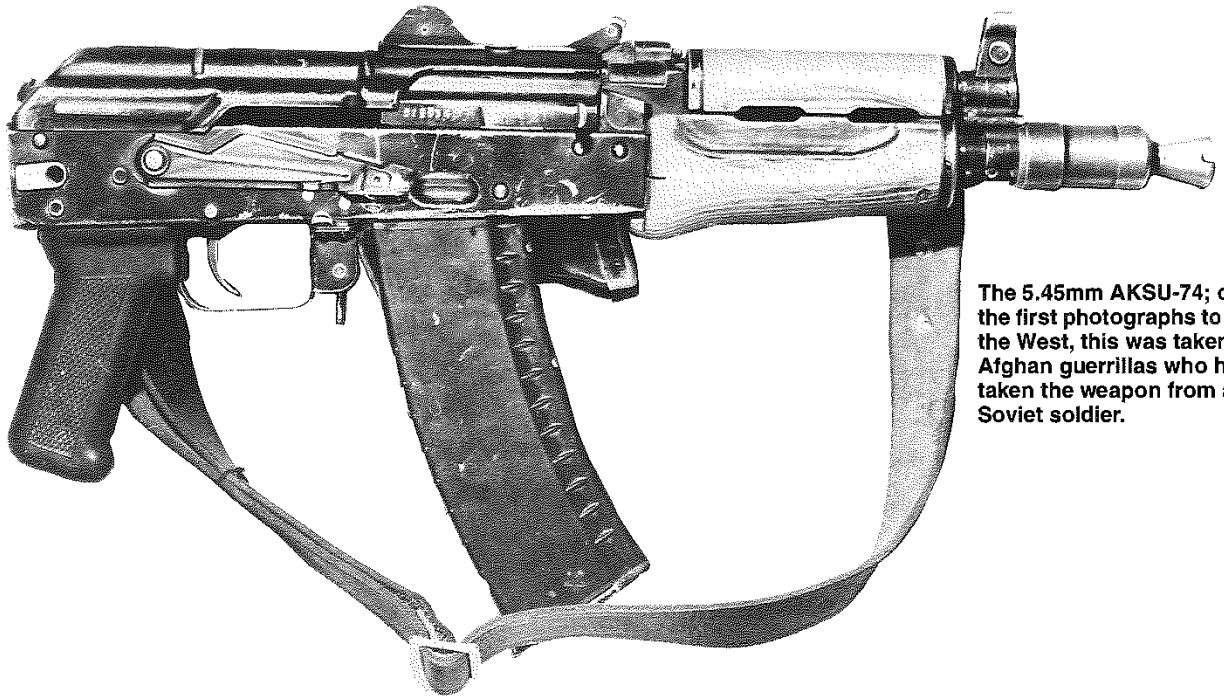
• BXP

Mechem, Silverton

9mm Parabellum

Developed in the early 1980s, this is a simple but effective weapon, built from stainless steel stampings and precision castings. It is very compact and with the butt folded can be fired one-handed like a pistol. The bolt is of the telescoped type, surrounding the rear end of the barrel when closed, and when forward it effectively seals all the apertures in the body, so preventing ingress of dirt and dust. The perforated barrel nut carries a screw-thread which will accept a compensator or a silencer which works well with standard or subsonic ammunition. There is a change-lever/safety catch on both sides of the receiver, and there is an extra notch on the bolt which will engage the sear should the weapon be dropped, so preventing accidental firing. The metal stock folds beneath the body with the shoulder pad acting as a forward hand grip and heat deflector. The exterior surfaces are coated with a rust-resistant finish which also acts as a life-long dry lubricant. The rate of fire is high, but the weapon is well-balanced and can be controlled quite easily.

Length, butt extended: 23.90in (607mm); butt folded: 15.24in (387mm). **Weight unloaded:** 5lb 11oz (2.60kg). **Barrel:** 8.19in (208mm), 6 grooves, right-hand twist. **Magazine:** 32-round detachable box. **Cyclic rate:** c.800 rds/min. **Muzzle velocity:** 1250 ft/sec (380 m/sec) (9mm Parabellum).



The 5.45mm AKSU-74; one of the first photographs to reach the West, this was taken by Afghan guerrillas who had taken the weapon from a Soviet soldier.

5.56x45mm cartridge for their new rifle, the M16. This eventually led to general down-sizing of cartridges, with the Soviets adopting a 5.45mm round. The arguments advanced were much the same as those advanced by the Germans for the 7mm Short round and by the British for their 7mm Medium round—lighter ammunition, less recoil, shorter combat ranges and so forth. But to a good number of soldiers, this was a step too far, it being generally considered that the 5.56mm bullet simply does not deliver the same effect on the target as did the 7.62mm bullet. But ballistics have very little to do with it. The simple fact is that today's soldier had rather more than a rifle and a spade to think about. He (or she) has to be trained in anti-tank rocket launchers, anti-aircraft missiles, rifle grenades, hand grenade, light and medium machine guns, mortars, driving tracked vehicles ..... not to mention attending racial discrimination lectures, AIDS symposiums, drugs discussions... there simply isn't time to waste on an old-fashioned thing like a rifle. Make it light to carry, make it simple to use, make it painless to shoot, give it an expensive optical sight so that he can't miss; but don't waste time on rifle ranges. Besides, the neighbors are complaining about the noise.

The final rifle achievement of the century was the successful production of a rifle to fire a caseless cartridge. A design of caseless cartridge was discovered in Germany after the war, but no information about a suitable weapon was ever discovered. But in about 1970 the German army, taking the long view, decided that they would require a rifle with an exceedingly high first round hit probability, and issued a broad specification. It was soon obvious that the only way to obtain the desired performance was to loose off a burst of three rounds at such a high rate of fire—around 2000 rds/minute—that one of the three was bound to hit the aiming point. But such a rate with conventional ammunition and rifle design was impossible. Heckler & Koch therefore developed a rifle firing a caseless cartridge; by removing two functions from the operating cycle—extracting and ejecting the empty case—it was possible to speed things up and achieve the desired three-round burst rate. The rifle was perfected after almost 20 years of work, but at the last moment the reunification of Germany took financial priority and the contract was canceled.

In the mid-1980s the US Army mounted an expensive project known as the Advanced Combat Rifle. This left the design of the rifle entirely open, stipulating only that it should not exceed a certain weight, but must improve upon the hit probability of the existing M16A1 rifle by a specified amount. Several gunmakers were circularized, a number made proposals, and four actually produced weapons for a most extensive (and expensive) series of trials. After the expenditure of something in the order of $350 million, the conclusion was that none of the competing designs offered sufficient improvement of performance over the M16A1 as to warrant their manufacture.

And there we rest at the century's end; on a plateau of excellence in rifle design which it is going to be very expensive to advance from and the returns, in improved performance, will not be worth the price paid. It is no longer a question of "Where do we go from here?" but of "Where can we go from here?"

ARGENTINA

• FARA 83

Fabrica Militar de Armas Portatiles Domingo Matheu, Rosario

5.56x45mm

This was a fairly simple and uncomplicated gas-operated rifle using a gas cylinder above the barrel to contain a piston attached to a bolt carrier holding a two-lug rotating bolt. The cocking handle was forward and to the right, apparently influenced by the Heckler & Koch pattern, and the plastic butt was hinged to fold around to the right side of the receiver. On removing a lock pin at the bottom rear of the receiver, the pistol grip and butt could be hinged down, allowing the bolt and piston to be withdrawn from the rear of the receiver.

The rifle went into production late in 1983 but after about 1200 had been issued to the Argentine Army a financial crisis caused the issue to be stopped, and apart from a small batch made as demonstrators for sales purposes, no more have been made since about 1986.

Length, stock extended: 39.37in (1000mm); stock folded: 29.33in (745mm). **Weight unloaded:** 8lb 11oz (3.95kg). **Barrel:** 17.79in (452mm); 6 grooves, right-hand twist. **Magazine:** 30-round detachable box. **Cyclic rate:** c.750rpm. **Muzzle velocity:** 3166 ft/sec (965 m/sec).

AUSTRIA

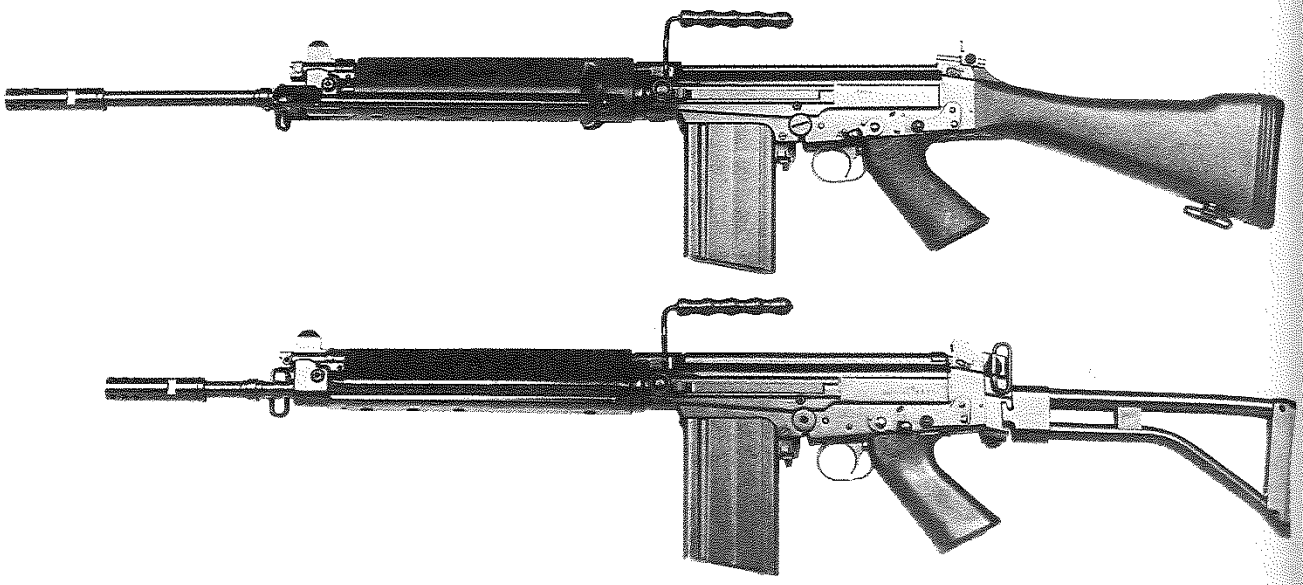
• Steyr AUG (1978)

Steyr-Mannlicher AG, Steyr

5.5x45mm

The Steyr 'Armee Universal Gewehr' is so called since it can function as a submachine gun, a carbine, an assault rifle, or a heavy-barreled automatic rifle (HBAR) for use in the squad automatic role. The difference between these models is simply the length of the barrel and the addition of a bipod for the HBAR version. Further details of the HBAR model can be found in the Machine Gun section. All models are normally equipped with an optical sight in the carrying handle; but by substitution of the receiver casting this can be changed to a mounting rail capable of accepting any telescope or night vision sight. The AUG is in use in the Australian, Austrian, Irish, New Zealand, Tunisian and Omani Armies and innumerable security agencies.

The AUG is a 'bullpup' of somewhat futuristic appearance and its construction is unusual. A basic structure of high-quality plastic supports the receiver, which is an aluminum casting with steel inserts for the barrel lugs and bolt guides. The sight bracket-cum-carrying handle is an integral part of this casting. The steel barrel, with chromed chamber, locks into the receiver by means of an interrupted thread, and the barrel carries a short sleeve containing the gas port, and cylinder and the front hand grip. A flash suppresser is fitted to the muzzle, and this is internally threaded to take a blank-firing attachment. The hand grip folds, and is also used to rotate and remove the barrel when necessary. The magazine is transparent, allowing the firer an instant check of its contents, and slots into the butt behind the hand grip. There is a cross-bolt safety catch above the grip, which can be set to 'fire' by a quick movement of the thumb. No selector lever is fitted; selection of single shots or automatic is done by varying the pressure on the trigger: the first pressure on the trigger allows single shots, but pulling past this position allows automatic fire. The rifle can be adjusted for right-or left-handed firers by exchanging the bolt and blanking off one of the two ejection ports.



Instead of the LAPA, the Brazilian army preferred these locally-manufactured versions of the FN FAL: the Imbel LAR.

round. If more precision was required the selector could be set to 'SA' (single action'), when the trigger mechanism operated in the conventional manner. Double or single action could be selected for either single shots or automatic fire. Prototype models used the M16 magazine, but it was intended that production models would use a plastic magazine.

Length: 29.65in (738mm). **Weight unloaded:** 7lb 10oz (3.48kg). **Barrel:** 19.25in (489mm), 6 grooves, right-hand twist. **Magazine:** 20-, 30- or 40-round detachable box. **Cyclic rate:** 650-700rpm. **Muzzle velocity:** 3280 ft/sec (1000 m/sec).

• Imbel LAR

Industria de Material Belico do Brasil, Vila Estrela

7.62x51mm NATO

The Light Automatic Rifle is simply the well-known FN-FAL manufactured in Brazil under license. It is produced in two forms, a standard model with a fixed butt and a Paratroop model with short barrel and a side-folding butt. Except for some very small dimensional changes it is exactly the same as the original Belgian weapon.

Length: 43.30in (1100mm); Para: 38.97in (990mm). **Weight unloaded:** 9lb 15oz (4.50kg); Para: 9lb 10oz (4.37kg). **Barrel:** 20.98in (533mm); Para: 17.20in (437mm); 4 grooves, right-hand twist. **Magazine:** 20-round detachable box. **Cyclic rate:** 650-750rpm. **Muzzle velocity:** 2805 ft/sec (855 m/sec).

• Imbel MD2 (1985)

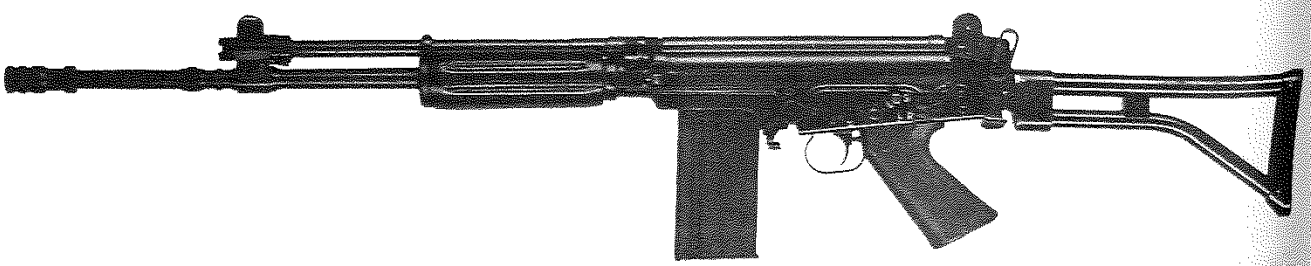
Industria de Material Belico do Brasil, Vila Estrela

5.56x45mm

The MD2 is a 5.56mm version of the LAR (above), suitably scaled down. Development began in about 1982, with the intention of capitalizing on the experience gained in manufacturing the LAR and, wherever possible, using existing components of that weapon. The first prototype, the MD1, appeared in 1983 and after extensive troop trials, modifications were made which produced the MD2, which went into service with the Brazilian army and police forces in the late 1980s.

Although using a certain amount of common parts and having a similar general outline, there is little other relationship between the LAR and the MD2. The MD2 is gas operated, using the now-familiar bolt carrier and rotating bolt; you could almost say it is an M16 in FAL clothing. It uses a 20-round magazine but the interface will accept the standard 30-round M16 magazine if required. A light bipod is available and may be attached to the forend, and the standard construction used a folding tubular butt. The result is rather heavier than the average 5.56mm rifle but it produces a very accurate and steady weapon which is perhaps easier to control in automatic fire.

There are a number of variations on the basic model. The MD2 is the standard, with long barrel and folding butt and providing selective fire. The MD3 is the same weapon but with a fixed plastic butt. The MD2A1 and MD3A1 are the same as the MD2 and MD3 but are engineered so as to provide only single-shot fire, and they are principally intended for police use.



The Imbel MD2 is simply a scaled-down FN FAL firing the 5.56mm cartridge.

Also by Walther, and a year later, the Gewehr 43 reverted to the traditional wooden furniture and rifle shape.

The Father of all today's assault rifles: the MP44 or Sturmgewehr 44, which revolutionized military rifle design.

ered fairly generally on all fronts—ways in small numbers and always as a ecialist's weapon. A definite improve-ent on the Gew 41(W), the Gew 43 was ch easier to make; most were found h laminated wooden furniture, but ards the end of the war plastic was used. Owing to the economic situa-, there was ultimately a further sim-ication of manufacture which gives e of the remaining models a very gh external appearance.

The Gew 43 remained in production l the end of the war and, after 1945, adopted in small numbers by the ch Army as a sniper's rifle. The Kara-er 43 differed from the Gewehr 43 in the substitution of a large trigger-rd, although it was also some 2 inches mm) shorter.

ew 43)

gth: 44.00in (1117mm). **Weight oaded:** 9lb 9oz (4.33kg). **Barrel:** 00in (558mm), 4 grooves, right-hand **Magazine:** 10-round detachable box. **zzle velocity:** c.2450 ft/sec m/sec).

Maschinenpistole 43, schinenpistole 43/1, schinenpistole 44, rmgewehr 44 (MP43, MP43/1, 44, StG44)

Haenel Waffen- und Fahrradfabrik Suhl; Erfurter Maschinenfabrik B Gei- GmbH, Erfurt; Mauser-Werke AG, dorf-am-Neckar, and an unidentified pany.

33mm Kurz

The MP43 was the developed version MKb42(H) with certain modifications made in the light of combat experience on the Russian Front; the first deliveries of the weapon were made in July 1943 and production continued until the first months of 1945. In late 1943, a variation of the basic MP43 was manufactured, under the designation MP43/1 in which the clamp-on grenade launcher was replaced by one of screw-on pattern: a short threaded section appeared at the muzzle of the MP43/1 to allow the grenade launcher to be attached. A mounting bracket for optical sights was also fitted, something which never appeared on the original MP43.

In April 1944, the nomenclature was advanced—for some undetermined reason—to MP44, which was otherwise identical with the MP43 although some weapons were fitted with the sight bracket. Towards the end of 1944, a further term was given to the weapon; this, StG44 (for *Stürmgewehr* -'assault rifle' - 44), is said to have been bestowed upon the rifles by a well-satisfied Adolf Hitler. At any rate, it more adequately describes the rifles' role. The weapon was originally designated as a machine pistol—or submachine gun—in order to circumvent Hitler's directive that development of rifles was to cease and production of machine pistols stepped up; by calling the weapon an MP the production figures thus appeared in the 'MP' columns of the monthly production reports, boosting the figures, and disappeared from the rifle columns. Honor was satisfied, and the true situation was only revealed after the MP44 had proved its worth on the Eastern front. Nothing succeeds like success.

Versions of the StG44 were developed with curved barrels; they are described in the next entry.

Length: 37.00in (940mm). **Weight unloaded:** 11lb 4oz (5.10kg). **Barrel:** 16.50in (418mm), 4 grooves, right-hand twist. **Magazine:** 30-round detachable box. **Cyclic rate:** 500rpm. **Muzzle velocity:** c.2125 ft/sec (647 m/sec).

• Maschinenpistole mit Vorsatz J, P or V; (Maschinenpistole 44 mit Krummlauf)

C.G. Haenel Waffen- und Fahrradfabrik, Suhl; Rheinmetall-Borsig AG, Düsseldorf

7.92x33mm Kurz

The curved-barrel *Maschinenpistolen* were a remarkable wartime development and illustrate the gusto with which the German High Command entered into futile projects, which promised relatively little and diverted valuable production time from more conventional weapons.

The base for the Krummlauf device was an MP44 to which was fitted a curved-barrel unit with suitable mirror sights attached to the muzzle. The prime object was to have a weapon which the occupants of armored personnel carriers could poke through firing ports and deal with hostile infantry who were close to the vehicle and attempting to stick mines or grenades to it.

The idea originated in a system for testing aircraft machine guns, which have to be capable of functioning irrespective of the attitude of the aircraft. To test a gun at a high angle of elevation demands a very long impact area, not always conveniently found. Therefore a curved barrel attachment was devised, to be clamped to the

Exhibit D

THE COMPLETE AR-15/M16 SOURCEBOOK

What Every Shooter Needs to Know

REVISED AND UPDATED EDITION

Duncan Long

Introduction

I can still remember the first time I held an AR-15. Remember it like it was yesterday. This was unlike any other rifle I'd ever held: there was no wood and blued metal as with the traditional guns I'd owned; this shooting machine resembled something from a sci-fi movie with its plastic and matte black metal and a pistol grip that might be found on a ray gun. Even the balance was different—in the center of the weapon instead of along the barrel somewhere. And the plastic handguard had ventilation holes in it. It wasn't just that the firearm's looks were weird. The AR-15 was foreign to my grasp, a new type of gun that seemed confusing to hands used to cradling a wooden stock.

Equally odd were the contrasting stories I'd read and heard about the AR-15. An army recruiting manual off a dusty high school library bookshelf told in glowing terms how a bullet fired from the M16, the military counterpart to the gun I now held, could pierce a car's engine block, travel through the passenger compartment, and exit through the back bumper with power to spare. Right. . . . At the other end of the scale were the "war stories" of GIs coming back from Vietnam about dead U.S. soldiers with M16s lying jammed beside them, as well as tales recounting the failure of this rifle's bullets to stop an enemy even though he was "pumped full of lead." Some of the stories, I would later learn, were true and could be attributed to the incompetence of military planners. However, I would also learn that the yarns about the bullets lacking potency were totally false and could be attributed to panic and poor marksmanship.

So there I was, holding this controversial rifle in my hands and wondering what it was really capable of. I shouldered the AR-15 and was pleasantly surprised at the clear picture presented by its peep sight and natural aim. (The safety under my thumb seemed to be at just the right place and worked with a positive feel.) I dry-fired the gun; the trigger pull was crisp and short. Nice. Shooting proved a revelation as well. The rifle seemed to put bullets right on target, about as far as I could see on the hilly Kansas field where I did this first test. And the 30-round magazines I'd bought along chugged ammunition like there was no tomorrow. Very quickly I fired several hundred rounds, and the barrel became scorching hot, oil smoking from it. Yet the handguard kept my fingers cool, and the point of impact didn't seem to wander despite the enormous heat buildup. Nor did the gun jam or malfunction, which would have happened with a hunting rifle had I put that much ammunition through it so fast.

I knew then that I was holding a very different firearm. And after that first session, I came home knowing that I had found *the* rifle that was everything I had ever hoped for. That feeling hasn't changed since then, even though I've traded, built, and tested more variants and models of this gun than anyone has the right to enjoy while I wrote one book or article or another about it. This amazing firearm will one day be bested, but it has set a standard that has so far proved impossible to beat and will remain the gun against which new weapons are measured for some time.

Chapter 1

Beginnings

Because of its checkered past, as well as a design very different from what Americans had carried in the past, the AR-15 sparked more controversy than any other rifle in recent history. It has inspired both hatred and love among those who have carried it on the battlefield, into the field to plink, or in the back of a patrol car.

In part, these emotional reactions stem from the rifle's design. Where walnut and polished blue steel normally are found, the AR-15 boasts waterproof plastics and an aluminum receiver. And even though the gun is becoming old (as military firearms designs go these days), its styling and good human engineering continue to give it a space-age appearance that traditionalists view with horror, even though the gun is now pushing the half-century mark.

The AR-15 was among the first firearms of the 20th century designed to take advantage of modern industrial methods. This allowed for streamlined production without a lot of special milling while also giving the shooter a lightweight, durable weapon that didn't look like it had been cobbled together by a plumber and sheet-metal worker. The use of plastics and aluminum in major assemblies along with castings and steel stampings allowed many machining operations to be done away with, which also made the gun less expensive to manufacture, an important factor in the marketplace.

At the same time, nothing was sacrificed in quality. Employing modern industrial machinery to fabricate rifle parts also allowed tight enough tolerances to permit ready substitution of parts when repair or replacement is necessary, a real plus for military users and a boon to gunsmiths. Likewise, the tight tolerances made off-the-shelf AR-15s as accurate as any highly modified target version of previous military rifles.

The AR-15 was conceived as a light and handy gun chambered for a cartridge that would produce a light recoil while shooting a bullet that took advantage of the high-velocity wounding potential of a small projectile. The overall result was a very potent battlefield weapon.

Despite the initial adverse reactions, it wasn't long before the excellence of the AR-15's design became apparent to everyone. In fact, its design features have been copied by manufacturers of many other military rifles, and more than a few knockoffs can be found in such diverse places as the People's Republic of China and the U.S. civilian market.

Like the rifle itself, the .223 Remington cartridge (also known as the 5.56x45mm and the 5.56mm NATO) that was developed for it has greatly influenced military thinking and has proven to be the most effective rifle cartridge ever created for combat. While the future will undoubtedly see the fielding of a more lethal round, the .223 Remington is going to be a hard act to follow. Little wonder, then, that many countries have adopted the round for their battle rifles and that the former Soviet Union switched to a very similar round for its AK-74 assault rifles. Little by little, the cartridge (or one virtually identical to it) has been adopted by all the major military powers of the world.

ARMALITE'S BETTER IDEA

The lineage of the AR-15 can be traced to the 1950s. Interested in creating a small business, engineer and attorney George Sullivan, then the chief patent counsel for Lockheed Aircraft Corporation, initiated plans for creating rifles that departed radically from previous civilian firearms as well as those used by the U.S. military. Some brainstorming with firearms inventor and international arms broker Jacques Michault produced sketches and plans for rifles that would use aluminum receivers, fiberglass stocks, and straight-line, high sight layouts with a rear sight that doubled as a carrying handle—all of which later found their way to the AR-15.

Feeling that such firearms had a great potential in the civilian marketplace as well as with the U.S. military, Sullivan soon invested in a machine shop in Hollywood with the intention of fabricating experimental rifles

German rifles like this Sturmgewehr MP44, built cheaply by using modern industrial techniques, paved the way for later "assault rifles" that would be developed through the last half of the 20th century.

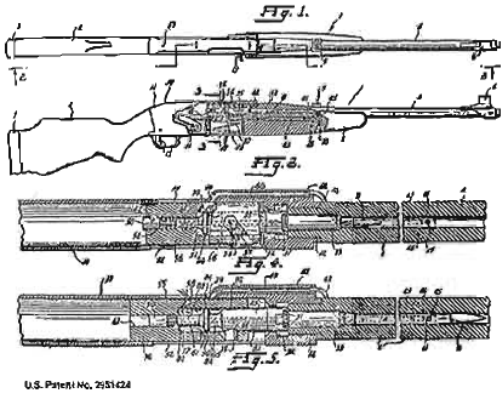
around the proposed designs. A short time later at a luncheon conference, Sullivan found himself sitting next to Richard S. Boutelle, president of Fairchild Engine and Airplane Corporation, and took the opportunity to tell the executive about the new rifle ideas and designs. Boutelle quickly became interested in the project, and on October 1, 1954, the Armalite Division of Fairchild Engine and Airplane Corporation opened its doors in California.

The first rifle created by the fledgling company was the AR-1 (Armalite Rifle number 1), based on a design of Sullivan and his brother-in-law, Charles Dorchester (who later became the plant manager for the new company). The two had actually started working on the rifle in 1947, so it was quickly completed once the new company started operation. The result was Armalite's Parasniper Rifle, a scoped, bolt-action sporting rifle that could double as a military sniper rifle. The rifle was chambered in .308 Winchester round (7.62mm NATO) and incorporated three features that would be seen in later rifles of the series: a fiberglass stock (filled with foam), an aluminum receiver, and an aluminum barrel with a steel lining.

Armalite's charter required that it develop prototypes and, when the designs were perfected, license the manufacturing rights to other companies. It was hoped this would quickly generate money for the fledgling company while minimizing capital outlays. Consequently, since there were no buyers for the design, the AR-1 never got beyond the prototype stage. The rifle did show the potential for creating a firearm with modern materials and techniques, however, and opened the door for the designs that would soon pour from the company.

Eugene Stoner

A former marine and army ordnance technician,

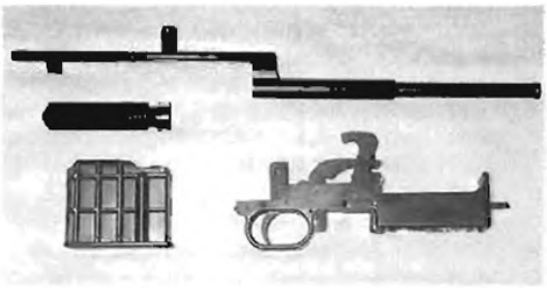


Stoner patent drawing for the rifle design he brought with him to the Armalite company.

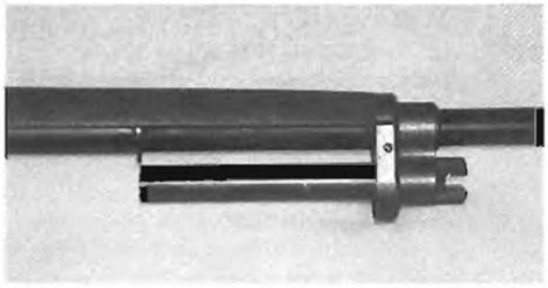
Eugene Stoner is the man whose name most often comes to mind as the designer of the AR-15. And rightly so, since it is obvious the lion's share of features found on the guns leading up to the AR-15 were his ideas. Stoner was not with Armalite from the start but joined the fledgling operation as Armalite's chief engineer, winning this position with a semiautomatic rifle design he had brought with him to the business. Stoner continued working on this rifle, which would eventually become the company's AR-3.

So although the AR-3 never went into large-scale production either, it embodied many of the features that later found on the AR-15, including an aluminum body and a fiberglass stock. And it too demonstrated the practicality of Armalite's goals and blazed the path for subsequent rifles.

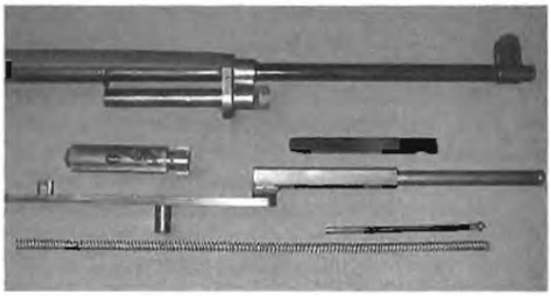
The AR-3 prototype rifle. (Photo by Randy Green.)



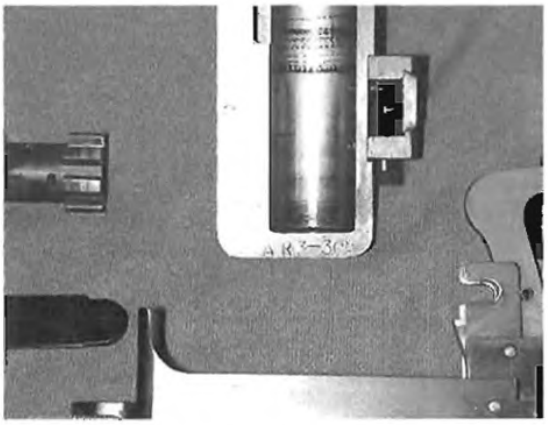
The AR-3 trigger group and bolt assembly. (Photo by Randy Green.)



AR-3 barrel and gas tube. (Photo by Randy Green.)



The AR-3 barrel, bolt assembly, and carrier above recoil spring. (Photo by Randy Green.)



"AR-3" stamp inside receiver. (Photo by Randy Green.)

View of AR-3 receiver. (Photo by Randy Green.)

Two other talented workers were soon teamed up with Eugene Stoner: L. James Sullivan (no relation to George Sullivan), who worked as a designer/draftsman, and Robert Fremont, who supervised prototype manufacture and led studies that determined whether the tolerances needed for rifles would be practical from a mass-production standpoint. These three men worked on a number of the Armalite weapons and became the driving forces behind the company's design work (as well as such work worldwide in the decades to come).

Both Stoner and Sullivan would later go on to

While working on this book, I was contacted by Randy Greenfield, who happened to have bought the AR-3 prototype. The pictures shown here are possibly the only ones ever to appear in print. The gun was well machined and looks like a production firearm. And while the layout and many of the components are not consistent with the design that would eventually be adopted for the AR-10 and AR-15, they point to the route the designers were taking that would eventually lead to these guns. As such, this makes this a very interesting bit of history. As Greenfield wrote,

I used a magnet to test the rifle and the following parts are non-magnetic and presumably were machined aluminum blocks:

Receiver
Trigger housing
Magazine housing
Front sight

The magazine itself has a stamped aluminum housing and machined aluminum follower block. The assembly is similar to the M14 with the barrel fitting into the stock and the trigger group locking it from the bottom. The trigger group is held to the stock with two screws, a machine screw forward of the magazine and a wood screw behind the trigger. I weighed the complete rifle on a reasonably accurate scale and it is in the 6-7 pound range.

create a variety of new firearms and related products. Sullivan is credited with extensive work on such firearms and products as the AT-22, Ultimax 100 LMG, Hughes Chain Gun, Ruger Models 77 & Mini-14, and C-Mag, as well as many other designs that haven't met with as much success and recognition as these have enjoyed.

By the Numbers

It should be noted that several Armalite firearms were being developed during the same period rather than just one after another as might be suggested by the numbers the company gave the various models. Apparently, such designations were assigned to rifles as new models were put into development, and so it's probable that several firearms were in various stages of development at any one time. The numbers only indicate to some extent the order in which the firearms were offered to licensing companies, but not when they actually went into production.

Many of the guns never even got into production—and some hardly got off the drawing boards. The AR-2, AR-4, AR-6, and AR-8 never went into production or were even offered for licensing as far as anyone knows. Exactly what these "missing" models might have been is unknown, and they may or may not have been similar to the company's other firearms (for example, the AR-13, according to company officials, was a "hyper-velocity aircraft gun"). And some of the models, such as the AR-16, were limited to prototypes because no manufacturers expressed interest in purchasing the rights to them.

THE AR-5

Armalite's first brush with commercial success came in 1957 with the AR-5 rifle, which was designed for the U.S. Air Force's requirements for an aircrew survival weapon. Work on the AR-5 was apparently initiated by the friendship between Boutelle and Gen. Curtis LeMay, who headed the U.S. Strategic Air Command.

The AR-5 was a bolt-operated rifle chambered for the .22 Hornet. The rifle used a detachable magazine, designed for the Harrington & Richardson (H&R) M4 survival rifle being built for the air force, and a barrel that was held to the front of the receiver by a threaded ring; the rifle was 30 1/2 inches long when assembled and 14 inches when broken down, making it short enough to meet the air force's length requirements.

The rifle's receiver/action, barrel, and magazine could all be stowed in the A-5's hollow fiberglass stock when the firearm was broken down for storage. The materials used to make the rifle were so light that the rifle could float on water because of the buoyancy of the hollow stock (undoubtedly a strong selling point for a survival rifle, which might conceivably see use in a life raft or near the water). In addition to holding the rifle components, the hollow stock had a small storage compartment for a kit of matches, needles, fishhooks, and so forth, making it a survival package in itself.

Twelve AR-5s were fabricated for air force testing and, with some minor modifications, accepted for use on military planes. The AR-5 was designated the MA1 by the air force, but Armalite never saw any great monetary results from the rifle because the air force's large inventory of M4 and M6 Survival Guns precluded the purchase of significant numbers of the AR-5 (MA1).

Nevertheless, the experience of dealing with the military and the enthusiasm shown for the gun by those testing it suggested to those running Armalite that there might be a market for military firearms. Thus the company adjusted its initial marketing thrust, which

AR-5 survival rifle.

focused on civilian buyers while considering later advancement into military sales, and embarked on a two-pronged development course that would produce guns aimed at civilian as well as military buyers.

THE AR-7

To take advantage of the work it had done on the AR-5 as well as create a viable moneymaker, Armalite created the AR-7 with an eye toward the commercial market in the United States. The rifle had the basic layout of the AR-5 but was chambered for the more popular .22 LR and changed to a semiauto blowback action (which was inexpensive to manufacture). The detachable aluminum barrel (with steel lining) was lengthened to 16 inches to conform to the U.S. Bureau of Alcohol, Tobacco, and Firearms (BATF) regulations for civilian rifles. The ability of the rifle to be broken down and stored in the hollow stock was retained, as was its ability to float on water.

AR-7 Explorer Pistol.

Although Armalite actually produced a few of these firearms and sold them to the public, rather than tie up its production equipment with the rifle it sold the rights to the AR-7 to Charter Arms Corporation in mid-1973. Charter Arms produced the firearm for a number of years as the AR-7 Explorer and later sold a pistol version called the Explorer Pistol. (This pistol version may have been created earlier by Armalite, although Charter Arms has generally received credit for this design; a photo of Sullivan surrounded by Armalite's firearms shows him holding a Golden Gun shotgun in one had while holding what appears to be a pistol version of the AR-7 in the other.)

In 1990, Survival Arms, Inc. took over production of the AR-7, working under a license agreement with Charter Arms. In the late 1990s, AR-7 Industries, LLC also commenced production of the AR-7. In 1998, the design came full circle and was introduced into the product line of the newly reorganized Armalite company. (For a more detailed look at the AR-7 and its many variations, spin-offs, and accessories, see *AR-7: Super Systems*, available from Paladin Press).

THE AR-17 GOLDEN GUN

Armalite's AR-9 was a semiautomatic shotgun with an aluminum barrel and body incorporating a number of design features that later found their way into the AR-10 and AR-15 rifles (including a rotating bolt design). Rather than market the 5 1/2-pound shotgun, Armalite decided in 1955 to shelve the design and instead exploit many of its features for a commercial shotgun that was

AR-7 Industry rifles

AR-17 Golden Gun.

Three AR-10 prototypes created by Stoner.

eventually marketed as the AR-17 Golden Gun. This two-cartridge semiauto shotgun met with limited success and was in many ways ahead of its time, with a polycarbonate stock and an anodized aluminum barrel and receiver (both of which normally had a gold-colored finish).

THE AR-10

Development of the AR-10 can be traced back to 1953 to a design Stoner created before joining Armalite. Stoner's rifle was originally chambered for the .30-'06 cartridge (feeding off a Browning Automatic Rifle magazine) and was later modified for the new 7.62mm NATO cartridge, which appeared to be on its way to becoming the standard round for much of the free world.

As with most modern firearm designs, Stoner's work built upon earlier systems. Much of the bolt and receiver-mounted recoil tube of the AR-10 (and later the AR-15) can be traced to the original design of the Johnson light machine gun, which had been created at the end of World War II by American inventor Melvin M. Johnson Jr. While this automatic rifle saw only limited use during

World War II, it did prove to be a successful and forward-looking design, and it is obvious from a casual inspection of the AR-10 that Johnson's gun had a strong influence on Armalite's designers.

In fact, it's possible that Johnson himself had a hand in some of the developmental work with the AR-10 because he was on Armalite's payroll as "military rifle consultant and publicist"—perhaps one of the odder job descriptions of the century. At any rate, one of the most important features of the light machine gun to find its way into the AR-10 was the cam-controlled rotary bolt, which locked into the barrel, rather than the receiver, of the new gun. This made it possible to use a lightweight aluminum receiver with the firearm since the barrel supported all the gas pressure produced when the weapon was fired.

Another feature that enabled the AR-10's light weight was a simplification of its gas system. In lieu of a complex rod and spring assembly, a blast of gas was diverted through a gas port in the barrel and routed down a tube to unlock the firearm's chamber shortly after a round was fired. This, too, was borrowed from a previous firearm design, the Swedish Ljungman Gevar 42, which, in turn, was later employed with the 1944 and 1949 MAS rifles.

Even today, Armalite is a bit touchy about the suggestion that it built upon past designs, arguing that the AR-10 gas system is not the same as that of the Ljungman. In a sense this is true, since the gas system of the AR-10 and subsequent Armalite designs based on it employ a camming bolt and carrier, which are unlocked by gas pressure pushing against the bolt carrier key. However, it should be noted that the Ljungman system, like the later AR-10, has a tube that ports gas from the barrel to a cavity in the bolt carrier, thereby causing the gun to cycle. This in no way takes away from the genius of Stoner in building on the past to assemble a system that was greater than the sum of the parts borrowed from past firearms.

Trials and Tribulations

A version of the AR-10, the AR-10A, was submitted to the U.S. Springfield Armory in 1956 for testing as a possible replacement for the M1 Garand rifle. The AR-10 was able—unlike the M14—to shoot in the automatic mode while remaining easy to control due to its straight-back design and a special titanium muzzle brake. The rifle met with success, and soon the army expressed an interest in more rifle trials with the new weapon.

Unfortunately, Armalite switched from the first prototype guns with their had steel barrels to a new design that used a steel liner surrounded by an aluminum jacket (similar to that developed for the earlier Armalite survival guns); during military tests early in 1957, the barrel burst just ahead of the soldier firing the weapon. Even though no one was injured, the potential for harm to testers was obvious, and the rifle was immediately pulled from the trials.

Stoner—with the assistance of armorers at the U.S. Springfield Armory—quickly fabricated an all-steel, conventional-style barrel for the rifle so the testing could be resumed. Ironically, it was later discovered that milling longitudinal cuts into the steel barrels allowed the rifles to remain as light as those with aluminum-and-steel barrels.

One of the main features of the rifle, an efficient muzzle brake that had originally been made of "duralumin," was replaced by an equally efficient but more durable—and also more expensive—one made of a titanium alloy. This added considerably to the expense of the firearm. And the "Buck Rogers" look of the rifle undoubtedly met with some negative reaction from conservative forces in the military. Add the minor malfunctions, part breakage, and the barrel failure, and the U.S. Army's enthusiasm for the new Armalite rifle quickly dropped off. A short time later, the army chose the M14 rifle over the Belgian Fabrique Nationale (FN) FAL and the AR-10.

The Dutch AR-10

Even though the AR-10 was still being redesigned by Stoner and L. James Sullivan, Fairchild had actively promoted the rifle worldwide. In 1957 Armalite licensed the government-owned arsenal of Artillerie-Inrichtingen of Hembrug, Holland, to manufacture the new rifle with an eye toward sales to the Dutch military as well as to other buyers around the world.

For a time the Dutch military seemed poised to purchase large quantities of the AR-10; Artillerie-Inrichtingen quickly invested $2.5 million to tool up for producing the new rifle, undoubtedly with a hope of some large initial sales at home. During this period the AR-10A design was modified, with the gas tube being moved from the side of the barrel to run instead from the front sight/gas port assembly and down along the top of the barrel to a "gas key" coupled to the bolt carrier.

Since the Dutch military wanted the capability to launch rifle grenades from any rifle it adopted, the efficient muzzle brake of the original AR-10 was sacrificed for a more conventional flash hider that could accommodate a rifle grenade. This was an unfortunate trade-off because it sacrificed much of the lightweight rifle's ability to handle full-auto fire without loss of control by the shooter.

Because Fairchild executives expected large sales of the AR-10, the Artillerie-Inrichtingen arsenal was licensed to build, but not sell, the new rifles. Worldwide sales rights were broken down and sold by Armalite to Interarms (which was to handle sales to Norway, Sweden, and

"Family" of AR-10s created by Artillerie-Inrichtingen.

The Cuban-Sudanese version of the AR-10.

Finland, as well as all South American sales and African sales south of the Sahara) and Cooper-Macdonald, Inc. (which was to handle Southeast Asian sales).

The first AR-10s Artillerie-Inrichtingen produced were plagued with problems, including poor accuracy due to improper heat treatment of the cold-forged barrels. By the time these problems were solved, countries shopping for a 7.62-caliber battle rifle had adopted the FN FAL or weapons offered by other manufacturers. The nail in the coffin for the AR-10 came when the large Dutch contract that had been expected fell through.

In the end, Artillerie-Inrichtingen manufactured fewer than 6,000 AR-10s. Cuba, Mexico, and Panama purchased only a handful of the guns for testing; Venezuela chose to buy only 6; Finland asked for 10, and Guatemala purchased from 200 to 500. The "large numbers" went to Sudan, which acquired from 1,500 to 1,800; Portugal, which procured from 800 to 1,000; and Nicaragua, which bought 7,500.

In short, the AR-10 was a commercial failure.

Artillerie-Inrichtingen finally halted production of the rifle in 1959, and Colt's Patent Firearms was licensed to manufacture the improved version of the AR-10A. By this time the weapon had seen major improvements in the form of a stronger extractor, a more reliable magazine system, and a cocking handle that had been moved from inside the carrying handle to the rear of the receiver. It had become an excellent weapon with no interested buyers, since both the Fabrique Nationale and Heckler & Koch now were offering similar rifles in the same chambering that had had the advantage of extensive military testing by some of the major armies of the world. In short, no one wanted to take a chance on the AR-10 when there were other "safe" choices that had been adopted by Germany, Britain, and other large military powers.

AR-10 Innovations at Armalite

While developing designs for the Artillerie-Inrichtingen, Armalite devised several innovative versions of the AR-10, including a short-barreled carbine, several light machine gun (LMG) variations, and a sniper model. Included were belt-fed guns as well as a clever high-capacity magazine that utilized a spring-lifter that enabled a standard AR-10 to feed hundreds of cartridges without the need to reload or modify the gun for belted operation. Later, Colt's went on to modify the gas tube and spring-load it for use with quick-change barrels and developed a belt-fed model of the rifle. But, as with later firearms families, none of the variations attracted much interest among military buyers.

Today most authorities see the AR-10 as an excellent weapon that missed its place in history because of poor timing and marketing. And despite rumors of manufacturers tooling up to construct a version of the AR-10 for the public, such civilian models have all been AR-15 variants chambered for the .308 round. A true AR-10 built to the specs of the original design has never materialized. The problem with creating a new AR-10 is one of economics; it will always be cheaper to produce an AR-15 chambered for the .308 than to completely retool for a true AR-10 rifle that is not much different and has little to offer other than historic interest to the buyer.

While exact figures aren't known, it appears that the numbers of AR-10 rifles sold by Armalite and its contracts during this original organization of the company (not to be confused with the current operation covered later in this book) were quite small. Among these were a few apparently chambered for the Soviet/Russian 7.62x39mm cartridge, which were tested by Finland as a possible alternative to its AK-47-style Valmet rifles.

Most of these AR-10s were simply for testing and evaluation. Additionally, Nicaragua ordered 7,500 AR-10s but canceled the order when one of the test weapons allegedly blew up. The total numbers produced are as follows:

Country	Quantity
Cuba	1
Finland	6–10
Guatemala	200–500

The "family" of AR-10s created by Armalite.

Mexico	1
Panama	1
Portugal	800–1,000
Sudan	1,500–1,000
Venezuela	1

LESS WELL-KNOWN ARMALITE RIFLES

Armalite also created the AR-11, which boasted a conventional stock and resembled the AR-3 (and was chambered for the .222 Remington cartridge that eventually would be modified to become the round used in the AR-15). The company's AR-12 was a steel-stampings version of the AR-10, the basic design of which was modified to make it easy to mass-produce in Third World countries; the AR-12 was chambered for the 7.62mm NATO and might have been made at about half the cost of the AR-10 but never went beyond the prototype stage. The AR-14 was the sporting version of the AR-10 with a conventional Monte Carlo stock (without a pistol grip) and iron sights. It was chambered for .308 Winchester/7.62mm NATO, .243, and .358.

The AR-16 rifle appeared during 1959 and was notable because it exploited the inexpensive manufacturing techniques pioneered by the AR-12. Chambered for the 7.62 NATO/.308 Winchester, the AR-16 wasn't commercially successful; only three of the guns were ever made. But the rifle did break ground for the development of the AR-18, which would eventually become a competitor with the AR-15 for use among the militaries of the free world.

THE AR-15

Whereas Armalite's timing had been all wrong and economic failures seemed to be the norm for previous offerings from the company, the AR-15 enjoyed just the opposite. The rifle captured the imagination of buyers and had several lucky breaks that made the sales of the gun skyrocket.

One could conclude that this was to be expected, however, considering all the work Armalite had put into the design of the guns that led up to the AR-15. Add to that the fact that company officials, salesmen, and other personnel had by now created a lot of good contacts within the industrial-military complex as well as becoming more savvy marketers of firearms in general. Having gained valuable experience with

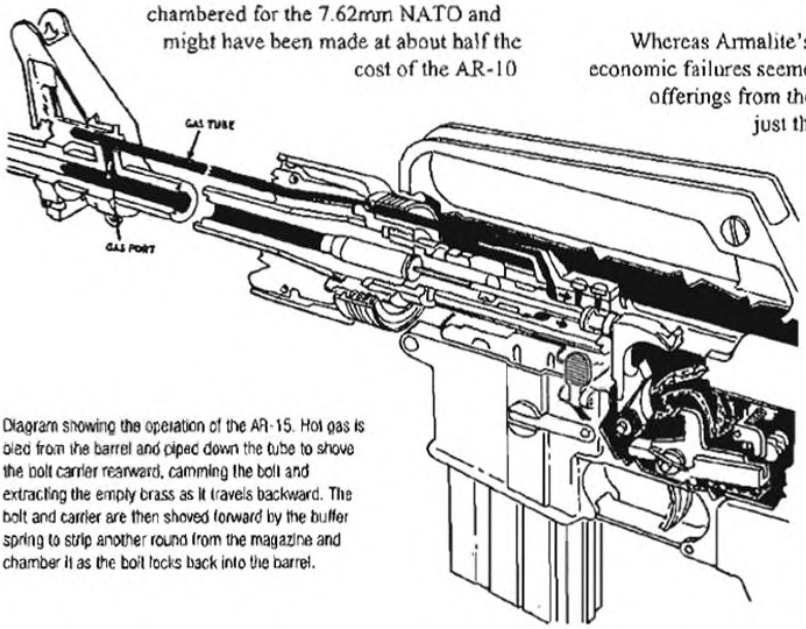


Diagram showing the operation of the AR-15. Hot gas is bled from the barrel and piped down the tube to shove the bolt carrier rearward, camming the bolt and extracting the empty brass as it travels backward. The bolt and carrier are then shoved forward by the buffer spring to strip another round from the magazine and chamber it as the bolt locks back into the barrel.

The XAR1501 prototype that would eventually lead to the AR-15 design.

Early AR-15, identifiable by its lack of flash hider.

Armalite's AR-15.

previous rifles, the company now had an excellent weapon as well as the ability to laud its capabilities to potential buyers.

Developed from 1956 to 1959, the AR-15 made use of a number of principles and features of the AR-10 and in many ways was simply a scaled-down AR-10. Like the AR-10, it used the same type recoil/buffer system in the stock, a gas tube to unlock the chamber and operate the bolt of the rifle, and lightweight aluminum receiver halves with the bolt locking into a barrel extension.

Placing the recoil spring in the stock of the rifle and dispensing with the heavy gas rod found in most similar guns shifted the balance of the rifle toward the stock. While traditional shooters may dislike this arrangement, many shooters find the rifle even easier to carry than might be the case with another firearm of its weight because of this shift in balance toward the rear of the gun. And many also find it easier to hold on target because of this.

The basic design of the AR-15 is generally credited to Stoner because he headed the AR-10 project, but the actual work on the AR-10 was started before he joined the company, and some features date back to the rough sketches created by Jacques Michault and George Sullivan. However, because Stoner perfected and debugged the AR-10 and later picked out and refined the cartridge that would be used in the AR-15, he is generally credited with the AR-15, even though his contributions were only a part of the developments that eventually led to the rifle.

Much of the actual scaling down of the AR-10 to create the AR-15, as well as the perfection of the new rifle, was done by Robert Fremont and L. James Sullivan, while Stoner apparently worked to perfect the AR-10 for Dutch manufacture. "Scaling down" a firearm is no minor task, since it involves changing the parts of the rifle to accommodate a smaller cartridge while retaining the length and size of the grip, stock, and barrel to fit the human body. Adding to the complexity of the process was the fact that the pressure of the gases that would be contained in the smaller chamber were actually higher than with the large 7.62mm cartridge, so some parts of the firearm actually had to be scaled up somewhat.

Because the new smaller cartridge of the AR-15 had a flatter ballistic arc than the AR-10's round had enjoyed, Fremont and Sullivan adopted a simplified two-position "L" rear peep sight to replace the complicated screw mechanism of the AR-10. The new system moved the elevation adjustments to a spring-loaded detent on the screw-in front sight.

Perhaps to stay within the later military weight requirements, the first AR-15 prototypes had fluted barrels under the handguard and dispensed with the foam reinforcement inside the stock and handguard in favor of simply using fiberglass shells with an

aluminum heat shield under the handguard. The greatest change in the new design was in the trigger group, where the disconnector was replaced by a completely new design and modified trigger and hammer layout (the auto sear design and selector remained pretty much the same).

A MORE POTENT ROUND

The cartridge created for the AR-15 was the result of many years of testing by the U.S. military and varmint hunters alike. The military work dates back to the 1920s when army ordnance personnel created a lightweight .22-caliber bullet for the M1 rifle cartridge with an eye toward a long-range machine gun round. This work was revised in the 1950s when the army started sifting through information garnered from ALCLAD.

The ALCLAD study had started out to learn the requirements for better body armor (some of which had proven highly effective when tested in the field during the Korean War). But the study got into areas of interest to small-arms experts when it examined such things as the range at which casualties occurred, the effects of bullets or shell fragments on the human body, the frequency and distribution of wounds, and so forth. To obtain these data, The army's Continental Army Command Operations Research Office (ORO) conducted a large statistical study involving the 3 million casualty reports from the first two world wars and the Korean conflict.

The results of this study flew in the face of most military thinking. It found the following:

- In combat, nearly random shots produced more casualties than did aimed fire.
- Rifle fire was seldom used effectively at distances greater than 300 yards.
- The majority of rifle casualties were produced at ranges of 100 yards or *closer*.
- Even expert marksmen could seldom hit targets beyond 300 yards because of terrain features or the marksmen's need for cover.

This study was buttressed by research done by the military writer and historian, Gen. S.L.A. Marshall, who discovered that nearly four-fifths of all foot soldiers in World War II never fired a round in any given battle—with one exception. The soldier charged with carrying the Browning Automatic Rifle (BAR) almost always fired his weapon, apparently because he could dominate his enemy through automatic fire. And to some extent his firing also encouraged the soldiers next to him to engage the enemy as well. This finding also laid the groundwork for development of the AR-15 as the U.S. military searched for a lighter alternative to the BAR—a rifle capable of controlled automatic fire that would enable troops to fight aggressively in battle.

SALVO

The above facts led to the Operations Research Office SALVO project in the early 1950s. In turn, the project made a number of findings that would affect later small-arms design and basically send military small-arms development in the United States in two very different directions. The two major points made by SALVO were these:

- A lightweight projectile was adequate for a soldier's needs at normal combat ranges.
- Long bursts of fire tended only to waste ammunition, while three- to five-round bursts were the most effective automatic fire in small arms.

The principal thrust of the SALVO project was to outline the requirement for a small-caliber rifle that was capable of automatic fire. To achieve these ends, designers took two routes. One was toward the use of smaller bullets in more compact cartridges, the route that would finally prove to be most effective. The other was the basis of the Special Purpose Individual Weapon (SPIW) project, carried out during the early 1950s with the aim of creating a weapon with a superfast projectile that would satisfy the requirements for an effective weapon put forth by the ALCLAD and SALVO research. SPIW was principally directed at producing a weapon that could create a multiple projectile pattern of shots through the use of flechettes packaged in one round, similar to a shotgun shell. (Later the thrust of the program shifted to single flechettes packaged in separate cartridges and fired serially or several at a time in multibarreled guns.)

After some experimentation, flechette configuration was more or less settled: a small rocket-shaped steel dart weighing only around 10 grains (0.65 gram). This permitted packing a number of the darts into one payload package without producing excessive recoil, while putting a number downrange on the target to increase the chances of hitting it, even if the shooter's aim was somewhat off the mark. Generally this basic configuration is credited to Irwin Barr, who commenced work toward perfecting the flechette as a modern weapons projectile in 1950. His Cockeysville, Maryland, company, Aircraft Armaments Incorporated (AAI), handled much of the work and eventually landed a number of government contracts to develop the flechettes and weapons to fire the projectiles.

Barr conducted his early project without funding, contacting the Department of Defense (DOD) to let it know what he was doing in the early days of his project. His work was received with great interest, and in 1952 AAI was offered a contract to produce some demonstration shotgun shells loaded with Barr's flechettes.

Work progressed, and in May 1956 AAI received another contract to study the effectiveness of flechettes. Nine months later, AAI concluded that the 10-grain flechette was the optimally sized flechette and that a speed of 4,000 fps would make it as effective as the much larger but slower 150-grain bullet in a .30-'06 cartridge fired from the M1 rifle.

By now it seemed like flechettes were the fast track to the future, so the U.S. Army awarded a contract to AAI to carry the concept forward with a test gun that would be employed in a variety of tests. Toward this end, AAI employed 10 Winchester Model 70 bolt-action rifles, which were rechambered to accommodate flechette ammunition. Tests with these guns further suggested that the flechette load held promise, so in October 1962 the army asked for rifles that could both fire at specific targets like a rifle and hit a large area with a barrage of projectiles.

This time AAI had some competition, with bids being submitted not only by AAI but by nine other firms as well. Of these, AAI, Harrington & Richardson, and Winchester received development contracts early in 1963, with work to also be done at the U.S. Army's Springfield Armory. These three companies and Springfield Armory each presented 10 test rifles in March 1964 for evaluation. Army test personnel decided that the Springfield Armory and AAI prototypes had the most going for them and provided more funds to develop each system, hoping one or the other would prove viable.

The Springfield Armory design was quite futuristic for its day and in many ways blazed the trail for the modular systems that more or less became the norm in the last decades of the 20th century. The gun could be converted into several configurations, including a bullpup rifle or standard rifle. The AAI design was more conventional in its layout, departing from the basic rifle concept only in its use of a flechette payload.

Springfield Armory and AAI each submitted 10 rifles in August 1966 to the U.S. Infantry Board at Ft. Benning, Georgia, for testing. Things didn't go well in the tests, with both systems proving faulty; however, it was felt that AAI rifle showed promise, so the company received more funding to continue development of its system through a 35-month research-and-development program.

Although by this time the AR-15 had made its way to the scene and voices were calling for its adoption (more on this story in a bit), some felt the flechette gun was the best bet. One of these was General Electric's Armaments Division, which submitted a proposal to refine and perfect Springfield Armory's modular design. The company was issued a contract for this in January 1969, and AAI again had competition.

To carry out its work, General Electric leased the Springfield Armory complex from the government (the armory having recently been closed) and hired Richard Colby, who had been working at the armory on SPIW. Ultimately, the work would reach a dead-end: no practical system was ever developed from the project before funding ran out.

Meanwhile, AAI had four different projectile packages in the works by mid-1969. But the work toward perfecting its rifle had reached an impasse: the gun was far from reliable. Hoping to get the bugs out of the rifle system so that work with the flechette testing could go forward, the U.S. Army transferred the work to its Small Arms Systems Agency at the Rock Island Arsenal in Illinois.

The latest version of the AAI design at this point was the XM70, which went through many modifications and design changes to make it reliable, as well as testing its ammunition as the work progressed. This continued through the early 1970s, with the rifle ultimately becoming viable.

But there was a growing realization that the flechette concept itself was far from promising. In fact, the projectiles weren't nearly as effective as had been hoped. The fin stabilization proved to be very inaccurate over long ranges, and the area coverage afforded by groups of the projectiles was haphazard at best, with a large percentage often hitting the ground well before the target range, thereby being totally wasted. Additionally, there were some doubts about how effectively it would actually wound a soldier, the fear being (apparently based on animal tests) that the wound would be small and penetrating but perhaps not debilitating in many instances.

In addition the AR-15 was by then becoming established in the U.S. military—the army having decided to adopt the rifle as its M16— so the decision was made to pull the plug on all funding for SPIW.

This wasn't the last of the flechette, however; AAI would be submitting a gun chambered for a flechette round in the mid-1990s for consideration by the U.S. military. But today the program is generally seen as a technological failure. Ultimately, military planners decided to stick with conventional but scaled-down rifle ammunition rather than adopt the shotgun-shell-style or single-flechette cartridges created by SPIW.

Conventional Bullets

Running counter to SPIW were several programs that would actually lead to viable weapons systems. Some of

the tests involved were conducted using necked-down M1 carbine cartridges firing .22-caliber bullets. These proved that such weapons were practical and effective (and the rifle was liked by the troops due to its low recoil and light weight). The end result was the suggestion that an ideal combat weapon would fire a conventional, but smaller than currently employed, .22-caliber bullet weighing 55 grains and traveling at 3,300 fps.

Armalite learned about the army tests and proposed switching to the smaller caliber during the AR-10 testing. Much of the AR-10's failure had been due to the new system's not having been tested long enough to uncover all the bugs. Thus, Armalite set out to make a new rifle that would conform to the military's needs by building on the AR-10 system, which had by then seen a lot of refinements and was close to being perfected.

The new AR-15 was originally chambered for the .222 Remington used in the AR-11, since it came closest to the type of cartridge the army would be asking for. This round was then topped with a 55-grain boattail bullet developed for Armalite by the Sierra Bullet Company. Because the original cartridge case was not large enough to create the velocity desired, it was lengthened slightly, and the new round was named the .222 Special.

The first ammunition manufactured for use in testing was made by Remington and bore the head stamp of .222 Special. Later, when Remington began marketing the .222 Magnum, which was very similar, Armalite renamed the .222 Special the .223 Remington to avoid confusion (the .223 round would fit and fire in rifles chambered for the .222 Magnum — with potentially disastrous results). Ironically, the bullet for the .223 Remington is .224 inch in diameter, making the ".223" label misleading to many novices.

The gas system of the AR-15 was tied into the basic design of the rifle and the military's velocity requirements. Through experimentation, Armalite engineers discovered that for the gas system to work properly, a fast-burning powder had to be used; a slow-burning powder would not be completely burned by the time it entered the gas system to propel the bolt open and to operate the reloading mechanism. In fact, repeated firings with a slower powder created major fouling in the bolt of the rifle until jamming finally developed. Because of this, one of original design specifications for the new rifle was for fast improved military rifle (IMR) powders rather than the slower ball powders traditionally used by the U.S. military.

As will be noted later, the specifications for this cartridge would later create problems for the AR-15, due to bureaucratic blundering and lack of proper training of troops in Vietnam.

THE CONARC TRIALS

As Armalite had expected, the U.S. Continental Army Command (CONARC) announced that it was searching for a lightweight, small-caliber weapon to replace some or all of its rifles and submachine guns. Interested manufacturers and individuals submitted their proposals, and in 1957 the Infantry Board in Ft. Benning officially asked Winchester-Western (a division of the Olin Mathieson Corporation) and Armalite to develop candidate rifles and ammunition to be tested as possible replacements for the M14 and 7.62mm NATO round. These had been developed by the military itself and were failing to perform as well as had been hoped. A third rifle was to be created "in house" by the U.S. Springfield Armory to compete against the two commercial designs and serve as a standard against which the other two rifles would be compared.

The requirements set forth by the Infantry Board for a small-caliber high-velocity rifle were as follows: (1) the rifle would weigh less than 6 pounds when fully loaded; (2) the rifle would need to be capable of automatic fire; (3) the round the rifle fired would be capable of penetrating body armor, a steel helmet, or a 10-gauge steel test plate out to 500 yards; (4) the round would be equal in lethality to the M1 Carbine within 500 yards; (5) the weapon would have a detachable 20-shot magazine; and (6) accuracy and trajectory would be equal or better than the M1 rifle out to 500 yards.

The range requirements in two of these specifications were 200 yards greater than the ranges ALCLAD had shown were needed. Those privy to the requirements have admitted that the range was raised from 300 to 500 yards simply to make the specifications look better to superior officers. Later, when the military decided to use meters rather than yards to conform to other NATO countries, the specifications were changed to 500 meters, making the final cartridge have to perform at twice the range ALCLAD had found was actually needed. Some of this added range might have been justified if the army ever mounted a scope offering magnification of distant objects on its rifles so that the longer range potential might be utilized by troops. But as long as rifles are going to be issued with iron sights, range requirements greater than 300 yards are unsupported by any known studies (and there is no sign that other research or testing to prove otherwise has ever taken place).

On March 31, 1958, Armalite delivered 10 AR-15s, 100 magazines, and 100,000 rounds of ammunition to the Infantry Board for the trials. Because no manuals had been created for the new rifles, Eugene Stoner accompanied the guns and served as a "living manual,"

Lightweight rifle candidates: the gun submitted by Winchester-Western (top), the gun created by Springfield Armory (center), and Armalite's AR-15.

The M1 carbine in many ways served as the yardstick against which the AR-15 was measured. Like the AR-15, the M1 carbine was light and handy, firing a cartridge that produced little recoil and was easy to manage during automatic fire.

showing army personnel how to operate the firearm and helping with minor repairs necessitated by the wear incurred during the tests.

The tests at Aberdeen Proving Ground in Maryland and Ft. Greely, Alaska, suggested a number of modifications and improvements to the AR-15, most of which were subsequently made. The barrel was strengthened (to allow for firing with small amounts of water in the bore of the rifle) and a flash hider was added to it; the cocking handle was moved from the inside of the

carrying handle to the rear of the receiver (probably due to problems with the lever becoming overheated with extended firing and to allow those wearing arctic mittens to operate the mechanism); the single-piece handguard was replaced with a clamshell design held in place with a knurled (later ribbed) spring-loaded ring; a rubber butt was added to the plastic stock (probably to help prevent the stock from breaking); the rear sight's size was increased; the selector was modified so that the safe setting was forward rather than the original setting pointing upward (since dragging the rifle could set it to the fire position); and the trigger pull was reduced to 7 pounds and its return spring strengthened.

Additionally, to improve the mechanism's tolerance for dirt, the clearance between the magazine and receiver was increased, the clearance around the buffer increased, and the bolt carrier's lands reduced. Since the dust cover had a tendency to come loose, a cam was added to it. To increase reliability of the rifle, the feed ramp angle was also altered and the capacity of the magazine reduced from 25 to 20 rounds. All these changes made the rifle about a pound heavier than the original specifications of the Infantry Board but resulted in a better rifle as far as the military testers and Armalite were concerned.

Winchester's rifle, designed by Ralph Clarkson, proved to be very similar to the M1 carbine and sported a traditional walnut stock coupled with the look of a miniaturized M14 rifle. By fluting the rifle's barrel, Winchester was able to keep the weight of the gun to only 5 pounds with an empty magazine. However, the Winchester rifle had a major problem: in order to beat Armalite in delivering rifles for testing with the army, the company had started chambering its rifles for the .222 Remington before the range requirements for the new rifle were upped from 300 to 500 yards. Winchester made some frantic efforts to modify the gun and cartridges, but the end result was less than ideal reliability of both rifle and ammunition, so the AR-15 came out looking better after the trials than might otherwise have been the case.

BIGGER IS NOT BETTER

During 1959, the army conducted tests involving the AR-15 and Winchester's .224 Lightweight Military Rifle but reached no decision on adopting the Armalite cartridge or either of the rifles for actual military use. However, during the tests one thing became very apparent: the lighter weight of the AR-15 coupled with its more controllable recoil made it popular with troops testing it as well as highly effective in putting aimed fire on target. During the trials the soldiers noted how the smaller rifles (the Winchester and especially the AR-15) handled. Nearly all preferred the smaller caliber weapons to the heavier M14 rifles.

During this same period, the Combat Development Experimentation Center (CDEC) discovered that a 7- or even 5-man squad armed with AR-15s could do as well or better in hit-and-kill potential in combat-style tests than the traditional 11-man squad armed with M14 rifles—something that undoubtedly didn't sit well with military planners because the U.S. Army had just elected to arm its soldiers with the M14.

During the tests, it also became very clear that the heavy recoil of the M14 rifle was almost impossible for an average soldier to control under actual combat conditions (as opposed to target-style shooting). And the AR-15 proved to have an overall malfunction rate of only 6.1 per 1,000 rounds fired. This was amazingly good for a nonproduction gun and outperformed the M14, which was averaging a failure rate of 16 per 1,000 during these same tests.

The army CDEC's report concluded that the army should develop a lightweight, reliable rifle "like the AR-15" to replace the M14 and also suggested that the increased firepower afforded by such a weapon would allow a reduction in squad size—all of which undoubtedly displeased more than a few generals in the Pentagon. No contracts were offered to either company for new rifles; the military "stuck to its guns," keeping the M14.

The M14 rifle proved heavy and awkward at best and was almost unmanageable when fired in the automatic mode.

Changing the Results

What happened next during U.S. military tests involving the AR-15 is clouded in controversy. Supporters of Armalite would later claim that efforts had been made to sabotage the AR-15. Certainly this appears to be the case, though as with most historic occurrences that are less than open to public scrutiny, it may be that a series of blunders and mishaps created the problems. Whatever the cause, the outcome was that the AR-15 came out of the tests looking bad.

The problems started when three of the AR-15s the U.S. military was employing in testing were sent to Ft. Greely to check their functioning under arctic conditions. (Today the need for a standard weapon that functions in all climates may be questioned; however, in the middle of the Cold War the need for this capability was not far-fetched. Although the United States had never really seen battlefield conditions as extreme as those at Ft. Greely, with Soviet territory just a few miles from Alaskan shores, there was serious concern about the potential need for such a rifle. In addition, considering the stalemate of the Korean War and the growing tensions in Vietnam, having to repel an invasion of Alaska by Chinese or Soviet troops was seen as a possibility if not a probability.

It wasn't until Armalite officials received a call for replacement parts from Ft. Greely that they even knew some of their firearms had been sent to the base. Unsure of what was going on, the company sent Stoner with the parts, both to replace the parts himself and to determine what exactly was behind the somewhat unusual breakage problems, since the parts called for were normally not subject to failure.

What the inventor found was later described as appalling: some of the guns had been improperly disassembled. Worse, parts had been lost and replaced—with handmade parts of dubious quality.

After repairing the rifles, Stoner test-fired them and found that the AR-15s functioned well in the arctic conditions at the base. Thinking the problems were cured and knowing that the firearms were functioning properly, Armalite officials undoubtedly heaved a corporate sigh of relief and figured the testing would again give their rifle high marks.

Only months later did the shock come. The rifle appeared to be the proverbial "jammatic," with numerous failures, according to the data that emerged from Ft. Greely. As company officials looked into the matter, they discovered what must have been infuriating: the problems created by the substitute parts were included in the test results and conclusions, with no mention of the alterations or near flawless performance after Stoner had placed the proper parts in the guns.

The M16A2 functions reliably in temperature extremes. Here a U.S. Marine uses his ski poles to steady his M16A2 rifle in preparation for a live-fire exercise. (Courtesy of U.S. Department of Defense.)

DIVESTING THE AR-15

Although it is hard to know what insiders at Armalite and Winchester thought of the testing done by the U.S. military, many historians feel that the army had intended to use the tests as a vehicle to show off its own designs while giving the illusion of the tests' being open and fair. As more than one critic of the trials has suggested, the U.S. military had a long history of creating its own firearms designs. The thought of a civilian operation's developing a weapon that would be adopted as the standard-issue rifle was not one that many military leaders cared to entertain. The key criteria for the tests, as this argument goes, were that rifles from outside sources

be rejected by the military while in-house designs received every benefit of the doubt. Given the Ft. Greely tests, as well as subsequent rigged tests that would come, this argument seems plausible. If so, then the tests were all just window dressing designed to justify the army's selection of the M14 rifle as its new firearm.

After army brass announced the decision to adopt the M14 rifle, officials at both Armalite and Winchester realized they had invested a lot of time and money in the military trials of their rifle with little to show for it. Soon Winchester discontinued work on the weapon and the model was shelved, never to go into production.

Likewise, Armalite (whose parent company, Fairchild, was having financial difficulties keeping the firearms branch going) found itself struggling because of the lack of any military contracts and the black eye given by the Ft. Greely tests. What had looked like a promising start on a major sale to the U.S. military had fallen flat. Thinking it was simply throwing away good money after bad if it continued to market the design, Armalite sought to divest itself of the AR-15. What had appeared to be a goose that would lay golden eggs was, as far as company officials at Armalite could tell, dead. The firearm that had looked so promising was placed on the auction block.

By now, having failed to generate any significant revenue despite creating so many excellent rifle designs, Armalite saw key personnel leaving the company, headed for greener pastures. Fremont left for a more secure job with Colt's in 1959 and was followed by Stoner two years later. Sullivan left in 1960. Thus the firearms team that had created so many innovative designs disintegrated.

Chapter 2

Colt Firearms

Too many times, excellent firearms designs have gone into the dustbin of history simply because there was no market for the gun. This might easily have been the case with the AR-15 had Colt's Firearms Corporation not also been having economic problems at the same time that Armalite was. Instead, what appeared to be the death knell for the AR-15 became the chain of events that would make this firearm one of the success stores of the 20th century and put it into the hands of troops around the world (as well as those of numerous civilian and police users).

Colt's Firearms Corporation was created in the mid-1800s by Samuel Colt, who secured a patent for the first successful revolver mechanism in 1836. Although his business was not as successful as sometimes pictured (in part due to the intense competition for business from Smith & Wesson and other gunmakers), Colt guns have always captured the imagination. They even inspired the post-Civil War slogan, "Abe Lincoln may have freed all men, but Sam Colt made them equal." Colt guns did just that, doing away with the brawn that was often called for when a single-shot weapon failed to do its work, instead giving a shooter several follow-up shots to deal with a single enemy, or even a band of outlaws or renegades.

Colt died at the early age of 47, but his business continued, flourishing in large part through military sales of firearms created by and licensed from John Moses Browning. Business was especially good during World War I, World War II, and the Korean War, thanks to the military contracts needed to win these conflicts.

Following the Korean conflict, the company began doing some serious belt tightening. Although civilian sales were a major part of Colt's operation, its bread and butter often came through major sales to the U.S. government. The firm had seen money roll in from military contracts almost from the day Samuel Colt had started his firearms operation. At one time or another, Colt had made Gatling guns, single- and double-action revolvers, various automatic pistols (including the 1911 adopted by the U.S. military), the BAR, and several styles of Browning machine guns.

This came to an abrupt halt when the U.S. Army decided to adopt the M14 rifle and Colt failed to obtain the contract to make the new guns. Meanwhile, orders for the weapons it had been making were cut back with an eye toward phasing in guns like the BAR. Colt undoubtedly realized it was hurting and things were only going to get worse if it didn't add a new product that could add military sales to its lineup.

In September 1955, Colt's management had formed a conglomerate with Leopold D. Silberstein's Penn-Texas Corporation, becoming a wholly owned subsidiary of the holding company based in New York. This arrangement continued until 1959, when a group of investors gained control of the company, dismissed Silberstein, and renamed his company Fairbanks Whitney.

When it learned that the license to build the AR-15 was up for grabs in 1959, Colt's management jumped at the chance to obtain the rights and, in the process, secured the rights for manufacturing the AR-10 as well.

SELLING THE PRODUCT

After Colt signed the contract with Armalite, its aggressive sales techniques enabled it to sell a number of the rifles to several small Southeast Asian countries. (The rifle was much easier for Asian soldiers to control since it was lighter and offered less recoil—both important considerations for the smaller physique of the average oriental trooper.)

Eugene Stoner, who was soon working for Colt in marketing, accompanied gun exporter Bobby Macdonald through Southeast Asia, demonstrating the AR-15 and AR-10 to potential governmental buyers in Burma, India, Indonesia, Malaya, Australia, and the Philippines. While none of those who saw the AR-10 were much interested, the AR-15 was loved by nearly every government representative who fired it. When word of the AR-10's

failure to attract a potential buyer reached Colt, the company suspended all plans to produce the larger-caliber rifle, even though more than $100,000 had been spent in tooling for it.

(NOTE: The AR-10 nearly got another lease on life as the U.S. Army's sniper rifle when it was one of six rifles tested at the Aberdeen Proving Ground in 1977. The Rock Island Arsenal modified the rifle, removing the front sight assembly and the rear sight/handle and incorporating a scope base and ART scope. But the tests were inconclusive and only pointed to the need for a better ranging system and more accurate ammunition. Again, the AR-10 failed to be adopted for military use.)

In December 1959, Colt produced its first run of 300 AR-15 rifles, which was broken into small lots and sent for testing to many of the countries Stoner and Macdonald had visited. Some of the governments expressed interest, but sales were blocked to most of them because the mutual-aid funds the U.S. government was offering required that firearms be standard issue with the U.S. military. The AR-15 wasn't issued to U.S. troops, so the U.S. government wouldn't provide funds for its purchase. With funds running low and a lack of actual buyers, Colt was getting close to serious problems and Armalite was not receiving the royalties it had been hoping for from AR-15 sales.

Then both companies had a stroke of luck.

RIVALRY TO THE RESCUE

Boutelle, president of Fairchild, had maintained his friendship with General LeMay during the years since the development of the AR-5 survival rifle. During a skeet shoot on his farm, Boutelle demonstrated an AR-15 to the general, firing at a ripe watermelon, which exploded spectacularly when struck by the burst of high-velocity bullets. LeMay was very impressed with what he saw, thus setting in motion a chain of events that would eventually bail both Armalite and Colt out of their financial woes.

Problems had been brewing between the air force and the army since the former had rejected the latter's M14 as too heavy and awkward. The army then turned around and refused to supply parts for the M1 Garand the air force had retained, claiming the spare parts for the World War II-vintage rifle had been scrapped when the M14 was adopted. Consequently, air bases with nuclear weapons were being guarded by security forces armed with the outdated M1 carbine, a weapon never noted for the effectiveness of its cartridge or reliability with automatic fire. Thus the air force was forced to either make due with the M1 carbine or adopt a rifle it viewed as being no great improvement on World War II-vintage rifles.

And then LeMay saw the demonstration of a rifle that fit the bill for the air force's needs, firing a potent little bullet while still being almost as lightweight as the M1 carbine and pounds lighter than either the M1 Garand or the M14.

At LeMay's prompting, the U.S. Air Force started its own tests of the AR-15 at Lackland Air Force Base in Texas. The tests suggested the new rifle was everything the service had hoped for. In 1960, the air force asked for an analysis of the weapon by the Army Ordnance Corps in order for the AR-15 to be granted candidate rifle status for more air force tests.

The army's test and evaluation was conducted at Aberdeen Proving Ground, and the AR-15 proved nothing short of phenomenal. The rifles fired by army personnel proved capable of 10-round groups of 1.5 inches at 100 yards using iron sights and 10-shot groups of 1.1 inches with scopes—as good as many target rifles.

It didn't end there, however. The rifle not only was accurate, it was tough and reliable. During endurance tests of 18,000 rounds fired, only 10 parts broke and the average malfunction rate was only 2.5 rounds per 1,000—an excellent figure for a gun that had hardly gone into production. Of course, the "not-invented-here" syndrome appears to have been alive and well during the tests; the army final report begrudgingly concluded that the AR-15 was "reasonably satisfactory"—an understatement if ever there was one.

The air force followed up with more tests of the AR-15 at Lackland, this time comparing it with the M14 (perhaps to show the army how well a reasonably satisfactory gun would do in contrast to the army-designed M14). When the smoke cleared, 43 percent of the shooters firing the AR-15 could qualify as expert marksmen, whereas only 22 percent of those shooting the M14 could reach this level of skill.

The air force had found its rifle.

But there were hurdles to be jumped before the acquisition process could be started to get the rifles. Most important was the need for appropriations from Congress, which routed funds to what it felt were more urgent needs (at least in terms of constituents). Only after fighting for 2 years to get approval for the purchase was the air force finally able to procure 8,500 AR-15s in 1962.

GOOD NEWS, BAD NEWS

Ironically, the air force order for the firearms would pave the road for future sales of the guns to both the air force and foreign countries but would fail to bring financial success for Colt and Armalite employees involved in laying the groundwork for the deal. During the 2-year wait for the deal to be finalized, both Colt and Fairchild were taken over by larger corporations. During the

Although the AK47 family of weapons are tough and reliable, the cartridge they were chambered for was definitely second best when compared with the .223 Remington.

reorganization of the two companies, Boutelle got fired, and both companies' personnel who had been involved in marketing sample guns to foreign companies, which would soon be buying quantities of the rifles, were also laid off.

Yet a few AR-15s continued to be sold to various military users around the world; and those guns were gaining users who had nothing but good words for what was becoming known as "the little black rifle." Limited testing in Asia, especially in the South Vietnamese combat arena, showed just how lethal the lightweight rifle and the .223 bullet it fired were (and proved the ALCLAD requirements for an ideal combat rifle had been on the mark). Wanting to put the best weapon possible in the hands of its troops, Army of the Republic of South Vietnam (ARVN) placed an order for 1,000 AR-15s in December 1961, and, since the rifle had been approved for use by the air force (even though it hadn't been funded), the way was cleared for sales to Vietnam.

Meanwhile, U.S. army troops were slugging it out with communist guerrillas in Vietnam. And just as the its tests bad suggested in 1959, the army was finding that the M14 was too heavy for easy handling and that automatic fire was so haphazard that most guns were being modified to fire only in the semiauto mode. Compounding the problem was an occasional blowup of an M14 receiver that had apparently been improperly

The AK47 was heavier and less user friendly than the M16; it also had inferior sights, but most important, its ammunition was inferior ballistically to that of the AR-15.

heat-treated. Although the latter event was rare, soon Colt representatives were pointing out such problems to potential buyers and paving the way for the future sales of the AR-15 and rejection of the M14.

PLAYING THE GOLDEN ARPA

Perhaps recognizing the problems the M14 would present in jungle warfare, the U.S. Army purchased 8,500 AR-15 rifles to test in 1961. In 1962 Colt persuaded the DOD's Advanced Research Project Agency (ARPA) to test an additional 1,000 in its Project AGILE, which was aimed toward finding a better weapon for use in Vietnam.

The ARPA tests again silenced many critics of the AR-15. Among the findings were the following:

- A squad armed with AR-15s had five times the level of overall kill potential than a squad armed with M14s.
- AR-15s could be produced at a lower cost and with a higher degree of quality control than the M14.
- The AR-15 was more reliable, durable, rugged, and easier to care for than the M14 under the adverse conditions often found in combat.
- Soldiers learned to shoot better and more quickly with the AR-15 (than with the M14).
- Three times as many rounds could be carried by a soldier with an AR-15 (in contrast to the M14) when the weight of both the weapon and the ammunition was taken into account.

Equally arresting findings came from the AGILE tests involving Vietnamese troops and U.S. advisors who used the rifles in actual combat. Here again, the AR-15 proved extremely durable and reliable. Not only that, the round used by the rifle showed itself to be highly potent against enemy targets.

Up until the time the AR-15 was fielded in Vietnam, the wounds created by small-arms fire tended to be through-and-through wounds resulting from the bullet's momentum and stability. This was true of the AK47 and SKS used by the Vietcong and North Vietnamese as well as the M14 and M1 carbine. Such penetrating wounds were the most common unless bullets were deflected somewhere in their paths by obstacles or through a collision with hard tissue in the target.

This situation changed with the AR-15, whose bullet was light, fast moving, and unstable—a combination that proved deadly in the battlefield.

One of the U.S. advisors who had seen the AR-15 used in combat wrote,

> At a distance of approximately 15 meters, one Ranger fired an AR-15 full automatic, hitting one VC with 3 rounds with the first burst. One round in the head took it completely off. Another in the right arm took it completely off, too. One round hit him in the right side, causing a hole about 5 inches in diameter.

Another soldier in the field gave an equally graphic account of the effectiveness of the new rifle:

> On 9 June a Ranger Platoon from the 40th Infantry Regiment was given the mission of ambushing an estimated VC Company. . . . Back wound, which caused the thoracic cavity to explode. . . . Stomach wound, which caused the abdominal cavity to explode. . . . Heel wound; the projectile entered the bottom of the right foot, causing the leg to split from the foot to the hip. . . . These deaths were inflicted by the AR-15 and all were instantaneous except [for a] buttock wound. He lived for approximately five minutes.

As another reported, "Range was 50 meters. One man was hit in the head; it looked like it exploded. A second man was hit in the chest, his back was one big hole."

But it didn't end there. Troops in Vietnam also discovered that rifle grenades fired from the AR-15 enabled them to lay down what was similar to their own mortar fire. Furthermore, troops cared for the weapon and treated it more carefully than the M1 carbine because they had greater respect for it.

In short, the little black rifle fielded in Vietnam was everything its designers had promised—and more. The troops not only liked the rifle, they also were chalking up serious body counts with it. The weapon enabled those using it to "own the battlefield," not only becoming deadly opponents to Vietcong troops, but also becoming more aggressive as they learned the capabilities of the rifle they carried.

CHANGES AT COLT

Colt continued to do well turning out AR-15 rifles for the U.S. military as well as reviving a number of older guns, such as its black-power revolvers and Sharps rifle, as Western movies and TV fueled the civilian market for guns of the Old West. However, changes came again in 1964 when the company reorganized under the name Colt Industries and the firearms section became a subsidiary called Colt's Inc., Firearms Division.

Colt aggressively sought to broaden its market by continuing to sell revolvers of all and the .45 semiauto 1911 pistol to the public through the 1960s and 1970s and into the 1980s. In addition, it created its Colt Custom Gun Shop, which made special target handguns as well as offering engraving on all of its firearms. Nevertheless, the company's bread and butter continued to be sales of its AR-15 rifle to military, police, and civilian buyers around the world.

The M16 rifle version of the AR-15 proved popular among U.S. troops—when it functioned properly—not always a given due to ammunition that wasn't formulated for it and lack of cleaning kits. (Courtesy of U.S. Army.)

MEANWHILE, BACK AT ARMALITE

With its engineers gone and large sales of the AR-10 and other rifles failing to materialize (except for the AR-15, the rights to which Armalite had sold to Colt's Firearms without realizing as much profit as could have been, given later sales), Armalite and its parent company, Fairchild, were in financial trouble in 1961. This led Sullivan and the other original owners of Armalite to buy the company back from Fairchild along with the rights and title to all

firearms designs except the AR-10 and AR-15, which had been licensed to Colt. The goal of this reorganized company was still to create firearms, but with an eye toward actually making some serious money in the process; finding financial backing was not impossible due to the track record of Armalite. Funding was supplied by Capital Southwest Corporation of Dallas (with Charles Dorchester and Richard Klotzly later acquiring the majority common stock position in Armalite by buying out Capital Southwest Corporation late in 1971).

This new business entity became "Armalite, Inc." and except for the change of ownership was run by the same key personnel. Armalite worked from 1962 through 1971 without meeting with any great financial success.

Since Armalite had failed to experience any great wealth flowing in from its deal with Colt, the company needed a new rifle that might gain acceptance by those not interested in the AR-15 and thereby bring in much-needed capital. Since Colt now owned the rights to the gas system used on both the AR-10 and AR-15, this new rifle also could not employ this or other features found on the AR-15.

This task wasn't as daunting as it might otherwise have been because a rifle design meeting this criterion was actually on the shelf at Armalite. All that was needed was some modifications to the design. Thus, from 1962 to 1964, engineers at Armalite worked on modifying the AR-16 rifle to the .223 Remington cartridge in much the same way that the AR-10 had been modified to create the AR-15. This new rifle was designated the AR-18, and Armalite pinned nearly all of its hopes for financial success on the new gun. (Although the AR-18 was marketed after Stoner had left the Armalite Company, according to Burton T. Miller, who was the vice president of Armalite during this time, Stoner was nevertheless responsible for much of the development of the AR-18 before its introduction, having taken part in the development of the AR-16.)

Due to its being chambered for the more compact .223 cartridge, the AR-18 was slightly shorter than the AR-16. But it continued the overall construction design of mostly sheet-metal stampings that were easy and cheap to produce. Internally, the gun employed a gas piston similar to that of the Soviet Tokarev to move the bolt and its carrier rearward, in the process keeping the trigger group clean of powder residue, a fact that gave the AR-18 the potential to be slightly more reliable than the AR-15, and most certainly making cleaning and maintenance of the rifle easier. Unlike the AR-15, which had a large recoil spring in the stock, the AR-18 used twin recoil springs and guides located within the rear of the receiver; this made possible a folding stock (and later bullpup designs when this system was adopted by other rifles).

Soon this new rifle was in competition against its AR-15 sister in military trials around the world. Although it is arguable whether the AR-18 was a better rifle than the AR-15, one thing is almost certain: the AR-18 never really got a fair trial against its competitor during U.S. military trials. This was because of a disastrous business arrangement Armalite made in selling the manufacturing rights of the new rifle to the Howa Machinery Company of Nagoya, Japan.

Sadly for both companies, this coincided with the Japanese government's efforts to force an end to the war in Vietnam. To bring pressure on those involved with the conflict, the Japanese government refused to grant an export license to Howa for the shipment of AR-18s to any country even remotely involved in the fighting. What appeared to be a lucrative market was suddenly out of reach to those wanting to sell and demonstrate the AR-18.

This problem was compounded when the U.S. Army started searching for a gun that would be even more reliable than the AR-15. One potential choice was the AR-18. The Japanese government's refusal to allow the guns out of the country left Armalite no choice but to supply the army with hand-built AR-18s from the Armalite factory, which were undoubtedly less reliable than those produced at the Howa plant. Thus both firms both missed yet another chance. The U.S. Army became committed to purchasing the more expensive—but readily available—AR-15 manufactured by Colt. (And by the time the Vietnam War was over, the U.S. military was fully committed to the AR-15, which pretty well had all the bugs worked out of its design and was as reliable as anyone could ever have hoped for, far outperforming most similar rifles that were available.)

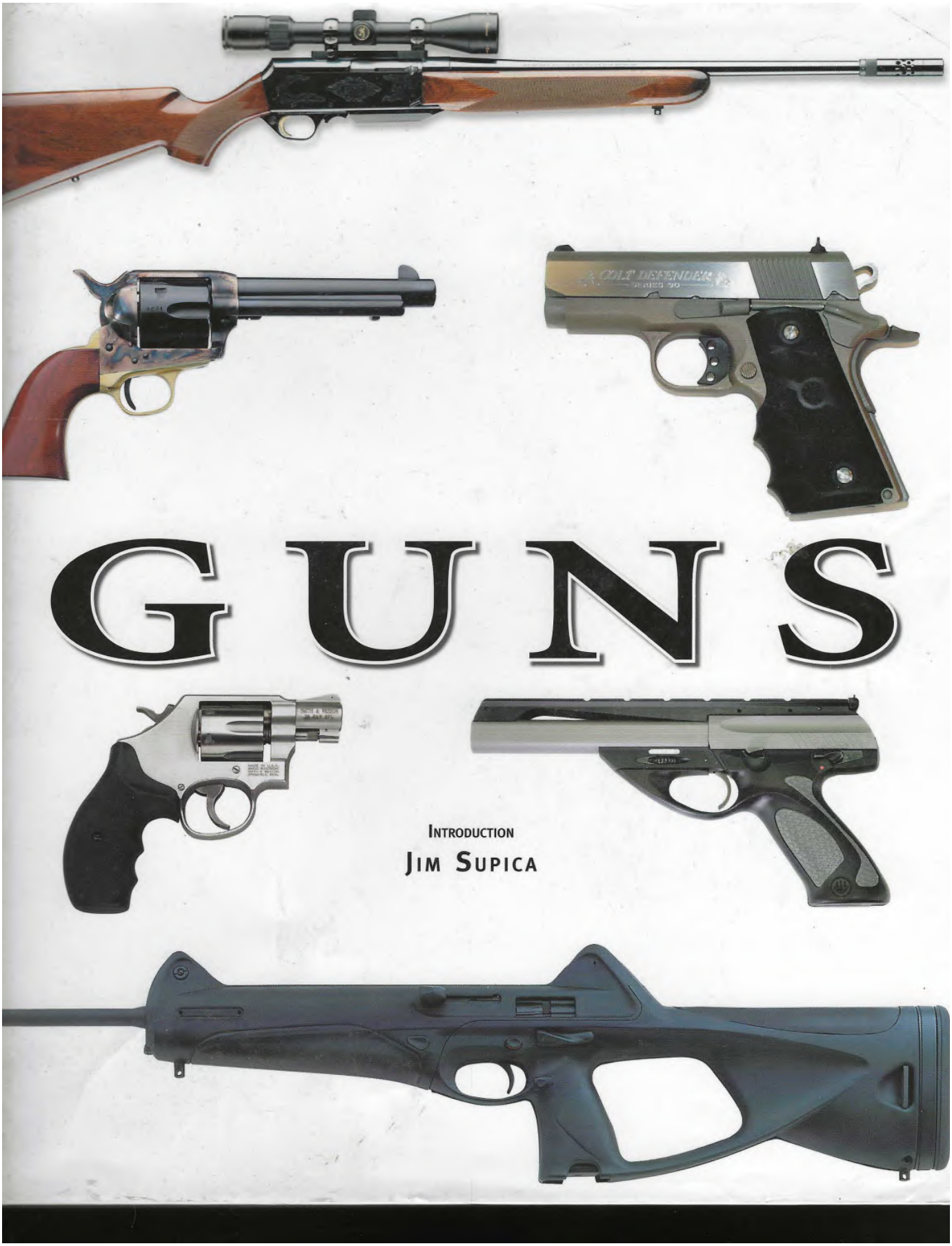
Testing the AR-18

Exactly why the few AR-18s produced by hand at Armalite for limited testing by the U.S. military failed to live up to expectations is a matter of some debate. Armalite had earlier arranged for exhaustive tests by the independent H.P. White Laboratory in Belair, Maryland, which verified Armalite's claims that the AR-18 was both tough and reliable. Yet this wasn't the result seen in the military tests subsequently conducted by the U.S. Army. What was going on?

Some Armalite officials later claimed these tests were less than fair, again suggesting that the army was protecting its new rifle just as it had earlier done with the M14. According to Burton T. Miller, some tests the army conducted with the 10 available AR-18s employed the wrong type of ammunition and a defective magazine. If so, this undoubtedly resulted in failures of the rifle because ammunition was fed poorly into the chamber.

To make matters intolerable, the Japanese

Exhibit E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INTRODUCTION

the Arisaka, and so forth. The Springfield '03 was still widely issued to American forces, but in the decade preceding the outbreak of hostilities, the U.S. army had been first testing competing designs of semi-auto rifles, and then proceeding with manufacture and issue of the pattern deemed best.

The U.S. M-1 Garand in .30-06 caliber was without question the finest full power rifle fielded in WWII. Instead of a fixed or detachable box magazine, it was loaded with 8 rounds held in a metal clip. When the last round was fired, the clip was automatically ejected with the action remaining open for quick insertion of another loaded clip. It was rugged, reliable, and powerful.

Germany also was developing a mid-range shoulder weapon, but with a different intent. They sought a detachable magazine rifle that would fire a reduced power cartridge and would be controllable and effective in full-auto firing mode, with more range & power than a sub-machine gun. The resulting MP-43 filled the bill, but was developed late in the war. The concept was one which would survive the conflict – the Germans called the weapon a "Sturmgewehr", loosely translated as "assault rifle".

Most military establishments hesitated to "downsize" the power and range of their primary rifles in the early Cold War years. The semi-auto detachable magazine concept was an

The Luger represented a design advance in auto-pistols, and served as a military sidearm for Germany and other countries in the first half of the 20th Century. Shown here are scarce long-barreled variations. Photo by Jim Supica, ArmchairGunShow.com.

It was also heavy. The army sought a weapon that was more accurate and powerful, and had a longer range than a pistol, but which was lighter and handier than the full size rifle, intended primarily as a secondary weapon for tankers, artillery crews, and personnel who were not in a primary combat role. This role was ably filled by the M-1 Carbine, a semi-auto accepting a 15 round detachable box magazine. It fired a new straight-wall cartridge, midway in power between the pistol and the full sized rifle.

Right: *Firearms history is replete with odd & unusual designs. From top: Unwin knife pistol, ca. 1860's; cane pistol w/ bayonet, ca. mid-19th Century; tiny 2.7mm Kolibri auto-pistol, shown with silver dollar for scale, early 20th Century; U.S. military WWII "Liberator" single shot sheet metal .45 acp pistol, designed to be dropped to partisan forces behind enemy lines and intended as a "use a gun to get a gun" one-use weapon to kill an enemy soldier to acquire his more-effective weapon. Photo by Jim Supica, ArmchairGunShow.com.*

INTRODUCTION

Examples of rare 20th Century military rifles include the Pedersen semi-auto (top), an early competitor of the Garand; and a Chinese Mukden bolt action Mauser pattern rifle. Photo by Jim Supica, ArmchairGunShow.com.

obvious success, and there was something to be said for full-auto capability. A series of full power "battle rifles" were introduced to meet this need – the FN-FAL and the Heckler & Koch G3 being two patterns that were widely adopted. The U.S. developed a Garand look-alike with detachable magazine and full-auto capability, the M-14.

However, the assault rifle concept wouldn't go away. The Soviet Union accepted the lower power round idea in it's fixed magazine semi-auto chambered for an intermediate power 7.62 x 39 mm round in 1945, the SKS, which saw wide distribution and production in Soviet client states, and enjoys popularity in the post-cold war US as an inexpensive semi-auto military surplus rifle.

They followed two years later with what would become probably the most widely produced military long arm design in history, and the quintessential assault rifle – the Kalashnikov designed AK-47, in the same caliber.

The AK-47 is a select fire (semi-auto or full-auto) carbine size weapon with a detachable 20 or 30 round box magazine. It has a well-deserved reputation for relatively cheap production, and for reliability even in the most adverse environments, or when used by under-trained indigenous forces who may neglect maintenance. It makes extensive use of sheet metal stampings in its construction, with a simple wooden buttstock with pistol grip.

The U.S. version of the assault-weapon configuration was introduced in 1963, originally known as the AR-15 and XM-16 designed by Eugene Stoner. It was ultimately adopted as the M-16 manufactured by Colt. It is chambered for the 5.56 Nato round, a military twin of the .223 Remington cartridge, and takes a detachable box magazine of 20 or 30 rounds. The rear sight is mounted on a distinctive integral carrying handle, and the stock and handguard are made of black synthetic material.

Initial reviews of the M-16 were mixed. A combination of an improper type of powder used in cartridge manufacture and a mistaken belief that maintenance could be neglected resulted in some early failures in the field. Some in the military establishment resisted a .22 caliber round for combat, dismissing it as a "poodle shooter".

This concern may be understood by reviewing a statistic commonly used to summarize a cartridge's power level – the

Exhibit F

The Gun Digest® Book of ASSAULT WEAPONS

Jack Lewis
U.S. Marine Lt. Col. USMCR (Ret.)
Robert K. Campbell
David Steele

7th Edition

Test Fire Reports:

- Full-Auto Rifles
- Submachine Guns
- Riot Shotguns
- Sniper Rifles
- Special Ops Guns

CHAPTER 6

THE AK VERSUS THE AR

A Hard Look at What May Be the Modern World's Two Most Often Used Tools of Warfare!

WHEN IT COMES to a comparison of the world's premier battle rifles, it is interesting to consider where and perhaps why they originated. A great influence where the Russians were concerned lay in the fact that their World War II semi-automatic rifle program had been less than successful. Only when the SKS, firing an intermediate-power cartridge, was adopted was the program considered any sort of a plus.

The United States, on the other hand, had the viable M-1 Garand. The success of this particular model – by design and in battle – colored our national thinking for decades.

However, both major powers recognized the obvious fact that static defense and warfare favoring static defenses was a thing of the past. Rapid deployment forces and superior firepower were then thought to be the watchwords of the future. Lighter weapons – most with the capability of full-automatic fire – would become the order of the day. Each nation apparently adopted this doctrine…but in different vehicles. The U.S. continued development of the M-1 Garand until it emerged as the M-14, a full-size, full-power rifle equipped with a detachable box magazine. The Russians adopted a rifle that was based largely on the German MP 44. The Russians liked the AK's firepower above all. The AK-47, the most popular of the various models, features a 30-round magazine and could be fired in the full-auto mode. The piece was – and is – designed to allow great reliability, which means that the parts are fitted loosely!

In the U.S., the M-14 was regarded as a good rifle, but experiments showed the rifle was not controllable in the full-auto mode. The heavy-barreled M-15, fitted with a bipod, then was suggested as a successor, but was not considered an efficient battle tool for full-automatic fire. Thus, controversy erupted between those who advocated rapid but accurate semi-auto fire and the emerging doctrine of firepower over accuracy. The situation remained static until events in Vietnam caused the U.S. military powers to consider an alternative weapons system.

The Saiga rifle is a beefed-up AK firing a 308 cartridge. The safety is up and on, locking the bolt. In the down position, the rifle is ready to fire. Campbell contends this is certainly not the handiest of modern battle rifle safeties.

In the Russian armed forces, the AK-47 did not replace Soviet machine guns at first, but it was noted that the AK utilized technology developed in the design and ultimate production of the successful PPSh-type 7.62mm Tokarev weapons. In this operation, metal stampings took the place of carefully machined parts. This approach made for an inexpensive weapon that could be mass-produced readily and quickly.

The bores of the early AKs were hard-chromed largely because of the previous Russian experience with poor quality ammunition and corrosive effects caused by inferior gun powder.

"While the AK may not invite close tolerances, it is not sloppy," according to Robert K. Campbell, who has made a study of the weapon. "Parts do not wear quickly to produce eccentric surfaces."

Campbell adds that "a parallel may be found between Armalite and Glock. The original Armalite corporation was unknown for weaponry, but wished to introduce aluminum into battle rifle production. At roughly the same time, Glock was entering its first venture in the firearms field by using a polymer frame. Both efforts, of course, have been successful. Even then, the AR-15 rifles and ultimate clones were produced on the newest machinery which was used to full advantage. However, the AR cartridge was designed to be more lethal than that fired from the AK."

Another then unique feature of the AR was the gas system. This rifle does not utilize a separate gas piston as does virtually every other gas-operated rifle in existence. Instead, the late Gene Stoner – a long-time friend of Jack Lewis prior to the inventor's passing – designed the rifle to deflect gas into a chamber in the bolt assembly.

"In one regard, the bolt is the action piston," Campbell soon learned. "This system has the advantages of low recoil impulse and high accuracy. A trade-off is that the system must be kept clean for proper function. Today, the M-16 variants all feature chrome-lined barrel and chamber surfaces. Problems in function with early rifles were answered with this chroming process."

In comparing the two types of rifles, one must realize that the AR-15 design arrived on the scene somewhat later concept-wise than the AK and is a somewhat fresher creation. The philosophies of the countries building these rifles also are evident in the production facilities needed to produce either rifle. State-run mega-factories appear best at producing the AK, while a good AR can be built by relatively small companies equipped with good CNC machinery. The technical differences of the two certainly exist on paper, but the real deal is how each rifle of its type handles and shoots. Thus, a comparison of the two rifles was undertaken by Bob Campbell to determine just how they stacked up against each other.

"In fairness, one must recognize the fact that there are many variants of either type rifle. I could have matched a precision-grade AR against perhaps a Krebs custom AK, or I could have chosen an Armalite version with optical sights and lorded it over the AK. I could have built up one or the other, but I opted for good but not extraordinary gear," Campbell explains. "The AR was ably represented by a Bushmaster carbine. The AK was a Century Arms variant with a folding stock."

It perhaps should be noted that the AR actually was the personal rifle of Campbell's son and had been fitted with a Vitor stock.

In comparing weights of the two combat-ready contenders, average weight of the loaded AR types was established as being about 7.5 pounds. The AK, carrying a loaded magazine as well, came in at 9.5 pounds. The Bushmaster used in the test had a 16-inch barrel, while the tube of the AK was 17 inches.

"The first question about the two weapons involved their handling qualities. To me, the AR

The AR-15 system, as exemplified by this Bushmaster carbine, is touted as being among the most ergonomic rifles ever fielded. It is considered to be user-friendly.

Campbell feels that cheek weld with the AR rifle is excellent. The sights come to the eye as the rifle is shouldered, the fore-end offering a comfortable grip.

The sight radius of the AK is shorter than that of the AR and the rear sight is much farther from the eye than with the AR sights. Proper hold can be uncomfortable.

The safety on the AK-47 tested illustrated the belief that the device is less than user friendly. Moving it in either direction is somewhat demanding.

felt better, offering the shooter confidence during quick movements, although the support hand felt cramped, when gripping the rifle's fore-end.

"I got the feeling," said Campbell, "that the AK was designed to be used by smaller people, but the Russians are by and large comparable in size to Americans. The forend of the AR has much more area for comfortable hand placement."

Campbell also felt that cheek weld with all of the AK variants he has tried over the years becomes more difficult than with the AR. "Some fellows with long arms must bend their wrist uncomfortably to hold the AK," the investigator reports. "This results in a slightly cramped grip. The three-position stocks available for the AR make firing with body armor relatively comfortable and allows the rifle to be carried comfortably. Truth is, the AK is less ergonomic than the AR."

In making the piece ready to fire, the cocking handle of the AR is easily actuated with either hand. Campbell says the AK is not difficult to make ready, but is less handy than the AR in this respect.

Bob Campbell insists the AR safety is among the most positive ever designed. Easy to manipulate, it offers rapid handling with a high degree of safety.

"With the AK, the bolt is cocked easily with the right hand in most cases, but the left hand is clumsy in coming over the top of the receiver to cock the rifle. The AR system is friendlier," Campbell contends.

He also feels that the AR safety is leagues ahead of anything else in current use. The safety lies under the thumb in a positive position for operation. Thus, the thumb can make the rifle safe in one quick, sweeping motion.

"The AK safety is a long lever mounted on the right side of the receiver. This lever resembles the safety of the Remington Model 8 and is no handier," according to Campbell. "The lever blocks the bolt when in the upper position and it requires the firing hand to be removed from the firing grip to manipulate the safety. The weak hand may travel over the top of the receiver to handle the safety, but this is a poor tactic.

"The safety of the AR-15 is much superior to that of the AK-47 in every way," is the evaluation on that score.

"Trigger compression for both types of rifles is probably close to equal," Campbell opines. "Both use military-style triggers that are neither light nor crisp. The Bushmaster trigger is the equal of any commercial offering, but the Century AK, while abrupt, was usable. Either trigger guard is suitable for gloved-hand use, although the AK is more generous."

Campbell found the sights of the AR much better for accurate fire at short, medium and long range, but especially at longer ranges. "The open sights of the AK simply do not allow the positive, quick sighting of the AR-type rifle. The aperture sight of the AR-15 quickly centers the eye."

Campbell feels a concern that must be addressed by law enforcement officers and citizen shooters is the fact that the AR tends to shoot low at close range. This is common to all military rifles, but the need to place the sights of the AR far above the bore adds to the problem.

"In a hostage situation, at up to 10 yards, a center hold on the forehead of a hostage taker could result in a shot to the hostage. As an example, if the hostage taker is holding your wife from behind in a take-over robbery and you take a dead-on center of the forehead hold and proceed to do business, the bullet will strike about in her clavicle. This is not something the designers were concerned with in coming up with a battle tool, but anyone using an AR for personal defense must understand this issue. The AK is slightly less offensive in this regard."

As for changing magazines, Campbell feels the AK is dated. "Robust and reliable, true, but the magazine is more difficult to change quickly than with the AR"

The AK magazine catch is located forward of the trigger guard and is actuated while the magazine is swung out and now. A new magazine is grasped, and then literally rocked into the receiver.

"The AR system is much smoother. A push of the magazine release allows the spent magazine to fall free. Since the magazine well extends below the bolt, it acts as a funnel to allow the magazine to be seated quickly. The ability of a soldier to keep up a barrage of fire is much greater with the AR."

Campbell also found that in firing, the AK recoil is greater than that of the AR. He says that neither rifle is uncomfortable or difficult to handle, but the AK-47 offers greater recoil. He found the sound of the fired cartridge is louder than that of the AR-15.

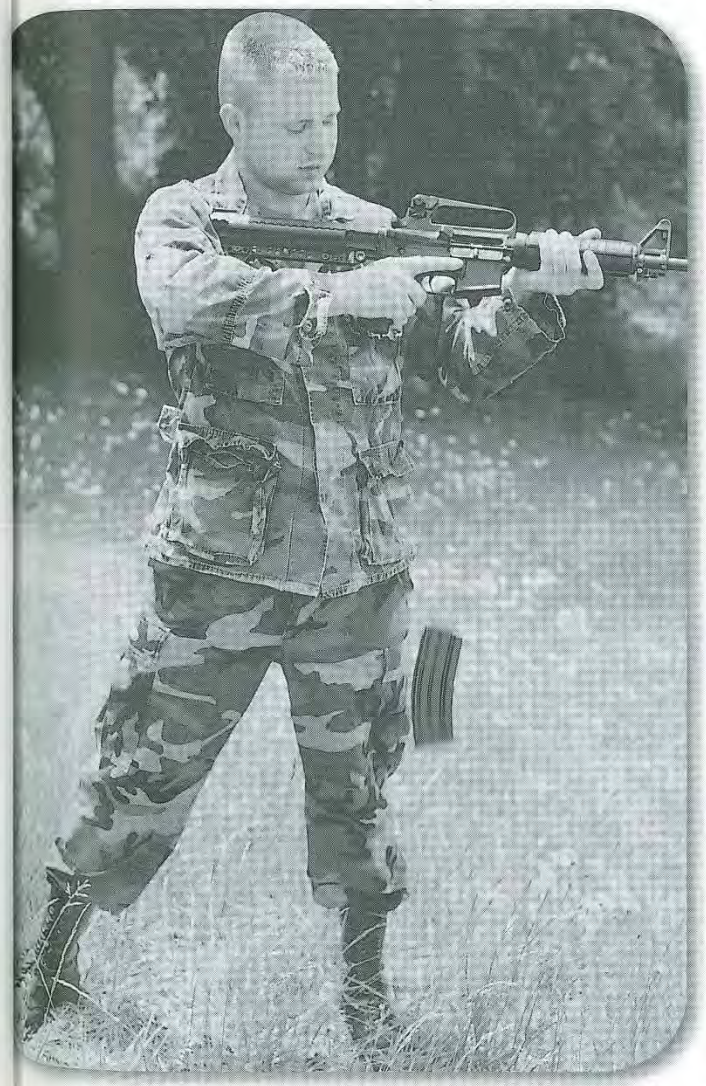
"As for reliability, the AK-47 has the mechanical and practical advantage," the investigator found. The gas cylinder of the AK-47 sits above the barrel and is cleaned and serviced easily. The gas tube is fairly large, affording much leverage in operation. The AR-15 has what is termed a gas impingement system. Gas alone works the bolt and there is no gas cylinder.

"There is an economy of manufacture realized by eliminating the gas cylinder and piston," Campbell says, "and the system also allows better stability and accuracy. At the same time, though, unburned powder may blow into the chamber causing carbon to form upon the gas port channel. The system demands clean-burning ammo or a malfunction may occur in less than 1,000 fired rounds."

The AR is assembled with closer tolerances than the AK and this is reflected in the AR-15's greater accuracy. This rifle was designed to allow quick, easy maintenance and troops in combat situations sometimes strip and clean the rifle several times a day.

"However, judicious use of hard chrome and ammunition development have done much to make the AR-15 series a much more reliable rifle than was the case with the original issue. In a worst case scenario, the AK is the more reliable beast, but the AR is certainly a reliable system."

During his evaluations, Campbell fired the AK in several positions, including offhand, in the under-the-arm unaimed position, kneeling and prone. He found it less well balanced than the AR, but feels a seasoned shooter could perform acceptably in most combat situations. "An exception was firing from the prone position, since the length of the extended magazine makes firing difficult."



For rapid reloading with a fresh magazine, one simply has to push the magazine release button and the empty falls out, saving seconds in the process.

Here the Bushmaster has been outfitted with the ATN illuminated reticle scope. This scope can be set for 100, 200 and 300-yard targets by click adjustments.

After the magazine release has been pushed to its forward position, the magazine of the AK must be rocked out, requiring what may be precious extra seconds.

The fresh magazine must be seated with a repeat of the rocking motion, then one must be certain that it is locked securely into the rifle's magazine shallow well.

Campbell contends that the AK is the less accurate rifle, but adds that this accuracy deficit involves more than one facet. He says the rifle did not group well off the bench as did the AR and in rapid-fire, maximum-speed drills, the AK did not equal the AR.

"I think that while we realize the AR is the more accurate system overall, we must also give the devil his due. The AK is not a bad system and can be used credibly. A difficulty in achieving the best results with the AK is the issue sights. The AK uses open sights that are a bit tighter than the buckhorn sights found on lever-action rifles, but they are not precise by any measure. The rear sight ranges from a U to a V, depending upon the date of issue and the manufacturer, while the front sight is a simple post."

The rear sight of the AR-15 features two aperture settings, the larger aperture being for close-range combat shooting, while the other opening is meant for long-range precision fire.

"In firing the rifles, I found that if I shot 10 to 20 rounds rapid-fire at ranges from 10 to 100 yards, the groups from the AR would be half the size of those from the AK. I also found that I tended to concentrate on the AR sights more closely. One tends to use the AK as designed: as a bullet hose! It will lay down a lot of firepower pretty quickly," Campbell found.

As for absolute accuracy, Campbell could not resist the comparison. "I used surplus-grade 'burner' ammo for most of the firing tests with good results. Wolf Ammunition's 62-grainer was used in the Bushmaster, while the 122-grain HP load from the same importer was fired in the AK.

"There were no malfunctions of any type in either rifle. I then used upscale loadings designed to give the top accuracy in each rifle. The results were unremarkable. The AK did not benefit from top-quality ammo nearly as much as did the AR. For the Russian rifle, I used 7.62x39mm top-quality loads from Cor-Bon and they

To reload the AR, one simply thrusts a magazine into the magazine well and it locks in. This allows for extremely rapid replenishment of 5.56mm ammunition.

Campbell says he is happy to have both of the rifles in the family. If he could afford only the AK, he would make do, but would hope to buy the AR soon!

Accuracy Results

Five-shot 100-yard groups measured from outside to outside of the most distantly spaced bullet holes.

Bushmaster 5.56mm (16-in. bbl.)

Load	Group size (inches)
62-grain Wolf Ammunition	2.0
55-grain Winchester USA ball	1.8
64-grain Winchester JSP	1.5
55-grain Cor-Bon JSP	1.4
60-grain Black Hills	1.5
77-grain Black Hills	1.3

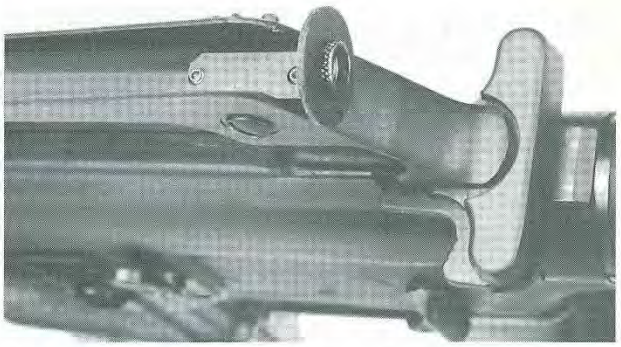
Century Arms AK-47 7.62x39mm (17-in. bbl)

Load	Group size (inches)
124-grain Norinco ball	4.5
122-grain Wolf Ammunition	3.65
123-grain Federal American Eagle	3.75
124-grain Winchester USA	3.6
125-grain Cor-Bon JHP	2.9
150-grain Cor-Bon JSP Hunter	3.25

seemed to improve the ballistic effect, making it a respectable ranch or personal defense weapon. However, in the matter of accuracy, it will require another system to show the 7.62x39 rifle in a different light.

Campbell feels that the Russian battle tool is colored by World War II experience. House-to-house fighting in Stalingrad and other cities showed that firepower often decided the battle's outcome. In such environs, accuracy beyond 300 yards meant little.

The AK does not require a great deal of training. Soviet human resources certainly should never be underestimated, but diverse groups from all over the world have been able to learn to fire and maintain the AK-47 quickly.



This Bushmaster carbine has been fitted with KNS precision sights. Note that the cocking handle is handy for use by either hand. In pure function, Bob Campbell considers the AR variants as the premier among current battle rifles.

The United States Army fought the same war against the same enemy in Europe, but came to different conclusions. Americans of that era were generally fine shots, since our freedoms allowed us to use firearms and become proficient with them.

The M-16/AR-15 is not the highly accurate long-range rifle that was the M-14, but it is more accurate than the AK and most of its clones. Campbell considers the M-16 a model of human engineering, noting that the Soviets favored a mechanized unit, whereas Americans still counted on infantry foot soldiers, so light weight and self-sufficiency were important. The AR-15 was developed to meet that need.

Which rifle does Bob Campbell prefer?

"I like the AK," he says. "It is a reliable rifle, an ideal centerfire plinker and an important part of history. But the AR would be my first choice in battle."

Gabriel Suarez, at his Arizona shooting school, shows that in the hands of a trained operator and from a solid firing position, the AK-47 is effective.

Exhibit G

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AD NUMBER
AD343778
CLASSIFICATION CHANGES
TO: unclassified
FROM: confidential
LIMITATION CHANGES
TO: Approved for public release, distribution unlimited
FROM: Distribution authorized to U.S. Gov't. agencies and their contractors; Administrative/Operational Use; 31 JUL 1962. Other requests shall be referred to Defense Advanced Research Projects Agency, Arlington, VA.
AUTHORITY
31 Jul 1974, DoDD 5200.10; DARPA per DTIC Form 55

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AD 343778

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SCIENTIFIC AND TECHNICAL INFORMATION

CAMERON STATION, ALEXANDRIA, VIRGINIA

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ADVANCED RESEARCH PROJECTS AGENCY
Washington 25, D. C.

20 August 1962

To: Addressees
From: OSD/ARPA

Subject: Field Test Report, AR-15 Armalite Rifle
Enclosure: Final Report, OSD/ARPA Research and Development Field Unit - Vietnam

1. The AR-15 Armalite rifle has been subjected to a comprehensive field evaluation under combat conditions in Vietnam. The results of this evaluation, contained in the attached report, are forwarded for your information.

2. Because of the controversy which has surrounded this weapon, particular care was exercised to insure that the tests were objective, thorough and adequately documented, and to insure that valid data and conclusions were derived therefrom.

3. The suitability of the AR-15 as the basic shoulder weapon for the Vietnamese has been established. For the type of conflict now occurring in Vietnam, the weapon was also found by its users and by MAAG advisors to be superior in virtually all respects to the - a. M-1 rifle, b. M-1 and M-2 Carbines, c. Thompson Sub-machine gun and d. Browning Automatic rifle.

4. Test data derived from recent Service evaluations of the AR-15 in the U.S. support the technical conclusions of the report. The Central Intelligency Agency has conducted similar tests; it is understood that the results of that evaluation are essentially identical to those contained in the report.

5. Photographs 7 and 8, Appendix D, pictures of Viet Cong KIA showing the wound effect of the AR-15 bullet, were deleted from the attached report by this office.

6. The conclusions and recommendations of this report have been made available to COMUSMACV and CINCPAC by the originator and to DOD and CIA by OSD/ARPA.

R. C. Phelps
R. C. Phelps
Asst Director, for AGILE

Downgraded at 3 year intervals; Declassified after 12 years. DOD Dir 5200.10

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RESEARCH & DEVELOPMENT FIELD UNIT
Advanced Research Projects Agency
Office of the Secretary of Defense
APO 143, San Francisco, California

MACRD 31 July 1962

SUBJECT: Report of Task No. 13A, Test of Armalite Rifle, AR-15 (U)

THRU. Commander (3)
U. S. Military Assistance Command, Vietnam
APO 143, San Francisco, California

TO: Commander in Chief, U. S. Pacific (3)
c/o Fleet Post Office
San Francisco, California

Advanced Research Projects Agency (3)
Office of the Secretary of Defense
The Pentagon
Washington 25, D. C.

1. (C) Forward herewith is the final report of the test of the Armalite Rifle (AR-15). It should be noted that the report proper in its present form reflects the views of the U. S element of CDTC only. It is being handled in this fashion to avoid the inference that the Vietnamese, in seeking a newer weapon, might have influenced the recommendations in the report.

2. (C) However, combat evaluations in Vietnam are necessarily joint ventures and the results must be made known to appropriate GVN authorities. This report will now be coordinated with the Vietnamese element in CDTC and will be officially closed out as a combined report. It is thought that this is unlikely to

ARPA Ser. No. 1543

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result in any substantive change in the report as now written.

1 Incl.
AR-15 Report w/5 Annexes

Copies furnished.
CHMAAG, VIETNAM (4)

WILLIAM P BROOKS, JR.
Colonel, Arty
Chief

DOWNGRADED AT 3 YEAR INTERVA
DECLASSIFIED AFTER 12 YEARS
DOD DIR 5200.10

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RESEARCH & DEVELOPMENT FIELD UNIT
Advanced Research Projects Agency
Office of the Secretary of Defense
APO 143, San Francisco, California

REPORT OF TASK NO. 13A

TEST OF

ARMALITE RIFLE, AR-15 (U)

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REPORT OF TASK NO. 13A
TEST OF
ARMALITE RIFLE, AR-15 (U)

1. (U) REFERENCES.

a. (U) OSD Message, DEF 907037, DTG 122354Z December 1961.

b. (U) MACRD Message 367, DTG 050203Z June 1962.

c. (U) US Army Infantry Board Report of Project 2787, 27 May 1958, Subject: Evaluation of Small Caliber, High Velocity Rifle - Armalite (AR-15).

d. (U) Final Report, Lightweight High Velocity Rifle Experiment, US Army Combat Development Experimentation Center, Fort Ord, California, dtd 30 May 1959.

e. (U) Evaluation Report of the Colt Armalite AR-15 Automatic Rifle, US Air Force Marksmanship School, Lackland AFB, Texas, dtd 22 September 1960.

f. (U) Report No. DPS-96, A Test of Rifle, Caliber .223, AR-15, Aberdeen Proving Ground, Maryland, dtd 9 January 1961.

g. (U) Fourth Report on the Test of the US Carbine, Cal. .30, M1, ORD Program #4972, Aberdeen Proving Ground, Maryland, dtd 13 Aug 1942.

h. (U) First Report on Test of Production Models of the Carbine, Cal .30, M2, ORD Program #4972, Aberdeen Proving Ground, dtd 1 Aug 1945.

i. (U) US Army Infantry Board Supplemental Report of Project No 2787, "Evaluation of Small Caliber, High Velocity Rifles - Armalite (AR-15)", dtd 13 August 1958.

2. (C) PURPOSE.

The purpose of this test was to determine if the AR-15 Rifle is compatible with the small stature, body configuration and light weight of the Vietnamese Soldier and to evaluate the weapon under actual combat

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conditions in South Vietnam. At the request of MAAG, Vietnam, the scope of the test was expanded to include a comparison between the AR-15 and the M2 Carbine to determine which is a more suitable replacement for other shoulder weapons in selected units of the Republic of Vietnam Armed Forces (RVNAF).

3. (U) DESCRIPTION OF MATERIEL:

The AR-15 Rifle is a lightweight, gas-operated rifle equipped with a 20-round, detachable magazine. It is chambered for Cartridge, Caliber .223. When fired in the rifle, this round gives the 55 grain bullet a muzzle velocity of 3200 feet per second. It has a plastic stock with a rubber butt, assembled in line with the bore. This, in conjunction with its high line of sight and separate hand grip, is designed to minimize rotation about the shoulder during firing. The two piece upper hand guard is made of metal and plastic and is designed for easy disassembly and rapid dissipation of heat. A lever above the grip on the left side of the receiver provides a selector for the trigger safety, semi-automatic and automatic fire. A bolt catch holds the bolt to the rear after the last round has been fired. A cover is provided for the ejection port in the receiver. A three-pronged muzzle attachment, threaded to the barrel, serves as a flash suppressor, grenade launcher, and a front support for a bayonet. The lower part of the front sight is machined to form a bayonet lug. Standard accessories include: Bayonet w/scabbard; bipod w/case; grenade-launching sight; and a cleaning rod. Photographs of the weapon appear in Annex "D".

4. (C) BACKGROUND.

a. (U) The problem of selecting the most suitable basic weapon for the Vietnamese soldier is complicated by his small stature and light weight. The average soldier stands five feet tall and weighs ninety pounds. Principle US weapons presently issued to Vietnamese troops include the M1918A2; the Thompson Sub-Machine Gun, Caliber .45; and the US Carbine, Caliber .30, M1.

b. (U) Because of its availability and the results of extensive studies and previous testing by military agencies, the Colt Armalite AR-15 Rifle was selected in July 1961 as the most suitable weapon for initial tests. This weapon was developed by the Armalite Division of Fairchild Aircraft Corporation to meet the military characteristics for a lightweight rifle utilizing the high velocity small caliber principle. It was first tested by the US Army Infantry Board in 1958 (Ref 1.c.). Since then, the weapon

and its ammunition have undergone extensive engineering and service tests by: Aberdeen Proving Ground; the Combat Development Experimentation Center, Fort Ord, California; and the US Air Force at Lackland Air Force Base, Texas, (Refs 1.d., 1.e., 1.f.). The rifle, with several modifications resulting from these tests, is presently being manufactured by Colt's Patent Firearms Manufacturing Company, Hartford, Connecticut. (Prior to completion of this report, the U. S. Air Force adopted the AR-15 as its basic shoulder weapon, replacing the M2 Carbine, the Browning Automatic Rifle and the M3 Sub-Machine Gun).

c. (C) Based upon favorable observations of the AR-15 by both US Advisors and RVNAF Commanders following limited firing demonstrations conducted in Vietnam during August 1961, weapons were requested in numbers sufficient to conduct a full scale combat evaluation of the AR-15 by selected units of the RVNAF. In December 1961, the Secretary of Defense approved the procurement of 1000 AR-15 Rifles, necessary ammunition, spare parts and accessories for evaluation.

d. (C) OSD/ARPA negotiated a contract with the firm of Cooper-MacDonald, Inc., Baltimore, Maryland, for procurement and air shipment of all materiel. The first shipment was received on 27 January 1962 and subsequent increments arrived approximately every three weeks until the contract was fulfilled on 15 May 1962. Operational evaluation and testing began on 1 February and terminated on 15 July 1962.

5. (C) SUMMARY OF TESTS:

a. (C) General.

(1) (C) To accomplish the stated purpose of this test, it was divided into two parts. One part was a combat evaluation of the AR-15 in which the weapons were issued to specially selected ARVN Units for use in their operations against the Viet Cong. Along with the rifles and ammunition, Vietnamese Unit Commanders and US Military Advisors were given weapon preference and operational questionaires and requested to complete and return them after training and combat use of the AR-15. Samples of these questionnaires appear as Appendices 1, 2, and 3 of Annex "A".

(2) (C) The other part of the test consisted of a comparison between the AR-15 Rifle and the M2 Carbine. Areas in which the two weapons were compared included: physical characteristics; ease of disassembly and assembly; marksmanship ability at known distances, semi-automatic and automatic fire; markmanship ability at unknown distances, semi-

automatic and automatic fire; ruggedness and durability; adequacy of safety features; effects of open storage in a tropical environment; ability to penetrate dense brush and heavy foliage; and, the individual Vietnamese soldier's preference between the two weapons.

b. (C) Results, Combat Evaluation.

(1) (C) For detailed report see Annex "A".

(2) (C) Summary. The Vietnamese Unit Commanders and US Advisors who participated in the evaluation consider the AR-15 Rifle to be a more desirable weapon for use in Vietnam than the M1 Rifle, BAR, Thompson Sub-Machine Gun, and M1 Carbine for the following reasons:

(a) (C) It is easier to train the Vietnamese troops to use the AR-15 than the M1 Rifle, BAR, M1 Carbine, or the Sub-Machine Gun.

(b) (C) The AR-15's physical characteristics are well suited to the small stature of the Vietnamese soldier (see photographs 1 and 2, Annex "D").

(c) (C) It is easier to maintain the AR-15 both in the field and in garrison than the M1 Rifle, BAR, Sub-Machine Gun, or the M1 Carbine.

(d) (C) The ruggedness and durability of the AR-15 are comparable to that of the M1 Rifle and superior to that of the BAR, Sub-Machine Gun, and M1 Carbine.

(e) (C) The AR-15 imposes less logistical burden than any of the four principal weapons presently being used by Vietnamese Forces.

(f) (C) The AR-15 is tactically more versatile than any present weapon being used by Vietnamese Forces.

(g) (C) In semi-automatic fire, the accuracy of the AR-15 is considered comparable to that of the M1 Rifle, and superior to that of the M1 Carbine.

(h) (C) In automatic fire, the accuracy of the AR-15 is considered comparable to the Browning Automatic Rifle and superior to the Sub-Machine Gun.

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c. (C) Results, Comparison Test of the AR-15 Rifle and the M2 Carbine.

(1) (C) For detailed report see Annex "B".

(2) (C) Summary:

(a) (C) Test #1, Comparison of physical characteristics

(i) (C) The AR-15 is comparable to the M2 Carbine in size and weight.

(ii) (C) The addition of an integral grenade launcher, telescope mount, and an accessory bipod the AR-15 Rifle capabilities that the M2 Carbine does not possess at present and attainment of which would require modification of the weapon (see photograph 3, Annex "D").

(iii) (C) Both the AR-15 and the M2 Carbine are compatible with the light weight and diminutive stature of the Vietnamese soldier (see photographs 4 and 5, Annex "D").

(b) (C) Test #2, Comparative ease of disassembly and assembly.

(i) (C) The AR-15 is simpler than the M2 Carbine and requires less time to disassemble and re-assemble for normal field cleaning (see photograph 6, Annex "D").

(ii) (C) The average Vietnamese soldier can be trained in the disassembly and assembly of the AR-15 in less time than for the M2 Carbine.

(c) (C) Test #3, Marksmanship ability, known distance.

(i) (C) The ARVN soldier's ability to deliver accurate semi-automatic fire at known distances up to 200 meters with the AR-15 and the M2 Carbine is comparable. (It is noted that a higher percentage of test participants fired qualifying scores with both the AR-15 and the M2 Carbine than with the M1 Rifle.)

(ii) (C) The ARVN soldier can deliver far more accurate automatic fire at known distances up to 200 meters with the AR-15 than he can with the M2 Carbine.

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(d) (C) Test #4, Marksmanship ability, unknown distance.

(i) (C) The ARVN soldier's ability to deliver accurate semi-automatic fire on targets of unknown range using the AR-15 and the M2 Carbine is comparable.

(ii) (C) The ARVN soldier can deliver more accurate automatic fire on targets of unknown range with the AR-15 than he can with the M2 Carbine.

(e) (C) Test #5, Comparative ruggedness and durability

(i) (C) The AR-15 is more durable than the M2 Carbine under conditions that require prolonged firing.

(ii) (C) The AR-15 will stand up to rough handling normally encountered in combat situations better than the M2 Carbine.

(f) (C) Test #6, Comparison of the adequacy of safety features.

(i) (C) The safety features on the AR-15 and the M2 Carbine are comparable with regard to their adequacy and the ARVN soldier's ability to understand how they function.

(ii) (C) The location of a single selector switch, which combines the functions of safety and type of fire selector, on the left side of the AR-15's receiver where it is easily accessible to the thumb, enables the ARVN soldier to get the first round off faster with the AR-15 than he can with the M2 Carbine. He must manipulate the safety selector on the M2 Carbine with his trigger finger, then return it to the trigger to fire. With the AR-15, he can keep his finger on the trigger while manipulating the safety selector with his thumb.

(g) (C) Test #7, Effects of open storage in a tropical environment.

(i) (C) The functioning capability of the AR-15 is less affected by prolonged exposure to tropical weather than that of the M2 Carbine.

(h) (C) Test #8, Brush penetration

(i) (C) The trajectory of the AR-15 bullet is not significantly affected when fired through dense underbrush at ranges up to 50 meters.

(ii) (C) The AR-15 round will penetrate jungle undergrowth equally as well as the M2 Carbine round at ranges up to 50 meters.

(i) (C) Test #9, Troop opinion poll

(i) (C) The great majority of the ARVN soldiers who participated in the comparison test prefer the AR-15 to the M2 Carbine.

6. (C) DISCUSSION:

a. (C) The extremely mobile type of offensive warfare being stressed by US Advisors in Vietnam and the small stature and light weight of the Vietnamese soldier place a high premium on small, lightweight weapons. In addition, the violent short clashes at close ranges which are characteristic of guerrilla warfare in Vietnam make it highly desirable to have a dependable weapon capable of producing a high rate of accurate and lethal full automatic fire.

b. (C) From the viewpoint of standardization and simplicity of training and the resultant long range reduction of the logistics burden, characteristics of existing weapons were studied to determine if a single weapon could be found that would meet the requirements for a basic shoulder weapon for Vietnamese troops. It is believed that such a weapon should encompass the following desirable characteristics of individual weapons:

(1) The effective range of the M1 Rifle.

(2) The light weight and small size of the M1 Carbine.

(3) The full automatic capability of the BAR.

(4) The simplicity of the SMG.

Other highly desirable, if not mandatory, features would include a bayonet, grenade launching and sniper capability.

c. (C) The AR-15 appeared to more nearly satisfy the above prescirbed characteristics than any other US weapon. The import of the AR-15 weapon/ammunition weight for units that conduct extended operations without normal resupply capabilities can be seen in comparing the 24 lb. weight of an M1 with a battle load of 220 rounds of ammunition with the 12 lb. weight of the AR-15 with 220 rounds. This weight difference equals approximately 430 rounds of AR-15 ammunition.

d. (C) The Comparison Test (Annex "B") shows the AR-15 to be distinctly superior to the M2 Carbine. Although the M2 Carbine is sufficiently light for use by the Vietnamese soldier, it does not possess the essential characteristics of a basic weapon for offensive warfare. It lacks the effective range of the M1 Rifle and has a high malfunction rate (Ref 1. e. and 1. h.). However, it is apparently available and was considered by MAAG as the prime competitor against the AR-15.

e. (C) The Combat Evaluation (Annex "A") shows that all US Advisors and Vietnamese Commanders who participated in the evaluation prefer the AR-15 to any other weapon with which the RVNAF are now armed. The lethality of the AR-15 and its reliability record were particularly impressive. All confirmed casualties inflicted by the AR-15, including extremity hits, were fatal (see photographs 7 and 8, Annex "D"). The high degree of reliability and trouble-free performance of the weapon reflected in previous test reports (Ref 1. c., 1. d., and 1. f.) was also noteworthy during the testing and evalutaion here. No parts breakage was encountered while firing approximately 80,000 rounds during the Comparison Test. Only two parts have been issued to date to replace breakage for the entire 1,000 weapons. Stoppages on the AR-15 are easily cleared by the individual soldier through the application of "immediate action".

f. (C) A thorough review of the numerous stateside AR-15 test reports referenced in paragraph 1 reveals nothing which would make the foregoing views unsound. The reported poor performance of the AR-15 under cold weather conditions is of no concern in Vietnam. The widely held view that the AR-15 operates poorly under rainy conditions was disproved in the weapon's second test by Aberdeen Proving Ground (Ref 1. f.). Those results were confirmed here during field operations. No deficiencies in the weapon requiring correction prior to adoption were found during the test in Vietnam, although two minor changes are recommended for product improvement. These recommendations appear in Annex "C".

g. (C) The combat evaluation part of this test is somewhat subjective since it is based on the individual judgments of many users. It is

believed, however, that the professional judgments of the senior US Advisors and Vietnamese Commanders of the units testing the weapon, all of whom are mature, experienced soldiers, does provide for a sound combat appraisal.

h. (C) From an operational viewpoint, it is believed that the tests conducted in Vietnam show the superiority of the AR-15 over the M2 Carbine and over other weapons now issued to RVNAF. It is believed that the decision as to what units might be issued the AR-15 or which weapons the AR-15 might replace is dependent on cost and logistical factors which are beyond the purview of this unit.

7. (C) CONCLUSIONS: It is concluded that:

a. (C) The AR-15 is more compatible with the light weight and small stature of the Vietnamese soldier than the M1 Rifle, the Browning Automatic Rifle, and the Thompson Sub-Machine Gun.

b. (C) The AR-15 is superior to the M2 Carbine.

c. (C) The M2 Carbine lacks the necessary dependability and versatility for consideration as the basic shoulder weapon for Vietnamese troops.

d. (C) The AR-15 is capable of replacing any or all of the shoulder weapons currently being used by the Armed Forces of the Republic of South Vietnam.

e. (C) The AR-15 is considered by both Vietnamese Commanders and U.S. Military Advisors who participated in the tests as the best "all around" shoulder weapon in Vietnam.

8. (C) RECOMMENDATIONS: It is recommended that:

a. (C) The AR-15 be considered for adoption as the basic weapon for all RVNAF with a view toward improving effectiveness and simplifying training and weapons/logistics systems.

b. (C) Priority for adoption of the AR-15 be given to those units which frequently operate in jungle environment for extended periods because

of the significant operational and logistical advantages accruing to their having the lightest and most effective weapon/ammunition combination available.

c. (D) The M1 and/or M2 Carbine continue to be issued only to those individuals who, because of their duty or position, can function effectively with a weapon best suited for a defensive role.

ANNEXES:

A. Combat Evaluation w/3 Appendices
B. Comparison Test
C. Suggested Corrective Actions
D. Photographs 1 through 8

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ANNEX "A"

DETAILS OF THE
COMBAT EVALUATION OF THE AR-15

I. (C) GENERAL.

Selected Vietnamese Units which had previously been engaged in considerable combat were issued AR-15 Rifles and ammunition for use against the Viet Cong. In addition, each Unit Commander and US Military Advisor with these units was given questionnaires in which he was requested to evaluate the AR-15 in comparison with the other weapons presently used by the RVNAF. (See Appendices 1, 2, and 3 for samples of questionnaires.)

II. (C) DISTRIBUTION OF WEAPONS AND AMMUNITION.

Unit	AR-15 Rifles	Ammunition
7th Infantry Division	100	50,000 rds
Rangers	100	50,000 rds
Airborne Brigade	390	195,000 rds
VN Marines	100	50,000 rds
VN Special Forces	100	50,000 rds
Special Battalions	125	120,000 rds
5th Infantry Division	40	25,000 rds
Father Hoa	10	10,000 rds
Total	965	550,000 rds

III. (C) DETAILS OF TEST.

A. (C) Purpose: To evaluate the performance of the AR-15 Rifle under actual combat conditions and to compare this performance to that of the weapons presently being used by the RVNAF.

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B. (C) Method: Each Unit Commander and US Military Advisor of those units receiving AR-15 Rifles evaluated its performance in combat and compared it to the performance of those weapons presently being used by the RVNAF. Areas in which the AR-15 was evaluated and compared included: training; physical characteristics; ease of maintenance; ruggedness and durability; logistical considerations; accuracy; and tactical versatility. In the questionnaires given them, Commanders and Advisors were instructed to award 5 points to the most desirable weapon, 4 points to the second, 3 points to the third, 2 points to the fourth, and 1 point to the least desirable weapon in each category delineated above.

C. (C) Results: The results from the questionnaires are set forth in the table below and reflect the evaluation of the AR-15 by Commanders and Advisors of most of the different types of tactical units in Vietnam (as listed in paragraph II above). The figures indicate the total number of points awarded to each weapon by Vietnamese Unit Commanders and U.S. Military Advisors in their joint responses to the questionnaires.

1. Training.	AR-15	M1 Rifle	BAR	SMG	M1 Carbine	Max. Poss.
a. Simplest to train the troops to use	59	44	15	37	55	70
b. Simplest to train in functioning	61	50	15	37	47	70
c. Simplest to train in disassembly and assembly	63	48	14	37	48	70
Total	183	142	44	111	150	210

2. Physical Characteristics	AR-15	M1 Rifle	BAR	SMG	M1 Carbine	Max. Poss.
a. Easiest for soldier to aim and fire	60	29	17	42	62	70
b. Easiest to carry over open terrain	59	29	14	43	64	70
c. Easiest to carry through jungle terrain	59	29	14	45	63	70
d. Easiest to hold on a target while firing several rounds	69	40	24	24	53	70
Total	247	127	69	154	242	280

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3. Maintenance	AR-15	M1 Rifle	BAR	SMG	M1 Carbine	Max. Poss.
a. Simplest to disassemble and assemble	65	43	14	39	49	70
b. Easiest to maintain in the field	63	51	16	34	46	70
Total	128	94	30	73	95	140

4. Ruggedness & Durability	AR-15	M1 Rifle	BAR	SMG	M1 Carbine	Max. Poss.
a. Most rugged weapon	52	59	33	35	31	70
b. Had fewest stoppages or malfunctions during firing	59	59	20	32	39	70
c. Most reliable under all conditions	57	60	28	30	35	70
Total	168	178	81	97	105	210

5. Logistics	AR-15	M1 Rifle	BAR	SMG	M1 Carbine	Max. Poss.
a. Imposes least logistical burden	66	47	17	30	50	70
Total	66	47	17	30	50	70

6. Tactical	AR-15	M1 Rifle	BAR	SMG	M1 Carbine	Max. Poss.
a. Easiest to employ	64	40	18	39	49	70
b. Preferred in ambush/ counter-ambush situations	69	28	36	48	29	70
c. Preferred against massed troops	65	32	61	33	19	70
d. Tactically most versatile	69	43	38	29	31	70
Total	267	143	153	149	128	280

ANNEX "A"

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7. General	AR-15	M1 Rifle	BAR	SMG	M1 Carbine	Max. Poss.
a. Preferred by troops	67	28	18	46	51	70
b. Preferred by commanders and advisors	64	33	21	39	43	70
c. Most suited to VN soldier under present tactical conditions	67	30	21	42	50	70
d. Most effective at most common range for engaging VC (0-200 meters)	63	46	49	22	30	70
Total	261	137	109	149	174	280

Recapitulation: In all aspects covered, the total ratings for all weapons were as follows:

AR-15	M1Rifle	BAR	SMG	M1Carbine	Maximum Possible
1320	868	503	763	894	1470

8. Accuracy. Advisors and Unit Commanders were requested to evaluate the accuracy of the AR-15 and compare it with other present weapons in both automatic fire and semi-automatic fire. Their evaluation is reflected in the following table:

	AR-15	M1 Rifle	BAR	SMG	M1 Carbine	Max. Poss.
a. Semi-automatic fire	61	62			45	70
b. Automatic fire	65		57	42		70

9. (C) Remarks. Unit Commanders' and Advisors' remarks concerning the value of the AR-15 to Vietnamese Units and its worth as a combat weapon in the war in South Vietnam as opposed to existing weapons were also requested. Generally, the comments were extremely favorable to the AR-15. All of the comments received are presented below in their entirety and in the form in which they were received.

(1) (C) "On 160900 June 62, one platoon from the 340 Ranger Company was on an operation vic. YT260750 and contacted 3 armed VC in heavily forested jungle. Two VC had carbines, grenades, mines, and one had a

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SMG. At a distance of approximately 15 meters, one Ranger fired an AR-15 full automatic hitting one VC with 3 rounds with the first burst. One round in the head-took it completely off. Another in the right arm, took it completely off, too. One round hit him in the right side, causing a hole about five inches in diameter. It cannot be determined which round killed the VC but it can be assumed that any one of the three would have caused death. The other 2 VC ran, leaving the dead VC with 1 carbine, 1 grenade and 2 mines." (Rangers)

(2.) (C) "On 9 June a Ranger Platoon from the 40th Inf Regt was given the mission of ambushing an estimated VC Company. The details are as follows:

a. Number of VC killed: 5
b. Number of AR-15's employed: 5
c. Range of engagement: 30-100 meters
d. Type wounds:
   1. Back wound, which caused the thoracic cavity to explode.
   2. Stomach wound, which caused the abdominal cavity to explode.
   3. Buttock wound, which destroyed all tissue of both buttocks.
   4. Chest wound from right to left, destroyed the thoracic cavity.
   5. Heel wound, the projectile entered the bottom of the right foot causing the leg to split from the foot to the hip.

These deaths were inflicted by the AR-15 and all were instantaneous except the buttock wound. He lived approximately five minutes.

The following is a list of minor deficiencies noted during this period:

a. The stock and heat deflector will reflect light. This light is visible for approximately 150 feet at night.
b. A brass brush is needed to remove carbon from the bolt carrier." (Rangers)

(3.) (C) "72 AR-15 Rifles were carried into this action (airborne assault). The drop zone was barely acceptable and many troops landed in high trees. Several LMG's and BAR's were not operational after the drop. Only one AR-15 was reported slightly damaged (damaged pistol grip) and all were operational. Throughout the entire operation, which lasted 6 days and covered over 40 kilometers of difficult terrain including dense jungle and frequent water crossings, the weapons (AR-15) held up exceptionally well." (Airborne Brigade)

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(4.) (C) "The AR-15 proved to be an effective weapon on this operation for the following reasons:

a. The weapon held up very well on the paradrop which took place on a small drop zone surrounded by dense forests. Landings of the troopers were much rougher than normal. Many troops landed in high trees. This subjected the individual weapons to a much more severe test than usual. Some of the LMG's and BAR's were not operational after the jump. All AR-15's were functional.

b. Field maintenance on this weapon (AR-15) proved to be much simpler than on the other weapons.

c. While no decisive engagement was made so that the striking power of this weapon (AR-15) could be observed, the troops had great confidence in it and it is my belief that it would have greatly increased our overall firepower had it been tested." (Airborne Brigade)

(5.) (C) "During the period from 16 April to 11 May 1962, the 8th Battalion, Airborne Brigade, participated in two (2) operations of five (5) and four (4) days duration.

The AR-15 was carried during both operations. I was not in a position to observe the engagement of Viet Cong with the AR-15 during either operation although it was fired on different occasions.

The following remarks therefore, are confined to other observations and personal opinions on the AR-15:

a. Maintenance requirements for the AR-15 were negligible. I inspected numerous weapons throughout the entire period stated above and always found the weapons in excellent firing condition.

b. A great simplification in the small arms weapons could be effected by the adoption of the AR-15 to replace the BAR, M1, and Carbine. The effectiveness of the weapon (AR-15), however, I cannot attest to at this time.

c. The troopers have a great amount of respect for the AR-15. If the weapon were adopted as TO&E for Airborne Units, there would be a tremendous psychological uplift in the individual soldier's belief in his ability to shoot and kill." (Airborne Brigade)

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(6.) (C) "One company (96 off & EM) completely equipped with the AR-15. Six operations took place prior to any real use of the weapon.

Five VC were hit, all five with body wounds, and all five killed. Four were probably killing wounds with any weapon listed, but the fifth was essentially a flesh wound. The AR-15 made it a fatal wound.

The troops have a great deal of respect for the weapon and prefer it to all others. They take excellent care of it.

One left upper handguard was cracked and broke during routing a stubborn captive from a wooded area. The soldier concerned placed the handguard against a VC head with considerable force." (7th Infantry Division)

(7.) (C) "On 23-24 May 1962, one company completely equipped with AR-15's (87) plus Bn Hq elements was involved in one light and one heavy action. No wounded were captured and all casualties were inflicted with the AR-15. 27 Viet Cong were killed (24 counted by the advisor) and 25 captured. Grenades were used for the first time and were very effectively employed at ranges of 100-500 meters. They served as the real artillery support as we could not get the artillery to fire any closer than 400 meters. About 36 grenades were utilized in the havy action, all propelled from the AR-15. The troops are very enthusiastic about the weapon and treat it with greater care than usual." (7th Infantry Division)

(8.) (C) "To date, this weapon has been used only for training. The simplicity of construction has reduced training time necessary for maintenance by approximately fifty per-cent. It is believed that this is an ideal weapon for this type weather and terrain." (Special Battalions)

(9.) (C) "On 13 April, 62, a Special Forces team made a raid on a small village. In the raid, seven VC were killed. Two were killed by AR-15 fire. Range was 50 meters. One man was hit in the head; it looked like it exploded. A second man was hit in the chest; his back was one big hole." (VN Special Forces)

(10.) (C) "This weapon is ideal for this country primarily for these reasons:

a. Durability & ease of maintenance.
b. Good Accuracy.
c. Rapid rate of fire.
d. Light weight (size & shape make it easy for Vietnamese to handle).
e. Excellent killing or stopping power." (Airborne Brigade)

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D. (C) Analysis: Based on the numerical ratings and the comments of US Advisors and VN Unit Commanders, the AR-15 is the most desirable weapon for use in Vietnam for the following reasons:

1. Ease of training.

2. Suitable physical characteristics.

3. It is easy to maintain.

4. It is more rugged and durable than present weapons.

5. It imposes the least logistical burden.

6. It is the best weapon for all-around tactical employment.

7. Its semi-automatic firing accuracy is comparable to that of the M1 Rifle, while its automatic firing accuracy is considered superior to that of the Browning Automatic Rifle.

8. Vietnamese troops, Commanders and US Advisors prefer it to any other weapon presently being used in Vietnam.

APPENDICES:

1. Weapons Questionnaire
2. For the RVNAF Unit Commander
3. Questionnaire for the Senior MAAG Advisor

ANNEX "A"

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WEAPONS QUESTIONNAIRE

Based upon your experience and observation as the Commander or Advisor of a unit of the RVNAF, rate the weapons on the right side of this questionnaire in order of preference with respect to the characteristics and questions listed. Your answers should reflect your opinion as to the value of the weapons to the Vietnamese, not the US Forces.

Rating Key: 5 - first choice
4 - second choice
3 - third choice
2 - fourth choice
1 - last choice.

A. TRAINING	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
1. Which weapon is easier to train the troops to use?					
2. Which weapon is easier to train the troops in functioning?					
3. Which weapon is easier to train the troops to disassemble and assemble?					

B. PHYSICAL CHARACTERISTICS	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
1. Which weapon, because of its size and shape, is easiest for the soldier to aim and fire?					
2. Which weapon, because of size, shape and weight, is easier for the soldier to carry over open terrain?					
3. Which weapon, because of size, shape and weight, is easier for the soldier to carry in the jungle?					
4. Which weapon is easiest to hold on a target while firing several rounds?					

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APPENDIX 1, ANNEX "A"

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C. MAINTENANCE	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
1. Which weapon is simplest to disassemble and assemble?	____	____	____	____	____
2. Which weapon is easiest for the troops to maintain in the field?	____	____	____	____	____

D. RUGGEDNESS & DURABILITY	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
1. Which weapon is most rugged?	____	____	____	____	____
2. Which weapon had the fewest stoppages and malfunctions?	____	____	____	____	____
3. Which weapon is the most reliable under all conditions?	____	____	____	____	____

E. LOGISTICS	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
1. Which weapon imposes the smallest logistical burden? (Consider weight, spare parts, ease of repair, etc.)	____	____	____	____	____

F. TACTICAL	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
1. Which weapon is easiest to employ?	____	____	____	____	____
Why?					
2. Which weapon would you prefer in ambush/counter-ambush situations?	____	____	____	____	____
Why?					
3. Which weapon would you prefer against mass attacks?	____	____	____	____	____
Why?					

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	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
4. Which weapon do you consider most versatile? (Consider all capabilities)	____	____	____	____	____

G. ACCURACY (Rate 5, 4 & 3)	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
1. Which weapon appears most accurate when fired semi-automatically?	____	____	____	____	____
2. Which weapon appears most accurate when fired automatically?	____	____	____	____	____

H. GENERAL	AR-15	M1 Rifle	BAR	SMG	M1 Carbine
1. Which weapons do the troops prefer?	____	____	____	____	____
Why?					
2. Which weapon would you prefer for your personal use?	____	____	____	____	____
Why?					
3. Which weapon do you think is most suited to the Vietnamese soldier under present tactical conditions?	____	____	____	____	____
Why?					
4. At what range do you think most Viet Cong are engaged?	____	____	____	____	____
5. Which weapon do you think is most effective at that range?	____	____	____	____	____
6. If the TO&E of your unit only allowed a single weapon, which one would you choose?	____	____	____	____	____
Why?					

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APPENDIX 1, ANNEX "A" CONFIDENTIAL

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I. REMARKS: In the space below, please make any pertinent remarks you may have concerning the AR-15 Rifle, its effectiveness in South Vietnam, its assets or its shortcomings (Continue on back of page if necessary).

Unit_____

Date_____

Signature_____

THIS QUESTIONNAIRE IS CLASSIFIED KIN, CONFIDENTIAL WHEN FILLED IN

APPENDIX 1, ANNEX "A"

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FOR THE RVNAF UNIT COMMANDER

QUESTION NO. 1:

How many weapons of each of the following types were carried into the combat engagement, how many rounds of ammunition per weapon were carried, and how many rounds fired?

	No. Weapons	Ammo rds/weap.	Ammo rds. fired
BAR			
M1			
SMG			
Carbine			
AR-15			

QUESTION NO. 2:

How many VC were killed? _____
wounded? _____

How many of the VC were KIA by the AR-15? _____

How many of the VC were wounded by the AR-15? _____

QUESTION NO. 3:

What percentage of the friendly fire was full automatic? _____

What percentage of the AR-15 fire was full automatic? _____

What percentage of the AR-15's had the safety device installed that allowed either full or semi-automatic fire? _____

QUESTION NO. 4:

What was the maximum range at which shots were fired at the VC?____

What was the average range? _____

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APPENDIX 2, ANNEX "A"

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QUESTION NO. 5:

Were aimed shots fired through light brush? _____

If so, about what percent of the total fire from all weapons (BAR, SMG, M1, Cargine, AR-15) were aimed shots through light brush?

Less than 5% _____ Less than 20% _____

Less than 50% _____ More than 50% _____

In your opinion were shots from the AR-15 missed because of brush deflection? _____

If your answer to this question is yes, is it your opinion that the full automatic feature of the AR-15 and the extra rounds that can be carried for a given weight allowance do or do not compensate for this bruch deflection? Yes_____ No_____ No Opinion_____

QUESTION NO. 6:

Were any rifle barrels bent in air drops or other rough handling and hard usage? _____

Were any barrels damaged by being fired with water in the bore?____

Were there any malfunctions of any type? _____

If yes, please elaborate in the remarks section of this questionnaire.

QUESTION NO. 7:

As a unit commander of the RVNAF, how would you rate the AR-15 Rifle in the guerrilla warfare action you expect to fight as compared with the other types of weapons listed?

In each space use: A - For the AR-15 is better than
B - For there is no difference
C - For the AR-15 is worse than
D - For no opinion

	M1	BAR	SMG	Carbine
Speed of employment				
Accuracy				

THIS QUESTIONNAIRE IS CLASSIFIED KIN CONFIDENTIAL WHEN FILLED IN APPENDIX 2, ANNEX "A"

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	M1	BAR	SMG	Carbine
Striking power				
Fire power				
Reliability				
Field maintenance				
Weight				
Size				
Overall				
Overall for ambushes only				

QUESTION NO. 8:

If the VC tactics grow into large scale attacks and the "human sea" type tactic is used, how would you rate the AR-15 overall against these other weapons? (Same scale as above: A, B, C, D)

M1	BAR	SMG	Carbine

QUESTION NO. 9:

Would the soldier who carried the AR-15 into this engagement choose it again over the weapon he formerly carried?

	% would choose AR-15	% would choose other
Formerly carried the BAR		
Formerly carried the M1		
Formerly carried the SMG		
Formerly carried the Carbine		

QUESTION NO. 10:

As an RVNAF unit commander, if you had your choice of weapons consisting of all four of the following: BAR, M1, SMG, Carbine or the AR-15, which would be your choice?

OPTION A: BAR, M1, SMG, Carbine _____.

OPTION B: AR-15 _____.

3

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APPENDIX 2, ANNEX "A"

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If your answer is option A, would you choose to completely replace any of the four weapons with the AR-15?

Would completely replace: BAR_____.

M1_____.

SMG_____.

Carbine_____.

QUESTION NO. 11:

Please elaborate in the space below or using extra sheets on any point not adequately covered above.

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QUESTIONNAIRE FOR THE SENIOR MAAG ADVISOR

1. In the engagement with the VC covered by this questionnaire, how many of each of the following weapons were carried by your unit?

BAR_____ SMG_____ M1_____ Carbine_____ AR-15_____

2. If the AR-15 had not been used, how many of each would have been carried?

BAR_____ SMG_____ M1_____ Carbine_____

3. As a MAAG Advisor to the RVNAF you obtain insight into the combat situation in SVN not available to the CDTC or to other US Government officials. These questionnaires can only gain a little part of the whole individual weapons problem. Some of the questions asked of the RVNAF unit commander are, therefore, repeated here because they are considered of prime importance.

QUESTION: How do you as a MAAG Advisor rate the AR-15 Rifle in the SVN guerrilla war as compared to the following weapons?

	BAR	M1	SMG	Carbine
A. The AR-15 is better.				
B. No difference.				
C. The AR-15 is worse.				
D. No opinion.				
How would you rate the AR-15 against these weapons for ambushes only?				
How would you rate the AR-15 in a "human sea" attack against these weapons?				

As a MAAG Advisor to RVNAF, if you were to recommend the TO&E of the above weapons or the AR-15 only which would you recommend?_____.

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APPENDIX 3, ANNEX "A"

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4. If you would not recommend completely replacing all four of the above weapons with the AR-15, would you recommend completely replacing any one of the four?

Would recommend completely replacing BAR_____.
Would recommend completely replacing M1_____.
Would recommend completely replacing SMG_____.
Would not completely replace any of these weapons_____.

5. Remarks: In the space below or on additional sheets please elaborate on any points not adequately covered above.

_____
(Signature)

THIS QUESTIONNAIRE IS CLASSIFIED KIN CONFIDENTIAL WHEN FILLED IN

APPENDIX 3, ANNEX "A"

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ANNEX "B"

DETAILS OF COMPARISON TEST
BETWEEN THE AR-15 AND M2 CARBINE

I. (C) GENERAL.

Personnel from a Vietnamese company that had just completed advanced individual training were used as test subjects for most of this comparison. The unit of 180 men was divided into two groups of 90 men each. Group A received one M2 Carbine per man, while Group B received an AR-15 for each man. Each group was then given a course of instruction on their respective weapon. The instruction for each was identical in time and scope of material covered. Following this, both groups underwent an identical test program which consisted of: assembly and disassembly; known distance firing, both semi-automatic and automatic fire; unknown distance firing, semi-automatic and automatic fire; bayonet course; and, infiltration course. This phase lasted for one week (44 hours). At the end of the first week, the two groups traded weapons and the course of instruction and the tests were repeated.

II.(C) SUMMARY OF TESTS.

To arrive at a valid conclusion concerning the relative suitability of the AR-15 as opposed to the M2 Carbine for possible use by selected units of the Armed Forces of the Republic of Vietnam, a total of nine tests were conducted. They were:

1. Comparison of Physical Characteristics.
2. Comparative Ease of Disassembly and Assembly.
3. Marksmanship Ability - Known Distance (semi-automatic and automatic fire).
4. Marksmanship Ability - Unknown Distance (semi-automatic and automatic fire).
5. Comparative Ruggedness and Durability.
6. Adequacy of Safety Features.
7. Effects of Open Storage in a Tropical Environment.
8. Comparative Ability to Penetrate Dense Foliage.
9. Troop Preference Poll.

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III. (C) **DETAILS OF TESTS.**

Test No. 1. Comparison of Physical Characteristics.

Purpose: To compare the physical characteristics of the AR-15 Rifle and the M2 Carbine.

Method: Both weapons were weighted and measured and the resulting data recorded.

Results:

a. Weights (lbs.):	AR-15	M2 Carbine
Weapon (less sling, magazine and accessories)	6.24	5.98
Magazine (empty)	0.18*	0.25*
Magazine (loaded - 20 rds)	0.68	-
Magazine (loaded - 30 rds)	-	1.02
Bayonet	0.62	0.72
Bipod	0.50	(No Bipod)
Sling	0.19	0.07
Totals: w/20 rd mag loaded	8.23	
w/30 rd mag loaded		7.79

*Figure not included in totals.

Relative Battle Load (lbs.) - including accessories of sling, bayonet, bipod.

Weapon w/12 magazines (240 rds)	15.71	
Weapon w/8 magazines (240 rds)		14.93

b. Dimensions (inches):	AR-15	M2 Carbine
Length of barrel	20.00	18.00
Overall length	37.50	35.58
Overall length w/bayonet	42.98	42.26

Analysis: The Ar-15 and the M2 Carbine are comparable in size and weight and both are compatible with the light weight and small stature of the VN soldier. An integral grenade launcher and telescope mount and an accessory bipod are included in the weapon weight of the AR-15. These are not standard items for the M2 Carbine.

Test No. 2. Comparative Ease of Disassembly and Assembly.

Purpose: To compare the ease of disassembly and assembly of the AR-15 Rifle and the M2 Carbine and the difficulities of training encountered therein.

Method:

a. Each group of test subjects received a two hour period of instruction in the disassembly and assembly of their respective weapons. After completing this instruction, test personnel selected random samples of 10 men and had them disassemble and reassemble their weapons. This procedure was repeated with each group until 100 men had been tested with each weapon. Times were recorded by Non-Commissioned Officers and the weapons were inspected for proper assembly by Test Committee Cadre.

b. For the purpose of this test, both weapons were disassembled only as far as was necessary for field cleaning, i.e., "field stripped".

Results:

	AR-15	M2 Carbine
a. Average time required for disassembly & assembly.	1 min. 17 sec.	3 min. 17 sec.
b. Could not reassemble (percent)	0%	19%
c. Reassembled improperly (percent)	4%	10%
d. Number of parts handled by soldier in field stripping	7	11

Analysis:

a. The AR-15 is simpler and requires less time to disassemble and assemble for normal field cleaning.

ANNEX "B"

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b. The average Vietnamese soldier can be trained in the disassembly and assembly for field cleaning of the AR-15 in a shorter time than for the M2 Carbine. This is further emphasized by the fact that all test subjects had previously received 12 hours of instruction on the M1 Carbine while undergoing basic combat training.

Test No. 3. Marksmanship Ability, Known Distance.

Purpose: To compare the ability of ARVN soldiers to deliver accurate semi-automatic and automatic fire on targets at known ranges using the AR-15 and the M2 Carbine.

Method:

a. Each group of test subjects received 10 hours of preliminary marksmanship training on their respective weapon. Upon completion of formal instruction, zeroing of weapons and practice firing at 26, 100 and 200 meters, each group fired a qualification course for test purposes. Each test participant completed this qualification course with both the AR-15 and M2 Carbine.

b. In semi-automatic fire, the course fired for the test was the standard ARVN M1 rifle qualification course. The scores obtained by the test subject with both weapons in this firing were compared with each other and with previous scores fired by the test subjects in qualifying with the M1 Rifle while undergoing Basic and Advanced Individual Training.

c. In automatic fire, the test subjects engaged the standard ARVN silhouette target at ranges of 75, 100 and 200 meters. Each individual fired a total of 40 rounds from each range. Scores were computed on the basis of 5 points per target hit and an average of 50% hits was used as the basis for qualification.

d. Throughtout all firing, stoppages or malfunctions due to mechanical failures were noted and recorded.

e. Throughout all firing, observations concerning the adequacy of safety features and the ARVN soldier's ability to understand them were recorded.

Results:

	AR-15	M2 Carbine	M1 Rifle
Semi-automatic:			
Percent qualified	26%	27%	15%
Automatic:			
Percent qualified	71%	7%	

Analysis:

a. The ability of the ARVN soldier to deliver accurate semi-automatic fire on targets of known range with the AR-15 and the M2 Carbine is comparable. Test participants, as a group, fired a higher percentage of qualifying scores with both the AR-15 and M2 Carbine than they had previously fired with the M1 Rifle.

b. The ARVN soldier's ability to deliver accurate automatic fire on targets of known range is far greater with the AR-15 rifle than with the M2 Carbine.

Test No. 4. Marksmanship Ability, Unknown Distance.

Purpose: To compare the ARVN soldier's ability to deliver accurate semi-automatic and automatic fire on targets of unknown range using the AR-15 Rifle and the M2 Carbine.

Method:

a. The standard ARVN Transition firing course was used for this test.

b. Semi-automatic fire. Each man received 40 rounds to engage 20 targets at varying ranges from 50 to 250 meters. For a first round hit, he was awarded 10 points. For a second round hit, he was awarded 5 points. Qualification score for the course was 100 points.

c. Automatic Fire. Each man received 80 rounds to engage 20 targets in short bursts. Targets were located at varying ranges from 50 to 250 meters. Scores were computed on the basis of 5 points per target hit. Qualification score for the course was 100 points.

d. Throughout all firing, stoppages or malfunctions due to mechanical failures were noted and recorded.

e. Throughout all firing, observations concerning the adequacy of safety features and the ARVN soldier's ability to understand them were recorded.

Results:

	AR-15	M2 Carbine
Semi-automatic run:		
Percent qualified	23%	22%
Automatic run:		
Percent qualified	23%	15%

Analysis:

a. The ARVN soldier's ability to deliver accurate semi-automatic fire on targets of unknown range using the AR-15 and the M2 Carbine is comparable.

b. The ARVN soldier's ability to deliver accurate automatic fire on targets of unknown range is greater with the AR-15 than with the M2 Carbine.

Test No. 5. Comparative Ruggedness and Durability.

Purpose: To compare the ruggedness and durability of the AR-15 Rifle and the M2 Carbine.

Method:

a. Concurrent with all other testing, observations concerning the ruggedness and durability of each weapon were recorded. During all firing excercises, any stoppage or malfunction of either weapon caused by mechanical failure was noted and recorded.

b. Fifty AR-15 Rifles and fifty M2 Carbines were each run through the standard ARVN Bayonet Assault Course twice. At the completion of the course, the weapons were inspected and "dry fired". Any deficiencies noted were recorded.

c. Fifty AR-15 Rifles and fifty M2 Carbines were each run through the standard ARVN Infiltration Course twice. At the completion of the course, the weapons were inspected and "dry fired". Any deficiencies noted were recorded.

Results:

a. After the first week of firing, seven M2 Carbines were eliminated from the test. Six of these would not fire automatically because of defective disconnector springs; the other would not fire at all because of a broken disconnector pin. In contrast, all AR-15's functioned properly throughout the entire test period.

b. After negotiating the Bayonet Assault Course the second time, two M2 Carbines were eliminated from the test because of broken stocks. No AR-15 Rifles were damaged.

c. Both the M2 Carbine and the AR-15 were carried through the Infiltration Course twice without adverse effect.

Analysis:

a. The AR-15 is considered to be more rugged and durable than the M2 Carbine under conditions which require prolonged firing.

b. The AR-15 will stand up to rough handling normally encountered in combat situations better than the M2 Carbine.

Test No. 6. Comparison of the Adequacy of Safety Features.

Purpose: To compare the adequacy of the safety features of the AR-15 Rifle and the M2 Carbine with respect to their function and location and the ARVN soldier's ability to understand them.

Method:

a. Concurrent with all firing and tests in which ARVN soldiers handled the AR-15 and M2 Carbine, test committee cadre made observations concerning the adequacy of the safety features with respect to their function and location and the soldier's ability to understand them.

Results:

a. No misfires occurred throughout the firing that were attributable to improper functioning of the safety mechanism on either the AR-15 or the M2 Carbine.

b. The ARVN soldiers had no difficulty in understanding the function and operation of the safety mechanisms on either weapon.

Analysis:

a. The safety features on the AR-15 and the M2 Carbine are considered comparable with regard to function and the ARVN soldier's ability to understand them.

b. The location of a single selector switch which combines the functions of safety selector and rate of fire selector, on the left side of the receiver where it is easily accessible to the thumb, enables the ARVN soldier to get the first round off faster with the AR-15 than he can with the M2 Carbine. With the M2 Carbine, he must manipulate the safety selector with his trigger finger, then return it to the trigger to fire. With the AR-15 he can keep his finger on the trigger while manipulating the safety selector with his thumb.

Test No. 7. Effects of Open Storage in a Tropical Environment.

Purpose: To determine the effects of open storage in a tropical climate on the AR-15 Rifle and the M2 Carbine and compare the results of such storage on each weapon.

Method:

a. Two AR-15 Rifles and two M2 Carbines were stored in the open for a period of two weeks without any care or maintenance. At the end of the storage, the weapons were examined and pertinent observations recorded.

Results:

a. M2 Carbines:

1. Because of rust and sand which had collected in the receivers, operating handles on both weapons could not be operated manually and force was required to open the bolts.

2. The operating slide stops would not function properly because sand and grit had fouled the operating slide stop springs.

3. Both magazines were rusty and had collected enough sand to prevent them from operating properly without first being thoroughly cleaned.

4. The chambers and bores of both weapons were rusty.

5. The rear sights on both weapons could not be adjusted for windage due to the collection of rust and grit on the windage screws.

6. Approximately twenty minutes were required to clean each weapon before test personnel considered it safe to fire.

b. AR-15 Rifles:

1. The charging handles on both weapons were difficult to operate because sand had collected within the receiver.

2. The bolt and bolt carriers of both weapons were rusty.

3. The chambers and bores of both weapons were rusty.

4. Approximately five minutes were required to clean each weapon before test personnel considered them safe to fire.

Analysis: The AR-15 Rifle, because it has fewer moving parts, will function more readily than the M2 Carbine after extended periods of storage in the open under tropical conditions.

Test No. 8. Brush Penetration.

Purpose: To determine whether dense brush and undergrowth affects the trajectory of the AR-15 bullet and to compare its ability to penetrate heavy foliage with that of the M2 Carbine.

Method:

a. Silhouette targets were positioned behind dense underbrush which generally consisted of bamboo saplings, bush, grass and vines. From a distance of 15 meters, both the AR-15 Rifle and the M2 Carbine were fired at the targets.

b. The distance was then increased to 50 meters and the targets were fired upon again. (Beyond 50 meters it was impossible to distinguish a target, so this was considered an acceptable maximum distance for the test).

c. Procedures a and b above were repeated several times with foliage of varying density.

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Results:

Type of Underbrush	Range	No. of rounds fired	No. of hits AR-15	No. of hits M2
Light underbrush	15 meters	6	6	6
Moderate underbrush & bamboo thicket	15 meters	6	6	6
Heavy underbrush & bamboo thicket inter-woven with vines	15 meters	6	6	6
Light underbrush	50 meters	6	6	6
Moderate underbrush & bamboo thicket	50 meters	6	6	5
Heavy underbrush & bamboo thicket inter-woven with vines	50 meters	6	6	5

Analysis:

a. The trajectory of the AR-15 bullet is not significantly affected when fired through dense underbrush at ranges up to 50 meters.

b. The AR-15 round will penetrate jungle undergrowth equally as well as the M2 Carbine round at ranges up to 50 meters.

Test No. 9. Troop Preference Poll.

Purpose: To obtain subjective data concerning the ARVN soldier's individual preference between the AR-15 Rifle and the M2 Carbine.

Method: Upon completion of all tests by participating personnel, each individual present for duty (158) was questioned with regard to preference between the two weapons.

Results:

a. Thought the AR-15 had the best "feel"	129	
Thought the M2 Carbine had the best "feel"		29

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b.	Thought the AR-15 had the best sight	66	
	Thought the M2 Carbine had the best sight		92
c.	Thought the AR-15 would stand up best under combat conditions	107	
	Thought the M2 Carbine would stand up best under combat conditions		51
d.	Preferred the AR-15 grip	129	
	Preferred M2 Carbine grip		29
e.	Thought AR-15 easier to load	120	
	Thought M2 Carbine easier to load		38
f.	Thought AR-15 easier to get ready to use	81	
	Thought M2 Carbine easier to get ready to use		77
g.	Thought AR-15 easier to disassemble	140	
	Thought M2 Carbine easier to disassemble		18
h.	Liked the AR-15 better from recoil standpoint	106	
	Liked M2 Carbine better from recoil standpoint		52
i.	Thought AR-15 easier to get back on target after firing a round	117	
	Thought M2 Carbine easier to get back on target after firing a round		41
j.	Thought AR-15 more dependable	107	
	Thought M2 Carbine more dependable		51
k.	Thought AR-15 best all around weapon for Infantry use	100	
	Thought M2 Carbine best all around weapon for Infantry use		58
l.	Thought AR-15 climbed least when fired automatically	117	
	Thought M2 Carbine climbed least when fired automatically		41

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m.	Thought AR-15 more accurate when fired full automatic	136	
	Thought M2 Carbine more accurate when fired full automatic		22
n.	Would prefer AR-15 in combat	130	
	Would prefer M2 Carbine in combat		28

Analysis:

a. The majority of test subjects preferred the AR-15 Rifle to the M2 Carbine in all aspects covered by the poll, except for the sights. Further questioning of the subjects by test committee personnel disclosed that this preference was due to greater familiarity with carbine-type sights, not because of an inability to understand the AR-15 sights. This is not considered a shortcoming of the weapon but a matter of training and familiarization.

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ANNEX "C"

SUGGESTED CORRECTIVE ACTIONS

DEFICIENCY/ SHORTCOMING	SUGGESTED CORRECTIVE ACTION	REMARKS
SECTION I		
This section contains deficiencies requiring elimination in order to make the item acceptable for use on a minimum basis.		
None	None	None
SECTION II		
This section lists those deficiencies and shortcomings in the item which were discovered during test and satisfactorily corrected prior to completion of the test. They no longer represent a defect in the item tested. The correction must be applied to the production model of this item.		
None	None	None
SECTION III		
This section contains shortcomings which are desired to be corrected as practicable, either concurrent with elimination of deficiencies in Section I, or in production engineering or by product improvement.		
1. The upper hand guard is hard to grip when hands are sweaty.	Roughen surface.	Ltr. from OSD/ ARPA on 11 Jul 62 states that manufacturer is now moulding "checkering" on upper hand guards.
2. The weapon cleaning rod is of minimum length and hard to grip.	Add one (1) additional section and provide "T" shaped handle.	

ANNEX "C"

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ANNEX "D"

PHOTOGRAPHS

This Annex contains miscellaneous photographs which visually depict pertinent aspects of the evaluation of the AR-15 conducted in South Vietnam.

PHOTOGRAPHS:

1. VN Soldier with AR-15 and M1 Rifle
2. VN Soldier with AR-15 and BAR
3. M2 Carbine and AR-15 Rifle with Accessories
4. VN Soldier with AR-15 and M2 Carbine
5. M2 Carbine and AR-15 Rifle
6. M2 Carbine and AR-15 Rifle "Field Stripped"
7. VC Casualty by AR-15 - 150 Meters
8. VC Casualty By AR-15 - 15 Meters

VN Soldier with AK rifle.

VN Soldier with AR-15.

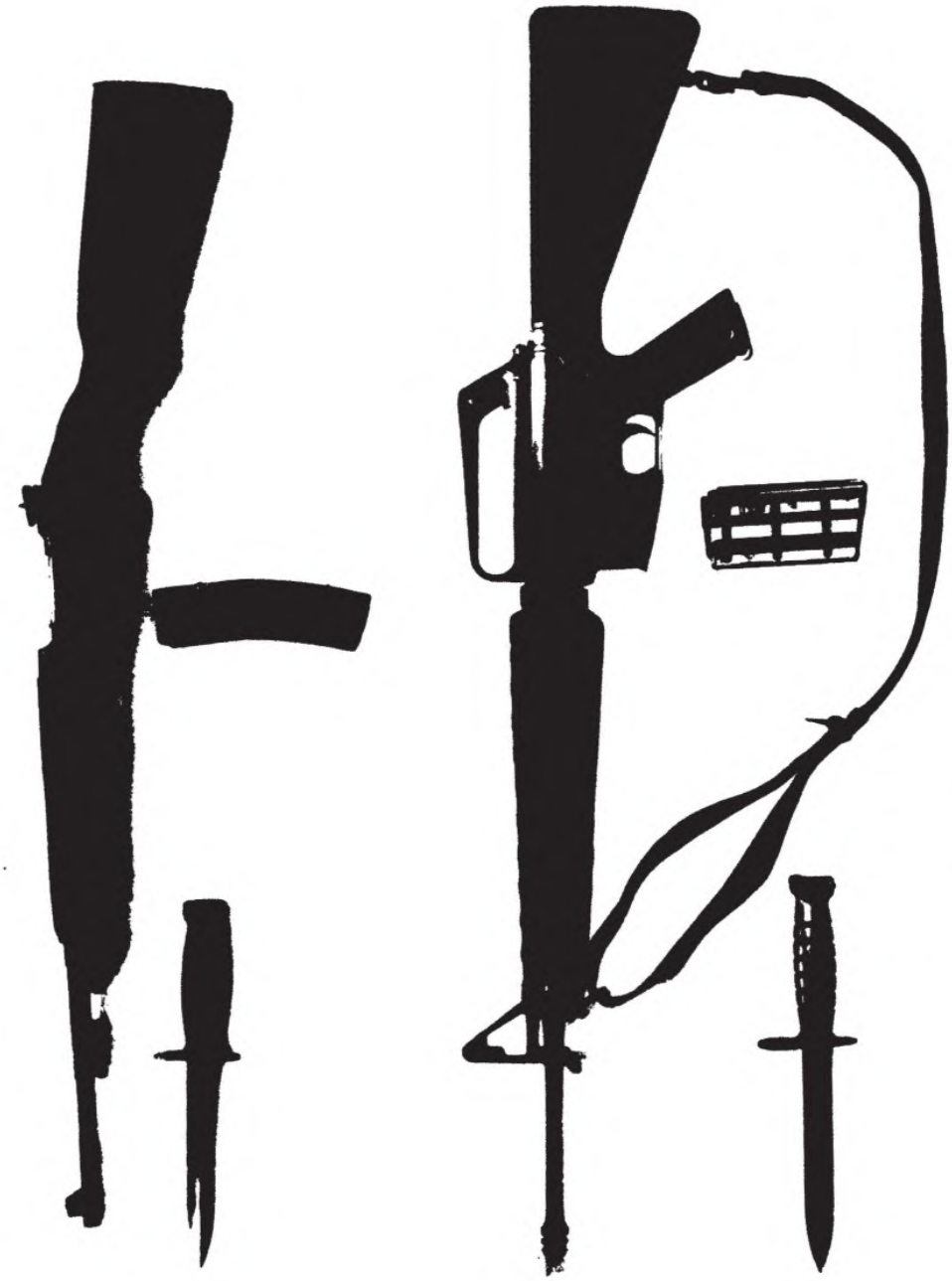
[illegible], Al. .30, M, w/standard accessories

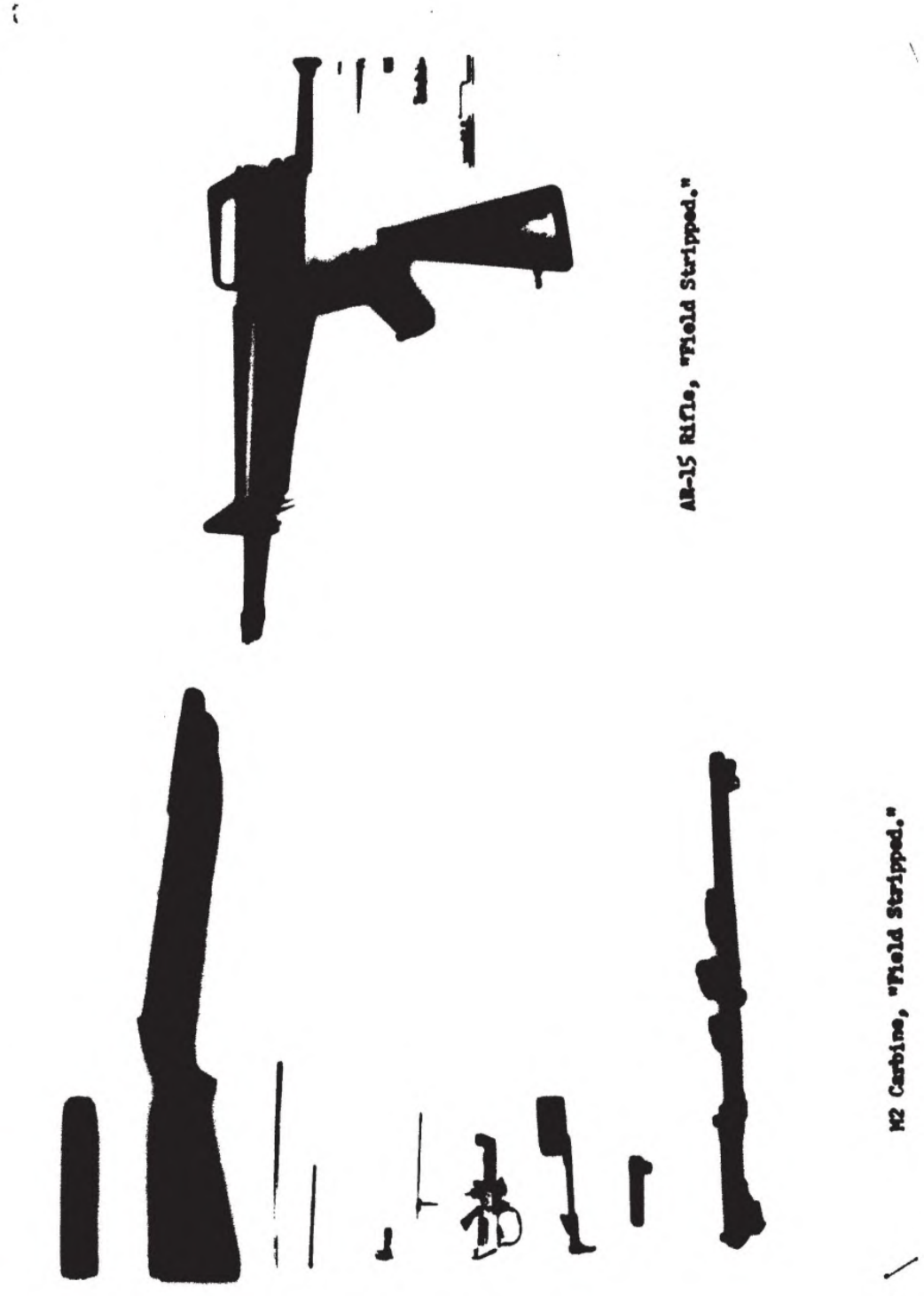
Colt, Armalite Rifle, [illegible] w/standard accessories.

PHOTOGRAPH 3, [illegible]

Assault Position with AR-15.

Assault Position with Carbine.


TOP: M2 CARBINE w/ BAYONET, 30 RD MAGAZINE
BOTTOM: AR-15 w/ 20 RD MAGAZINE



PHOTOGRAPH 6, ANNEX "D"

Exhibit H

The UDT SEAL MUSEUM presents

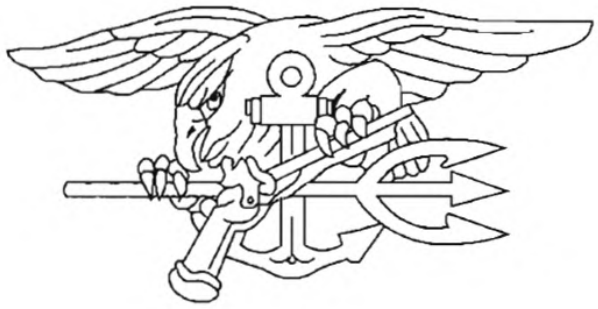
KEVIN DOCKERY

Swift, Silent, Deadly

THE ARMS AND EQUIPMENT OF THE UDT AND SEALS

from 1943 to the Present

THE EMPEROR'S PRESS



Special Warfare: Special Weapons

The Arms & Equipment of the
UDT and SEALS from 1943 to the present

Produced with the co-operation of the UDT-SEALS Museum

By Kevin Dockery

EMPEROR'S PRESS
Chicago, Illinois

The fortifications put in place on top of a SEAL billet in Vietnam during the Tet Offensive of 1968. At the lower right of the photo can be seen an M1 steel helmet laying on top of an M69 armor vest. Next to the vest is a set of web gear including at least one canteen. On top of the sandbags can be seen the buttplate of a loaded M60 machine gun. Next to the M60, leaning against the crate of ammunition, is a Stoner 63A light machine gun with a 150 round belt drum in place for use. Leaning against the wall just to the left of the sandbags is an M14 rifle with a 20 round magazine locked into place. The bandoleers appear to be additional 7.62mm ammunition in stripper clips for the M14 and additional M14 magazine are laying on top of the wall. Belts of 7.62mm ammunition for the M60 and 5.56mm belts for the Stoner are both draped over the wall. At the base of the M14 are the black fiberboard tubes holding high explosive ammunition for the M29 81mm mortar, the top portion of which can be seen just to the right of the center foreground of the picture.
PHOTO CREDIT: UDT-SEAL MUSEUM

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Table of Contents

This book and others to follow in this field are dedicated to the memory of Dr. Edward C. Ezell, Ph.D. who encouraged me to continue my writing, guided me, and told me I had paid my dues.

Help from a great many individuals and organizations went into the creation of this book and the items described between these pages. Because of the nature of their work, many of these individuals did not want to see their name in print. For others, the passage of time has rendered them anonymous.
The Author's personal and heartfelt thanks are extended to both the above and the following individuals, organizations, and institutions;

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UDT-SEAL Museum, Fort Pierce, Florida
- Jim Watson QMCS, USN (Ret.)
- H.T. Aldhizer, III
- Don Balzarini
United States Special Operations Command, PAO
US Army Ordnance Museum, Aberdeen Proving Grounds
CPT Richard Woolard, USN (Ret.)
Darryl Young

And to the men of the Teams,
past,
present,
and future.

A member of UDT-21 proudly displays a t-shirt with his unit's emblem after coming ashore in Denmark during NATO exercise Northern Wedding 82. He is armed with a Vietnam era XM177E2 fitted with a China Lake blank adapter. At his left shoulder is a Mark 1 Ka-bar with a cast aluminum pommel dating from World War II. The story of the UDT's came to an end within a year of this pictures being taken. In 1983, all UDT's were decommissioned and became SEAL Teams or SDV Teams.
Photo credit: US Navy

Rifles

TECHNICAL DATA—M1 Carbine
NSN 1005-00-670-7672
—M2 Carbine
NSN 1005-00-575-0057
CARTRIDGE—30 Carbine (7.62x33mm)
OPERATION—Gas
TYPE OF FIRE—Semiautomatic
M2 Selective fire - semiautomatic/full automatic
RATE OF FIRE—40 rpm
M2 Practical SS 40 rpm, A 75 rpm, Cyclic 750 to 775 rpm
MUZZLE VELOCITY—1970 fps (600 m/s)
MUZZLE ENERGY—956 ft/lbs (1296 J)
SIGHTS—Open, Ramp-type aperture/blade, Adjustable, graduation marks at 100, 200, 250, and 300 yards
FEED—15 or 30 round removable box magazine
WEIGHTS
WEAPON (EMPTY)—5.31 lbs (2.41 kg)
WEAPON (LOADED)—5.92 lbs (2.69 kg) w/15 rd mag
MAGAZINE (EMPTY)—15 round 0.19 lb (0.09 kg)
30 round 0.22 lbs (0.10 kg)
MAGAZINE (LOADED)—15 round 0.61 lbs (0.28 kg)
30 round 1.06 lbs (0.48 kg)
SERVICE CARTRIDGE—M1 Ball 196 gr (12.7 g)
PROJECTILE—111 gr (7.2 g)
LENGTHS
WEAPON OVERALL—35.58 in. (90.4 cm)
BARREL—18 in (45.7 cm)
SIGHT RADIUS—21.5 in. (54.6 cm) w/rear sight set at 100 yds

A group of UDT swimmers from Underwater Demolition Team 16 prepare to board their boat prior to going in to an island in the Pacific during World War II. The men are wearing standard jungle fatigues and inflatable canvas/rubber life belts along with M1 steel helmets. The man at the center of the picture has an unloaded M1 carbine slung across his back and is wearing an M1910 pistol belt with one-quart canteen and first aid pouch. In addition he has a pair of binoculars slung at his left side in their leather case. The binoculars indicate that the man is probably an officer and the uniforms and equipment suggest that the UDT men are going in to the island after the actual invasion has taken place. At the bottom left of the photograph can be seen the muzzle and front sight of an M1 carbine.
PHOTO CREDIT: UDT-SEAL MUSEUM

By the middle of World War II (1943) the average Navy sailor was receiving a limited amount of training in small arms while he attended boot camp as a recruit. Small arms were not a priority in the Navy as the force fought from aboard ship with the U.S. Marines being the primary amphibious ground combat unit. In 1943, when the NCDUs began training at Fort Pierce, Florida, the primary shoulder-fired weapon in the Navy was the bolt-action M1903 Springfield rifle. The semiautomatic M1 Garand was not considered a Navy weapon at that time and all production of the M1 was going to the Army and Marines.

For the men of the NCDUs and UDTs, it was not considered a mission priority to have the men offensively armed. Little emphasis was given to small arms training in the NCDU curriculum at Fort Pierce. The men who made up the UDT operating platoons were considered to be skilled demolitionists and not people to augment ground troops. Instruction in armed and unarmed combat was given to the UDTs in order that these highly trained men would be able to effectively defend themselves if necessary.

M1 (M2) CARBINE

The men who made up the Headquarters Platoon of a UDT were given training in small arms to a much greater extent than the men of the operating platoons. Headquarters personnel were expected to supply boat crews, coxswains, radiomen, and other support to the swimmers who would be doing the actual reconnaissance and demolition swims.

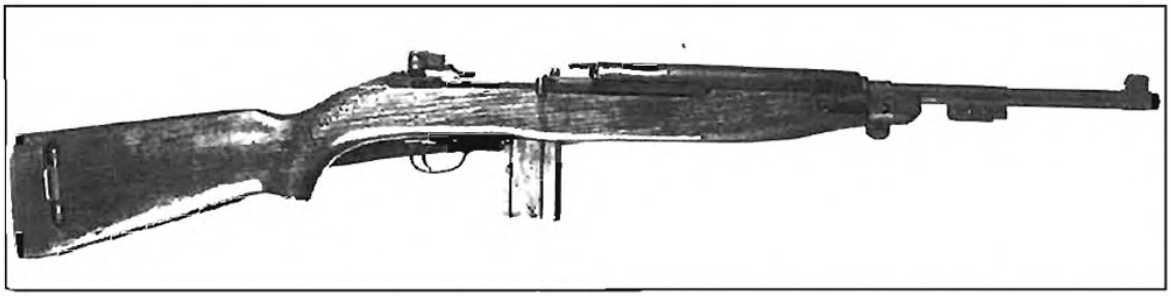
It was towards this end that the men of the Headquarters Platoon received hands-on experience with small arms, primarily the pistol and M1 carbine, as well as gunnery instruction for the .30 and .50 caliber machine guns. If, after the normal eight-week training period, there was a delay in sending the NCDU graduates to Maui for their UDT instruction the men would receive the same classes in small arms as the headquarters personnel.

But for all of their training, the men of the NCDUs and UDTs were still in the military. Common military jobs had to be performed such as guard duty. Because of the highly secret nature of their mission, the men of the NCDUs and UDTs were not able to tell anyone what they did to cause all the explosions heard coming from North Hutchison Island near Fort Pierce. The locals could of course hear the blasting, but the island was off limits to almost everyone but the NCDU students.

But the ammunition and explosive magazines on North Hutchison Island had to be guarded, and it was the men of the NCDU school who pulled that duty. The same situation was repeated at the UDT training compound on Maui in the Pacific. When necessary, the NCDU and UDT men were normally armed with the M1 Carbine.

The M1 Carbine was designed early in World War II after a directive for its development was put out by the Army Ordnance Board in June 1940. The intent was to develop a shoulder-fired weapon weighing about five pounds and having an effective range of 300 yards. The weapon was intended as a replacement for the service pistol and submachine gun for officers and noncommissioned officers as well as being a supplementary weapon for mortarmen, machine gunners, radiomen, and other similar duty positions.

The US service rifle cartridge (30-06) was far too powerful for as light a weapon as the carbine was supposed to be, and the service pistol cartridge (45 ACP) was unable to reach the range requirement. A special .30



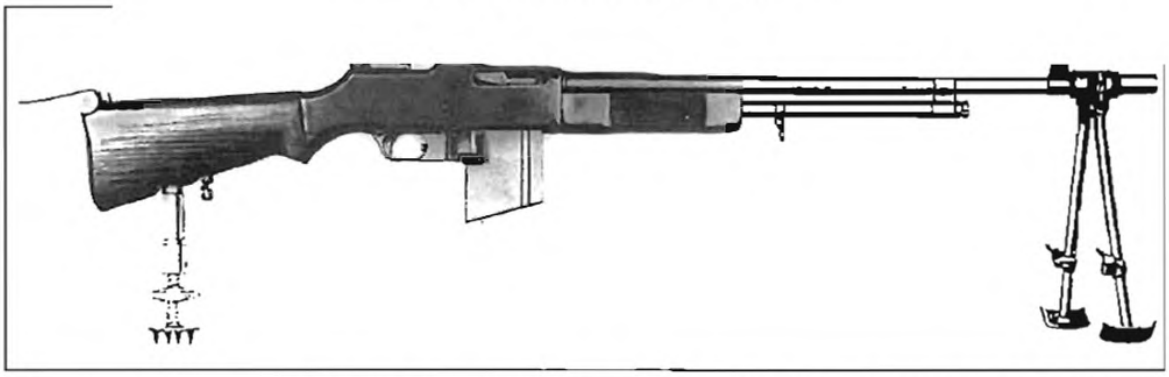
The M2 carbine loaded with a 15 round magazine. The top knob of the small selector lever can be seen at the top of the receiver, above the magazine and just forward of the curved grip of the operating rod.
PHOTO CREDIT: SMITHSONIAN INSTITUTION

TECHNICAL DATA—M1918A2 Browning Automatic Rifle
NSN 1005-00-674-1309
CARTRIDGE—30-06 (7.62x63mm)
OPERATION—Gas
TYPE OF FIRE—Full automatic, fast and slow rates
RATE OF FIRE—Practical [slow] 40 to 60 rpm, [fast] 120 to 150 rpm, Cyclic [slow] 350 to 450 rpm, [fast] 550 to 650 rpm
MUZZLE VELOCITY—2800 fps (853 m/s)
MUZZLE ENERGY—2646 ft/lbs (3588 J)
SIGHTS—Open, Leaf-type aperture w/round-notch battle sight/ blade, Adjustable, battle sight set at 300 yards, leaf graduated 100 to 1500 yards in 100 yard increments,
FEED—20 round removable box magazine

WEIGHTS
WEAPON (EMPTY)—18.96 lbs (8.60 kg) w/bipod
WEAPON (LOADED)—20.59 lbs (9.34 kg)w/bipod
Bipod 2.44 lbs (1.11 kg)
MAGAZINE (EMPTY)—0.44 lb (0.20 kg)
MAGAZINE (LOADED)—1.63 lb (0.74 kg)
SERVICE CARTRIDGE—M2 Ball 416 gr (27 g)
PROJECTILE—152 gr (9.8 g)
LENGTHS
WEAPON OVERALL—47.8 in. (121.4 cm)
BARREL—24.07 in (61.1 cm)
SIGHT RADIUS—31.13 in. (79.1 cm)

"The Browning Automatic Rifle Model 1918A2, or simply BAR, is a very heavy and powerful rifle."

Men on board a Navy ship stand mine watch. The sailor holding the weapon is armed with an M1918A2 Browning Automatic Rifle (BAR) with the bipod removed. The weapon will be used to shoot and detonate mines as they are detected before they can threaten the ship.
PHOTO CREDIT: US NAVY



A complete M1818A1 Browning Automatic Rifle (BAR). This example is complete with the rear monopod, an item almost always removed by the user in the field.
PHOTO CREDIT: US ARMY

caliber low-powered round was designed specifically for what was then called the "light rifle" trials in 1941. Several arms manufactures submitted prototype weapons chambered for the new round. By the fall of 1941, only sixteen months after the directive had first been issued, a winner of the light rifle trials had been decided on. The Winchester Light Rifle was adopted as the M1 Carbine in October 1941.

As adopted, the M1 Carbine was a small semiautomatic rifle feeding from a fifteen-round magazine. It was this model carbine that was issued to the men of the UDTs as their duties required. Late in 1944, a selective-fire version of the carbine was developed. Issued as the M2 Carbine, the new weapon had a thirty-round magazine available for it that could also be used in the earlier M1 Carbine. As the M2 Carbine became available, it was issued to the UDTs.

M1918A2 BAR

The only other shoulder weapon trained with and used in any numbers by the UDTs in World War II was at the opposite end of the small arms scale from the M1 Carbine. The Browning Automatic Rifle Model 1918A2, or simply BAR, is a very heavy and powerful rifle. Normally fired from the prone position with the weapon supported by a bipod, the BAR is capable of good accuracy at a long range. The twenty-round magazine of the BAR limits its capacity for sustained fire somewhat as does its lack of a way to change a hot barrel. But the weapon was a great deal more portable that the contemporary belt-fed automatic weapons of the time.

Instead of being selective-fire, that is firing either semiautomatic or full automatic, the M1918A2 BAR instead had two different rates of fire that could be selected by the operator. The fast rate of fire, around 600 rounds per minute cyclic, could put out a rapid volume of fire in order to engage or suppress an enemy position. The slow rate of fire, about 350 rounds per minute cyclic, allowed for single shots to be easily fired by a trained gunner and has more controllable muzzle climb when fired from the standing position.

In the Navy, the BAR would be used for shore or landing party operations. On board ship, the BAR would occasionally be found in use to augment a ship's volume of antiaircraft fire. More important to the men of the UDT, the BAR could be used to give a reasonable amount of firepower to small craft such as a rubber boat. The BAR could be fired from such a boat by a single operator while the light machine gun of the time, the Browning M1919A4 would be very clumsy to use and take up a great deal more room.

Used by the UDT in only limited numbers, the BAR saw little if any combat duty with the Teams during

A technician checks an M1918 Browning Automatic Rifle (BAR) while on board ship in the Pacific during World War II. These early-model BAR's could still be found in Navy arms rooms throughout the war where they were used for ship defense and to arm landing parties. The last weapon on the left is an M1918 BAR with its forearm removed and a pintle adaptor installed. The pintle adaptor would allow the weapon to be placed in any standard machine gun mount on board ship.
PHOTO CREDIT: UDT-SEAL MUSEUM

TECHNICAL DATA—AR-15 (Colt Model 601), M-16 (Colt Model 602)
NSN 1005-00-983-6877, (M-16) 1005-00-856-6885
CARTRIDGE—.223 Remington (5.56x45mm)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 950 rpm
MUZZLE VELOCITY—3250 fps (991 m/s)
MUZZLE ENERGY—1313 ft/lbs (1780 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable, battle aperture 0 to 300 meters, long range aperture 300 to 500 meters
FEED—20 or 30 round removable box magazines
WEIGHTS
WEAPON (EMPTY)—6.35 lbs (2.88 kg) w/o sling
WEAPON (LOADED)—7.46 lbs (3.38 kg) w/20 rd mag & sling Sling 0.40 lbs (0.18 kg)
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (0.08 kg) 30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.71 lb (0.32 kg) 30 round 1.02 lbs (0.46 kg)
SERVICE CARTRIDGE—M193 Ball 182 gr (11.8 g)
PROJECTILE—56 gr (3.6 g)
LENGTHS
WEAPON OVERALL—38.6 in. (98 cm)
BARREL—20 in (50.8 cm)
SIGHT RADIUS—19.72 in. (50.1 cm)
These weapons are among the first of their kind to be used by the Navy. A noticeable characteristic of the early AR-15/M-16 weapons is the shiny appearance of the chromed bolt carrier, visible through the open ejection port, and the green-colored plastic furniture (stocks). Later versions of the weapon had black plastic furniture and the bolt carrier was parkerized a dull grey.

A group of SEAL Team Two operators in the early 1960's. They are wearing uniforms that were part of a large open-purchase of commercially-produced equipment that was made to get the newly commissioned SEAL Teams operational as quickly as possible. The groups weapons are early-model Colt AR-15 rifles. The early style, fully chromed bolt carrier is readily visible through the open ejection port of the weapon held by the SEAL at the left of the picture. The smooth right side of the upper receivers show that these weapons do not have the forward bolt assist required by the Army in the later M16A1 rifle. Additionally, these weapons have the first model, stepped-down, double diameter open-prong flash hiders that were part of the early production units in the series. The SEAL at the lower right in the photo is holding the very rare AR-15 carbine with its flash suppressor mounted just ahead of the front sight.
PHOTO CREDIT: RYAN McCOMBIE COLLECTION

World War II. Photographs of NCDUs at Fort Pierce exist showing at least one man of the six man NCDU armed with a BAR. Training was given on the M1918A2 BAR at Fort Pierce and it is likely that additional training with the weapon was conducted at Maui late in the war. The commander of the UDT school at Maui towards the end of World War II, Commander John T. Koehler, could see the mission of the UDTs expanding inland if the war continued. To account for such a situation, and to expand the capabilities of the UDTs, Commander Koehler added further small arms training and other skills to the UDT training curriculum.

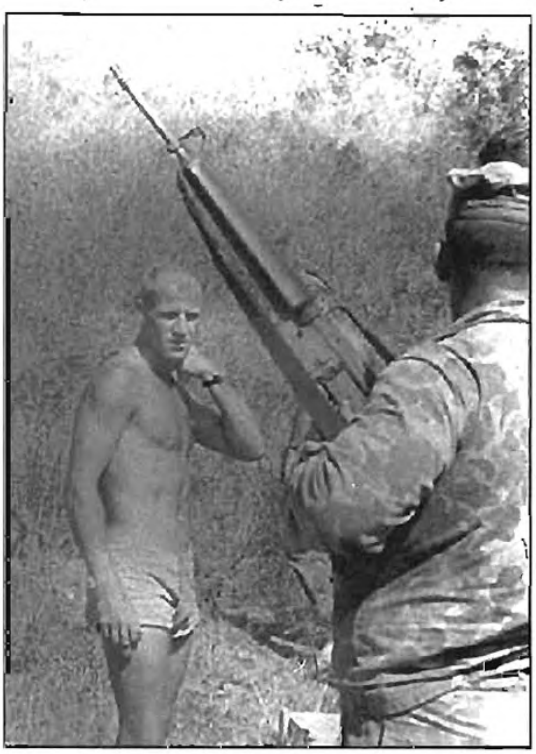
During the Korean War, the land combat application of the UDTs became much more than just a possibility. Guerrilla infiltration and exfiltration, clandestine resupply ops, and behind-the-lines demolition raids all were conducted by the men of the UDT. The M1 and M2 Carbines and BARs again saw duty with the UDTs, only their use was much more serious than simple guard duty. The submachine gun was considered the favorite shoulder weapon, but the carbine, BAR, and even the M1 Garand were seen in UDT hands. Though the UDTs had few small arms of their own, the facilities of a base armory or ship's stores were available to the Teams when necessary.

A watershed event in the weapons of the UDT took place shortly after the commissioning of the SEALs in January 1962. SEAL Team Two on the east coast at Little Creek, Virginia, was faced with the very real possibility of seeing combat operations in Cuba within a short time after its commissioning. Not being satisfied with what was available through Navy supply channels or in the base armory, Lieutenant Roy Boehm, the first officer-in-charge of SEAL Team Two as well as the Team's founder, sought out the best firearms on the market he could then find. Desiring high-firepower, light weight, dependability, and increased lethality over the M1 Carbine, LT. Boehm was highly interested in a very new firearm just available commercially, the AR-15 rifle.

AR-15 Model 601

Early in 1962, LT Boehm and some of his new SEALs traveled to Baltimore, Maryland to visit the Cooper-MacDonald offices. The Cooper-MacDonald firm had been representing the AR-15 rifle to the military for several years. The original manufacturers and developers of the AR-15, the Fairchild Stratos Corporation, had sold the license to produce the ArmaLite AR-15 to the Colt Firearms Corporation in 1959. Though the AR-15 had received praise from many of the people who had fired it, the US Military and especially the Army Ordnance Corps were adamantly not interested.

The Army, then responsible for small arms acquisition for the Air Force and Marines as well, had just adopted the M14 as the new service rifle in May, 1957. Difficulties in production and other delays had kept the M14 from being produced in the quantities needed by the military. It was only in 1961 that productions volume had finally started reaching the numbers needed for full issue. In this atmosphere, the Army Ordnance Corps was very much against any new weapon being even remotely considered for adoption. This was particularly true for a weapon that would also add a new caliber of ammunition into the supply system.



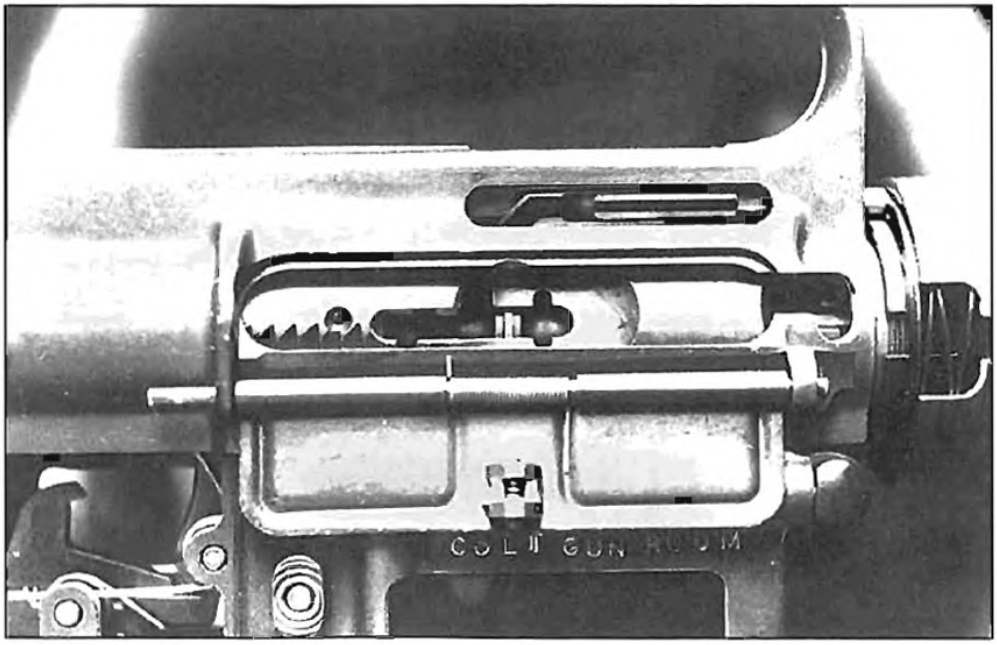
On the range at Little Creek in the early 1960's, these SEALs from SEAL Team Two are firing their 01 model AR-15 rifles. The unloaded weapon visible has the first model, stepped-down, double diameter, open-prong flash suppressor. The fairly light color of the handguards of this AR-15 comes from the very early weapons having light green rather than black stocks. The SEAL holding the weapon is wearing faded Marine camouflage fatigues.
PHOTO CREDIT: RYAN McCOMBIE COLLECTION

The Army had just managed to start coming on line with a new family of weapons, the M14 and the M60 machine gun, that were both chambered for the same 7.62mm NATO round. One of the selling points of the new weapons was that they would eliminate at least one caliber, the .30 Carbine, as well as several weapons, the submachine gun, M1 Carbine, M1 rifle, and BAR. The AR-15 was chambered for the unique .222 Special developed especially for it. In 1959, the new round was renamed the .223 Remington.

The lightweight .223 bullet did not seem at all a proper projectile for a military weapon according to several prominent people in the Army small arms field. These same people set out to disprove any possible advantages the .223 round might have in the military. The most obvious advantage of the new round was its light weight, at the time two loaded 20- round AR-15 magazines weighed less than a single 20 round- M14 magazine.

A rare cutaway AR-15 rifle from the Colt Gun Room. This photo shows all of the major internal workings of the AR-15/M16 weapon system. The hammer is forward in the uncocked (fired) position.
PHOTO CREDIT: KEVIN DOCKERY/ KNIGHT ARMAMENT COMPANY

A closeup of a cutaway AR-15 rifle from the Colt Gun Room. The gas tube can be seen inside the bolt carrier key in the slot just below the top of the upper receiver. Gasses from the barrel would be guided through the gas tube, down the bolt carrier key, and into the bolt carrier, behind the bolt itself. The pressure of the gases would drive the bolt carrier to the rear with the bolt itself acting as a piston. The cam pin that locks the bolt to the bolt carrier would be guided through a cam track that would force it to rotate and unlock/lock the bolt depending on the direction of travel. Three thin metal discs on the bolt are the bolt rings and they insure a gas-tight seal between the bolt and bolt carrier.
PHOTO CREDIT: KEVIN DOCKERY/KNIGHT ARMAMENT COMPANY



One problem with the small bore of the AR-15 that was strongly pointed out by the Army board examining the weapon. During trials of the AR-15 at the Aberdeen Proving Grounds in 1958, the barrel of one test weapon split while firing during a rain test. Modifications to the barrel were completed by Gene Stoner, the AR-15's designer. But rumors persisted about the danger of the .223 bore retaining water droplets due in part to capillary action.

If the SEALs were to use the new rifle and there was a problem with water retention in the bore, it would be proved useless given the environment of their missions. Not particularly trusting anyone else's tests, Lieutenant Roy Boehm conducted his own examination of the AR-15.

"... Wanting to test the AR-15 himself before making his purchase, Roy took some Team Two men up to Baltimore with him to check out the weapons the dealer had available. Roy and the guys shot the AR and fully tested it. They even tossed the weapon into the surf zone, covering it with sand, silt, and salt water, and it continued operating. With proper care, the AR-15 was able to pass any abuse Roy gave it. Team Two now could issue one of the newest weapons available on the market."

Lt. Boehm found no problem with water retention in the bore of the AR-15. He was in a unique situation where he had to outfit his men and did not have the time to wait for channels. The funds necessary for the equipping of SEAL Team Two were already at Roy Boehm's disposal in the form of open purchases he could make in any market he saw fit. The men of the SEAL Team quickly agreed with "The Boss's" decision.

"The best package of firepower and weight we had were the new AR-15 rifles. This was several years before the Army was to adopt the AR-15 as the M-16, even in limited numbers. But Roy had used his open purchase system and gotten us 66 brand new AR-15's fresh from the Colt factory.

Roy had ordered 136 of the new AR-15 rifles, the selective fire models [Colt Model 601] with green stocks. Half of the weapons were sent to Team One along with instructions, magazines, and spare parts."

Shortly after the new weapon's arrival, the situation in Cuba began heating up. It looked as if the AR-15 would get combat tested on the beaches of that Caribbean island.

"As the men came in, we issued what we had. Watches, pistols, and other gear was given out. Then when Cuba calmed down, the additional men went back to their parent units, and a lot of our gear went with them. One of the items we had before any one else in the Navy were the AR-15 rifles ...Half of the weapons went to the West coast and SEAL Team ONE with the remainder staying with us. Those were the first rifles of their kind in the Navy and were later adopted by the military as the M-16. We had them first because we needed them."

The new weapons were well and enthusiastically received by the SEALs. For the first time, a light weight, highly-lethal, selective fire weapon was available. Though the M2 Carbine had been both light weight and capable of automatic fire, the round it fired was considered underpowered and had proved itself to have less than ideal stopping power. In defense of the Carbine, it must be remembered that the weapon was designed to be a replacement for the pistol as a secondary arm generally for support troops.

Though the M-14 was the intended standard issue shoulder weapon of the early 1960's, it was considered too large and ungainly for use by the SEALs who might easily have to transport the weapon underwater. Another factor in favor of the AR-15 was its intentional design for controlled automatic fire. The M-14 could have a selector switch easily installed, but the weapon is built along traditional lines. The recoil of automatic fire in the M-14 violently pushes the muzzle up and to the right, especially when fired from the shoulder.

A pair of UDT operators set up flags to line up swimmers during a beach survey in Vietnam. The UDT man closest to the camera has a Colt Model 01 AR-15 slung diagonally across his back. His partner closer to the water is apparently unarmed except for the Mark 2 Ka-Bar at his right hip.
PHOTO CREDIT: UDT-SEAL MUSEUM

A selection of SEAL shoulder weapons in Vietnam circa late 1967-68. The bottom weapon is a Stoner 63A light machine gun fitted with a left-hand feed mechanism and a 150 round aluminum belt drum. Over the muzzle of the Stoner is a black plastic cap developed at China Lake to help keep the barrels of M16 and Stoner weapons clean and clear of mud. The caps can be easily fired through with no damage to the weapon. Second from the bottom is a Colt Model 07 submachine gun loaded with a 20 round magazine and having the sliding buttstock in the forward (collapsed) position. This specimen has been fitted with a 2nd model flash/noise suppressor on its muzzle. Second from the top is a Colt M16-series rifle with a 2nd type open-prong, conical flash suppressor on the muzzle. The weapon at the top is a M16-series weapon also with a 2nd model flash suppressor and a 40mm XM148 grenade launcher mounted underneath the barrel. The curved cocking lever for the XM148 can be seen just ahead of the magazine in the rifle. This rifle is loaded with two butt-taped 20 round magazines. The bottom magazine is loaded with tracer ammunition (not identifiable in this black-and-white illustration). On the right side of the photo is an unusual set of leather and canvas field gear with three M26 fragmentation grenades attached to it.
PHOTO CREDIT: US NAVY

This SEAL is wearing the so-called black pajama tops that were very popular with some members of the Teams in Vietnam. He is armed with an M16A1 rifle loaded with a 20 round magazine. His web gear is mostly M1956 pattern Load Carrying Equipment with several universal small arms ammunition cases on his belt. A number of M26 fragmentation grenades are secured to the mounting straps on the outside of the ammunition cases. At his left shoulder, this SEAL has secured a Mark 2 Ka-Bar with a painted-over Mark 13 day/night flare taped to the scabbard. Slipped though a loop at his right shoulder is an M18 colored smoke grenade.
PHOTO CREDIT: FRANK THORNTON COLLECTION

The AR-15 has the stock in line with the barrel of the weapon. This causes the AR-15 to have less tendency to climb up and right when fired on automatic, though the weapon still takes a good deal of training to properly control. The training is considered very worthwhile as full automatic fire is very much an advantage for sudden close-in fire fights or the overwhelming fire needed for an ambush. The SEALs liked the fact that the AR-15 could be fired on full automatic with just the flip of a selector switch. Sometimes, the SEALs liked full automatic fire a little too much. The first range practice with the new AR-15s for SEAL Team Two took place at a Marine range since they had the proper firing facilities and the fledgling SEAL Teams did not.

"As we were getting down into the firing position the [Marine] Lieutenant sounded off. "There will be no automatic fire on this range," he said, "Everything will be semiautomatic fire only." That was a bit of a mistake on his part.

"Lock and load one magazine. Ready on the left? Ready on the right? Ready on the firing line! Shooters, you may commence fire!" We all just raised our heads a little bit and looked up and down at each other. At the command "Commence fire" all of us switched over to automatic and let that magazine rip. The Lieutenant immediately confiscated all of the weapons and threw us off the base."

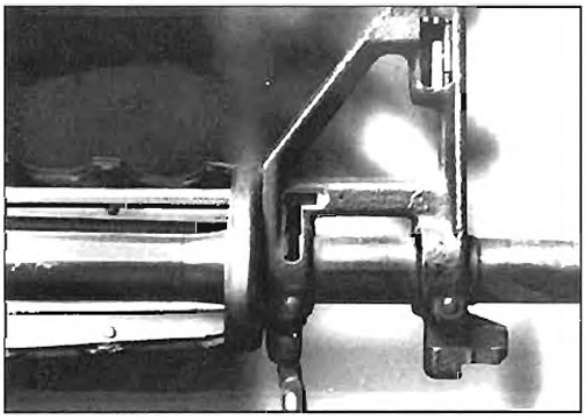
One problem that the SEALs did not have was with the lethality of the AR-15. Being the early 601 models, the AR-15s purchased directly by the Teams had barrels rifled with six grooves having a right-hand twist rate of one turn in fourteen inches. This rifling twist rate was the firearms industry standard when Gene Stoner had first designed the AR-15. Since the 55-grain .223 bullet was the same weight as commercial .22 bullets fired in high-velocity center fire rifles, the commercial twist rate was thought to be correct to stabilize the .223 bullet for accuracy.

The problem was that the commercial 55-grain bullets then in use were shorter and blunter than the full jacketed projectile designed for the .223 Remington military round. Standard M193 ball ammunition, when fired from the early AR-15, launched a projectile that was just barely stable in flight. When the bullet struck a target, or entered flesh, it began tumbling wildly, expending its energy rapidly. This rapid energy release resulted in the near-explosive wounds coming out of Vietnam in mid-1962.

Almost 1,000 AR-15 rifles, all early model 601s, and over half a million rounds of ammunition had been purchased by the Defense Department in late December 1961. These weapons and ammunition were part of Project AGILE being conducted by the Advanced Research Projects Agency (ARPA). The project intended, in part, to examine new weapons for use by "the small-stature... Vietnamese soldier and to evaluate the weapon under actual combat conditions."

Project AGILE resulted in the first operational tests of the AR-15 in combat being conducted by selected units of

These two SEALs crouch down and watch a helicopter come into their area during a training operation. The SEAL to the left is holding an M16A1 rifle with a plastic mud cap over the flash suppressor. The rifle is loaded with a pair of butt-taped 20 round magazines. He is wearing the early model Type 1 Rifleman's buoyant ammunition carrying vest.
PHOTO CREDIT: UDT-SEAL MUSEUM



A cutaway view of the front sight assembly of the M16A1 rifle. The open port that directs the propellant gases from the barrel into the gas tube can be seen just above the sling swivel and in front of the handguard mount. At the upper right portion of the sight assembly can be seen the threaded front sight post and the spring-loaded detent that helps hold it in place. The aluminum reflector that helps keep the handguards cool can be seen riveted to the inside of the left-side handguard.
PHOTO CREDIT: KEVIN DOCKERY/KNIGHT ARMAMENT COMPANY

The author firing an M16A1 rifle with a Mark 2 Blast Suppressor mounted on the muzzle. The weapon is firing a short burst on full automatic, two ejected cartridge cases visible as the elongated blurs above the firer's left hand and the weapon's front sight. It is interesting to note the lack of muzzle climb on the weapon, even when fired on full automatic. This lack of rise is a by-product of having the extra weight of the suppressor on the muzzle.
PHOTO CREDIT: KEVIN DOCKERY

TECHNICAL DATA—M16E1 (M16A1) (Colt Model 603)
NSN 1005-00-939-0584 (M16A1) 1005-00-073-9421
CARTRIDGE—.223 Remington (5.56x45mm)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 800 rpm
MUZZLE VELOCITY—3250 fps (991 m/s)
MUZZLE ENERGY—1313 ft/lbs (1780 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable, battle aperture 0 to 300 meters, long range aperture 300 to 500 meters
FEED—20 or 30 round removable box magazines
WEIGHTS
WEAPON (EMPTY)—6.5 lbs (2.95 kg)
WEAPON (LOADED)—7.61 lbs (3.45 kg) w/sling & 20 rd mag
Sling 0.40 lbs (0.18 kg)
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (0.08 kg)
30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.71 lb (0.32 kg)
30 round 1.02 lbs (0.46 kg)
SERVICE CARTRIDGE—M193 Ball 182 gr (11.8 g)
PROJECTILE—56 gr (3.6 g)

LENGTHS
WEAPON OVERALL—39 in. (99.1 cm)
BARREL—20 in (50.8 cm) w/o flash suppressor
21 in (53.3 cm) w/flash suppressor
SIGHT RADIUS—19.75 in. (50.2 cm)
Modifications from the original AR-15 (M-16 rifle for the A1 version included:
Chrome plating the chamber and later the entire bore
Addition of a forward bolt-assist for forcing the bolt closed
A heavier recoil buffer to slow the cyclic firing rate, this buffer was quickly retrofitted to all M16 rifles
A buttstock compartment for holding a set of cleaning gear
A closed "bird-cage" flash suppressor
A wider charging handle
Index lines (windage) on the rear sight
A 30 round magazine was introduced to replace the 20 shot version used in the field. This size magazine had been available since the earliest Colt manufactured weapons but had been available on a very limited basis. Prior to this (about 1968) only the Air Force had been issuing 30 round magazines as a normal item. These larger magazines were a valued "scrounge" item among the SEALs. 20 round magazines remained the norm throughout the Vietnam war.

the South Vietnamese Army supported by American advisors. The tests ran from 1 February to 15 July, 1962. Besides being well-liked by the Vietnamese troops for its size and light recoil, the AR-15 had shown itself to be a very lethal combat weapon. Reports told of almost incredible wounds being caused by single .223 bullets. Amputations of limbs, massive body wounds, and decapitations had all been caused by the very high-velocity AR-15 projectiles.

But there was a drawback that came with the near-instability of the AR-15 bullets being fired in 1-in-14 twist barrels. When the ambient temperature dropped below freezing, the air density changed. In cold air, the AR-15 bullets became unstabilized and accuracy dropped off badly. In independent, unbiased tests run by the National Rifle Association, it was found to be impossible to keep ten rounds on a 3 foot by 4 foot target at 300 meters range with the air temperature below 32 degrees Fahrenheit.

Since SEAL Teams Two did few operations in a cold environment during its first years, the drawback of the AR-15s rifling was not noticed as a problem. By July, 1963, orders had gone out from the Department of Defense that no further AR-15s would be accepted with the old rifling twist rate. The new twist rate, which stabilized bullets in below-freezing temperatures, was 1 turn in 12 inches. All subsequent AR-15s, M-16s, and M16A1s were all made with the 1-in-12 rifling twist rate, including those used by the SEALs.

A SEAL Team Two MTT (Mobile Training Team) 10-62 went to Vietnam to continue training the Beit Hai commandos of the South Vietnamese Navy. The training program had been begun by an MTT primarily from SEAL Team One earlier in the year. Along with "3 to 4 tons" of other equipment, the Team Two MTT took along with them a number of the Team's AR-15s. At the time the AR-15 and its use by the SEAL Teams was still classified. Again, the men of the South Vietnamese military greatly liked the AR-15. In fact the MTT soon ran out of the .223 ammunition they had brought along with them. At the time, the .223 military ball was loaded by Remington Arms and came packaged in a white 20-round cardboard box. As the ammunition was gone, the MTT turned to training the Vietnamese with available weapons including the M1 Garand, M2 Carbine, and BAR. It would be some years later that .223 ammunition would be available in huge numbers in Southeast Asia.

In June, 1963, President John F. Kennedy came to Norfolk and visited SEAL Team Two. While on his tour, President Kennedy saw a number of SEALs who were demonstrating the equipment they used. One man, GMG2 A.D. Clark was holding one of the Team's AR-15 rifles. When President Kennedy approached Clark he asked, "What have you got there, son?"

"This sir," answered Clark, "is the AR-15 rifle, made by ArmaLite."

At that point, one of the officers escorting President Kennedy, an Army Colonel, interrupted, commenting about how the AR-15 was only a limited duty, special-purpose weapon as compared to the issue M-14.

The President cut off the Colonel with a curt, "I am speaking to this gentleman here," and he resumed his conversation with Clark.

That action probably did as much to endear the President with the men of the SEALs as did his signing their commissioning orders only sixteen months before. But A.D. Clark continued with his praise of the AR-15 stating that it was exactly the weapon the SEALs wanted and no other. In a way it is very proper that A.D. Clark is the SEAL who spoke to the President in regard to the AR-15 rifle. Clark had been one of the SEALs who had accompanied Lt. Roy Boehm the year before when he had gone to Cooper-Macdonald in Baltimore to first test the AR-15.

M16 Model 602

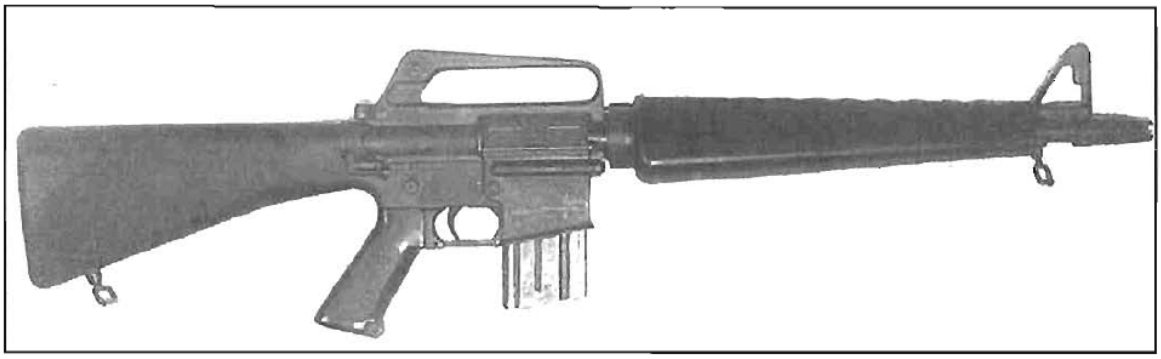
By 1965, even the UDTs had at least some AR-15s in their inventory for issue to operating platoons. By this time, the AR-15 had been purchased in some numbers by

Two SEALs during a training exercise. The front SEAL is carrying an M16A1 rifle loaded with a 30-round magazine and with the flash suppressor replaced with a China Lake blank adaptor. He is wearing a later-model SRU-21/P survival vest over his camouflage fatigues. The rear SEAL is armed with one of the XM177 series weapons also loaded with a 30 round magazine. He is carrying an AN/PRC-77 radio on his back with the coiled feed wire of the handset down over his right shoulder. To minimize his silhouette, the radioman has the short antenna to his radio folded down over his left shoulder and secured to his web gear.
PHOTO CREDIT: US NAVY

TECHNICAL DATA—CAR-15 Carbine (Colt Model 05)
CARTRIDGE—.223 Remington (5.56x45mm)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 950 rpm
MUZZLE VELOCITY—3050 fps (930 m/s)
MUZZLE ENERGY—1157 ft/lbs (1569 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable, battle aperture 0 to 300 meters, long range aperture 300 to 500 meters
FEED—20 or 30 round removable box magazines
WEIGHTS
WEAPON (EMPTY)—6.0 lbs (2.72 kg)
WEAPON (LOADED)—6.71 lbs (3.04 kg) w/20 rd mag w/o sling Sling 0.40 lbs (0.18 kg)
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (0.08 kg) 30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.71 lb (0.32 kg) 30 round 1.02 lbs (0.46 kg)
SERVICE CARTRIDGE—M193 Ball 182 gr (11.8 g)
PROJECTILE—56 gr (3.6 g)
LENGTHS
WEAPON OVERALL—33.6 in. (85.3 cm)
BARREL—15 in (38.1 cm)
SIGHT RADIUS—19.72 in. (50.1 cm)

"The CAR-15, for Colt Automatic Rifle, carbine was the same as the AR-15 rifle except that the barrel had been cut off to just in front of the front sight and the flash suppressor reinstalled."

These SEALs are demonstrating techniques used when landing on a beach with a Combat Rubber Raiding Craft (CRRC). All three of the SEALs are wearing the same type of camouflage uniforms and floppy bush hats. The two visible weapons are M16A1 rifles with the crouching SEAL having loaded his weapon with two butt-taped 30 round magazines. The standing SEAL, with his weapon in his left hand, has his M16A1 loaded with a single 30 round magazine. The bottom of the magazine has been wrapped with tape for additional strength and a small tape tab extends from the bottom of the magazine to assist in drawing it from an ammunition pouch. All of the load bearing gear worn by these SEALs is of the nylon ALICE (All-purpose Lightweight Individual Carrying Equipment) type adopted by the Army in 1974.
PHOTO CREDIT: UDT-SEAL MUSEUM



A right-side view of the Colt Model 05 carbine. The weapon is an 01 model AR-15 with its barrel cut back to the front sight assembly. This specimen has the 2nd type conical, open-prong flash suppressor.
PHOTO CREDIT: KEVIN DOCKERY

the Air Force as the M16 rifle. The Navy had purchased an additional 240 M16 rifles, announcing the contract in October, 1964. In the week of 18-22 January 1965, Colt received a priority 04 MIPR from the Navy for an additional 50 M16 rifles. At the time, rifles were shipped with seven 20-round magazines, spare parts and additional materials were shipped separately. The Army was also purchasing thousands of XM16E1s at this time, primarily for use with US Army maneuver battalions in Vietnam.

The AR-15 had been advertised by Colt as an almost self-cleaning weapon needing only "an occasional simple cleaning... [to] keep the weapon functioning indefinitely. Working parts can be cleaned by wiping with a cloth." But in the SEAL Teams and UDTs, maintenance procedures take on an importance close to that of a religion. This attitude stems from the Teams working underwater with Underwater Breathing Apparatus (UBAs). If a diver does not take meticulous care of his UBA, it will fail on him at some point, either killing him outright or causing him to drown. With something like that for a background, it is easy to see how the SEALs and UDTs keep their mania for maintenance.

In the first edition of the UDT Handbook (1965) are listed the cleaning instructions for the AR-15 (M-16) that state; "...all excess carbon [be] simply wiped off the working parts." But with the Team's tradition for complete maintenance, weapons, including the AR-15 were cleaned thoroughly and completely. Because of this situation, the SEALs did not suffer the large numbers of malfunctions experienced by Army personnel when the rifle was fielded in Vietnam.

CAR-15 Carbine Model 605

Several variations of the AR-15 were also obtained by the SEALs in early 1962 in addition to a number of accessories. Very early in 1962, SEAL Team Two had at least one of the rare AR-15 carbines, the Model 605. The CAR-15, for Colt Automatic Rifle, carbine was the same as the AR-15 rifle except that the barrel had been cut off to just in front of the front sight and the flash suppressor reinstalled. It is possible that only one of the CAR-15 carbines was ever procured as the weapon was not very successful and very few were manufactured by Colt. The AR-15 carbine was offered by Colt for situations "where stowage is a problem," which would of course hold appeal to the size-conscious SEALs. Though it shows up in a number of photographs of field exercises conducted by Team Two in 1962 and in a 1964 weapons display, the AR-15 carbine was little used and probably never fielded in Vietnam.

Several accessories for the AR-15 were experimented with by the SEALs prior to the Vietnam War. At least one removable telescopic sight was tried out by SEAL Team Two. The telescopic sight was a Delft Optics 3x25 power telescope (weight 0.875 lbs. [0.397 kg]) adapted from the earlier AR-10 rifle. Though it could be easily mounted and dismounted from the carrying handle of the AR-15, the early scope sight simply would not remained zeroed to the weapon. When mounted on the rifle, hand pressure was enough to push the sight out of alignment with the rifle. Other accessories obtained included AR-15 bayonets, clip-on bipods, and a small number of early model 30-round magazines.

XM16E1 (M16A1) Model 603

In 1965, the Army had begun receiving quantities of the XM16E1 rifle and several elite Special Forces and Airborne units were equipped with the new weapon. For Army use a number of modifications had been done to the original Model 601 AR-15. Most of these modifications had also been included in the Air Force issue M16. For the Army XM16E1, the major visible change was the addition of the forward bolt assist, a bolt closure mechanism on the upper receiver of the rifle that allowed the bolt to be pushed forward. To accommodate the new changes, Colt manufactured the M16 and the XM16E1 as their Models 602 and 603 respectively.

In the Spring of 1965, the SEALs were given the opportunity to employ their AR-15s in combat. By April, the rebels in the Dominican Republic had escalated the situation to a crisis point. U.S. Forces were finally called

A group of SEALs establish perimeter security while demonstrating a desert mission. The men are all armed with M14 rifles, preferred for the desert due to their longer effective range than the standard M16 series weapons. The SEAL to the left rear in the photo is removing a Compact Laser Designator (CLD) from the pack of the SEAL keeling in front of him. The CLD will be used to illuminate or "paint" a target with laser light for an incoming air strike. These men are all wearing the most recent pattern desert camouflage uniforms.
PHOTO CREDIT: KEVIN DOCKERY

TECHNICAL DATA—M14
NSN 6D1005-00-770-3559
CARTRIDGE—7.62mm Nato (7.61x51mm)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 20 to 40 rpm, A 40 to 60 rpm, Cyclic 700 to 750 rpm
MUZZLE VELOCITY—2800 fps (853 m/s)
MUZZLE ENERGY—2593 ft/lbs (3516 J)
SIGHTS—Open, Aperture/blade,
Adjustable 100 to 1200 meters in 100 meter graduations
FEED—20 round removable box magazine
WEIGHTS
WEAPON (EMPTY)—8.6 lbs (3.90 kg)
WEAPON (LOADED)—11.21 lbs (5.08 kg) w/sling, cleaning kit (in buttstock), & 20 rd mag
Sling 0.31 lbs (0.14 kg)
Cleaning kit/combination tool .67 lbs (0.30 kg)
MAGAZINE (EMPTY)—0.51 lb (0.23 kg)
MAGAZINE (LOADED)—1.63 lb (0.74 kg)
SERVICE CARTRIDGE—M80 Ball 393 gr (25.5 g)
PROJECTILE—149 gr (9.7 g)
LENGTHS
WEAPON OVERALL—44.33 in. (112.6 cm)
BARREL—22 in (55.9 cm)
SIGHT RADIUS—26.69 in. (67.8 cm)

TECHNICAL DATA—M14 w/folding stock
MAGAZINE (EMPTY)—0.51 lb (0.23 kg)
MAGAZINE (LOADED)—1.63 lb (0.74 kg)
SERVICE CARTRIDGE—M80 Ball 393 gr (25.5 g)
PROJECTILE—149 gr (9.7 g)

Wearing first-pattern desert camouflage uniforms, these SEALs are patrolling near Kuwait City during Desert Storm. The SEAL in the passenger seat is holding on to his M14 rifle, used in place of the M16 due to its greater range. The action of the M14 has been wrapped in a rag to keep the constant desert dust and sand from the action of the weapon. The large pouch hanging at the SEAL's hip is the M17A1 protective mask carrier with spatters of light paint on the cover in order to help camouflage it.
PHOTO CREDIT: US NAVY

A SEAL equipped for a rescue in a desert environment. He is carrying an M14 rifle, used for its greater effective range in the open spaces of the desert. The dark goggles he is wearing will protect his eyes from the glare of the sun as well as the sudden flash of a flash-bang (stun) grenade. Taped to the top of his PRO-TEC helmet is a strobe light that can be used to identify the wearer to friendly overhead aircraft. For pickup, the modified parachute harness this SEAL is wearing over his desert-camouflage uniform is an integral part of the Special Purpose Insertion and Extraction (SPIE) rig. For a SPIE extraction, a line lowered down from a helicopter would be attached to the carabiner seen just forward of this SEAL's right shoulder. Just above the trigger finger can be seen the cylindrical selector lock that prevents this particular M14 from firing on full automatic.
PHOTO CREDIT: KEVIN DOCKERY

in to protect US interests and help control the fighting in the streets. Two platoons of SEALs from Team Two arrived in the Dominican Republic complete with their equipment, including the AR-15 rifle. At the same time, components of the US Army's 82nd Airborne Division were also conducting operations on the island. The airborne troops were armed with their new XM16E1s.

One drawback of the AR-15 stood out very quickly for the SEALs after their arrival. As the existence of the SEALs was still considered classified at the time and their presence in the Dominican Republic something the military command wanted to keep secret, the SEALs moved about in civilian clothes for at least part of their duties.

But the SEALs were carrying their AR-15 rifles, a very distinctive appearing weapon to say the least. In this instance, the SEAL's penchant for camouflage didn't quite work out.

Combat employment of the AR-15 against the rebels in the Dominican Republic proved out the AR-15 to a number of SEALs' satisfaction. Incidents of combat for the SEALs was limited during the crisis, but few complaints were voiced against the new rifle.

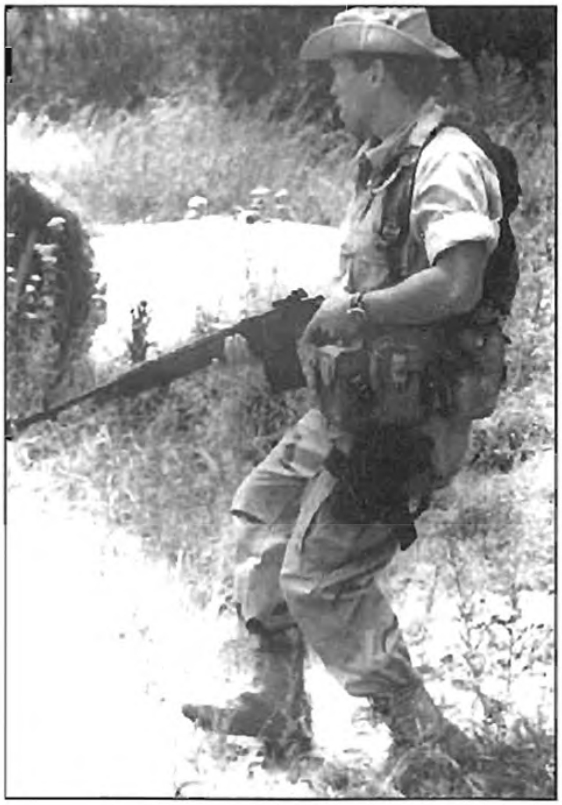
In addition to the AR-15, the SEALs had at least one additional type of rifle with them during their deployment. Having been issued one of the new AN/PVS-2 starlight scopes for night work, the SEALs mounted the device on an M14 rifle. The power and range of the 7.62mm bullet fired by the M14 proved itself very effective, especially against snipers. Though heavy in comparison to the AR-15, the M14 had a good deal of appeal due to the added range it gave the SEALs. In one instance, the M14 - AN/PVS-2 combination was able to provide security against sniper activity along a beach area at night, something no other weapon system available at the time could have done as well.

M14

The M14 was the last "full-sized" rifle to reach standard-issue status with the US military. An improved version of the M1 Garand, the M14 is chambered for the 7.62mm NATO round. The 7.62mm NATO ammunition, also identified as the 7.62x51mm or .308 Winchester (civilian), came out of the old school of thought as to what constituted an ideal battle rifle. Old-school opinion held that a military rifle must be effective at what we now consider a very long range. One thousand yards would only be considered a medium long range to earlier military planners, even though a soldier who could effectively use his rifle at that range was very rare.

Modifications to the gas system, a provision for full-

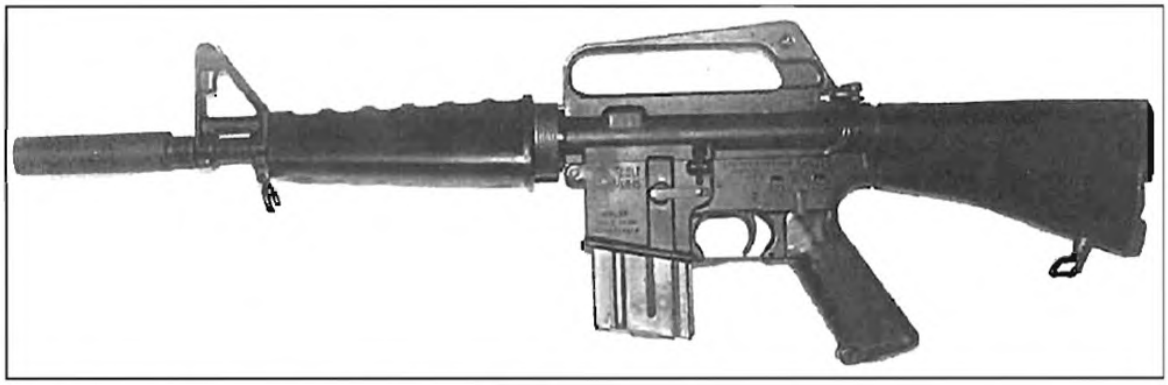
This SEAL takes a break during a demonstration at the UDT-SEAL Museum in Fort Pierce, Florida. He is wearing the first pattern desert camouflage Battle Dress Uniform (BDUs) as well as a set of nylon web gear (ALICE). He has two LC-2 canteen carriers on his belt on either side of his combat field pack. His weapon is an M14 rifle with the bolt locked in the open position.
PHOTO CREDIT: KEVIN DOCKERY



This SEAL operates as part of a patrol during a demonstration. He is wearing the most recent pattern of desert camouflage BDUs. His nylon web gear is the 1974 pattern All Purpose Lightweight Individual Carrying Equipment (ALICE) with several small arms ammunition cases at the side and front of his belt and an LC-2 canteen cover with its 1-quart plastic canteen at the rear of his left hip. The weapon this SEAL is armed with is the standard M14 rifle, preferred for the desert environment due to its greater range over that of the M16 series. The curved attachment on the muzzle of this M14 is a late production M12 blank firing attachment that allows the weapon to operate with blank ammunition. A low-slung holster on his left hip and the way he is carrying his M14 indicate that this SEAL is left-handed.
PHOTO CREDIT: KEVIN DOCKERY

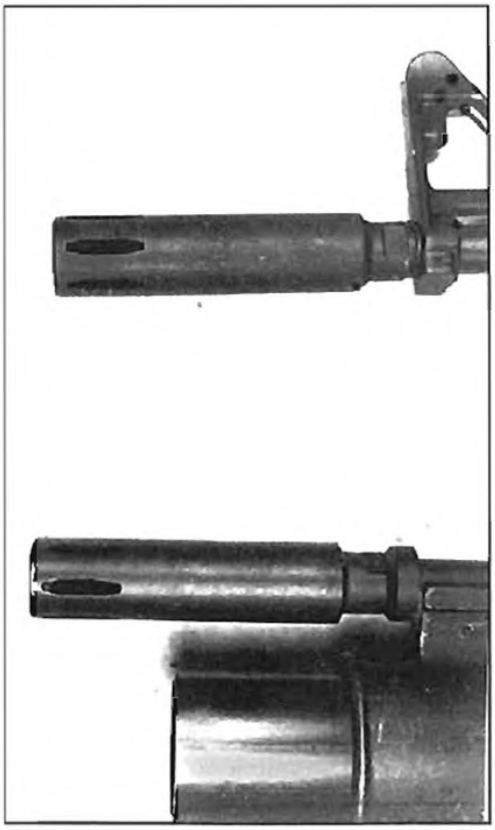
A group of SEALs awaiting their turn in a demonstration of SEAL abilities. They are all wearing the latest pattern of desert camouflage Battle Dress Uniforms (BDUs) as well as a mix of different types of load bearing equipment. The SEALs at the center and left of the photograph are both armed with M14 rifles fitted with late-pattern M12 blank firing attachments. The SEAL at the left is wearing a set of chest pouches for 20 round M14 magazines in addition to his regular web gear. The SEAL at the far right is armed with an M60E3 light machine gun, a belt of ammunition for which can be seen just above his left forearm.
PHOTO CREDIT: KEVIN DOCKERY

At a demonstration of SEAL abilities, this operator is walking across a beach equipped for winter warfare. He is wearing a white camouflage shell over his uniform, complete with hood, gloves, and cover for his pack. Strapped to the sides of his pack are aluminum-framed snowshoes. He is also wearing dark goggles to protect his eyes from the cold and glare off the snow and ice. His weapon is a folding-stock M14A1, unique to the SEALs. The stock on this particular weapon has been partially camouflaged with white tape.
PHOTO CREDIT: KEVIN DOCKERY



A left-side view of the Colt Model 07 CAR-15 submachine gun. The weapon is loaded with a 20 round magazine and the sliding buttstock is in its fully-forward position. The selector lever, directly above the pistol grip, is set to the semiautomatic fire position. This specimen has the longer, second type noise/flash suppressor.
PHOTO CREDIT: KEVIN DOCKERY

TECHNICAL DATA—CAR-15 Submachinegun (Colt Model 07)
CARTRIDGE—.223 Remington (5.56x45mm)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 950 rpm
MUZZLE VELOCITY—2750 fps (838 m/s)
MUZZLE ENERGY—940 ft/lbs (1275 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable,
battle aperture 0 to 300 meters,
long range aperture 300 to 500 meters
FEED—20 or 30 round removable box magazines
WEIGHTS
WEAPON (EMPTY)—5.3 lbs (2.40 kg)
WEAPON (LOADED)—6.01 lbs (2.73 kg) w/20 rd mag, w/o sling
Sling 0.40 lbs (0.18 kg)
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (0.08 kg)
30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.71 lb (0.32 kg)
30 round 1.02 lbs (0.46 kg)
SERVICE CARTRIDGE—M193 Ball 182 gr (11.8 g)
PROJECTILE—56 gr (3.6 g)
LENGTHS
WEAPON OVERALL—26/28.7 in. (66/72.9 cm)
BARREL—10 in (25.4 cm)



Two examples of the second model noise/flash suppressor. The upper specimen is on a Colt Model 07 submachine gun (CAR-15). The longer body of the second model suppressor and the six elongated ports at the muzzle separate the design from the shorter first model suppressor. The lower specimen is mounted on an XM177E2 with an XM148 40mm grenade launcher mounted underneath the barrel. What appears to be a second part of the suppressor, behind the reduced-diameter section, is actually a shaped metal washer. The large washer acted as a gas check and would allow rifle grenades to be launched from the suppressor if desired. Except for slight manufacturing changes that came over time, the two noise/flash suppressors are the same.
PHOTO CREDIT: KEVIN DOCKERY

automatic fire, a 20 round box magazine, and other mechanical improvements made the M14 a better overall battle rifle than the earlier M1 Garand. The long range capability and overall dependability of the M14 kept it held in reserve in the military supply system long after it had been supplanted by the M16A1 as the standard-issue US shoulder arm. Hand fitted and tuned to match specifications, the M14 became a highly accurate base for a later family of sniper rifles for the Teams and the Army.

CAR 15 Model 607

An additional AR-15 based weapon was used by the SEALs prior to their major deployment to Vietnam. The CAR-15 submachine gun was a shortened version of the AR-15, offered by Colt as their Model 607 early in 1965. Originally part of the CAR-15 weapons family, which included the Model 605 Carbine, the CAR-15 submachine gun was a very shortened version of the AR-15 rifle. Since the action of the AR-15 requires that the bolt carrier be able to recoil into the stock when the weapon is fired, a folding stock won't work. For the Model 607, a sliding buttstock of generally standard shape was devised.

The sliding buttstock has a switch on the buttplate to lock or unlock the stock system. Using the switch, the buttstock can be slid in or out and locked firmly into either the extended or collapsed position. With the stock in the collapsed position, the CAR-15 can be easily employed for instinctive shooting while held in the underarm position. Since the weapon was so handy when collapsed, many SEALs never bothered extending the stock.

> "... For myself, I preferred the CAR-15, the short submachine gun version of the M16. Using the CAR, I would rarely extend the stock as most of our fighting was done close-in with instinctive firing from the hip being the norm."

The barrel of the Model 607 was cut down to only ten inches and the standard flash hider installed. The front sight was also moved back and the gas system modified as needed. The handguards of the Model 607 were of the same triangular style as those on the AR-15, only roughly half as long. Well liked by the SEALs for its short size and fast handling characteristics, the Model 607 CAR-15 was available in very limited numbers. Those weapons that were available were used in Vietnam until they were effectively worn out.

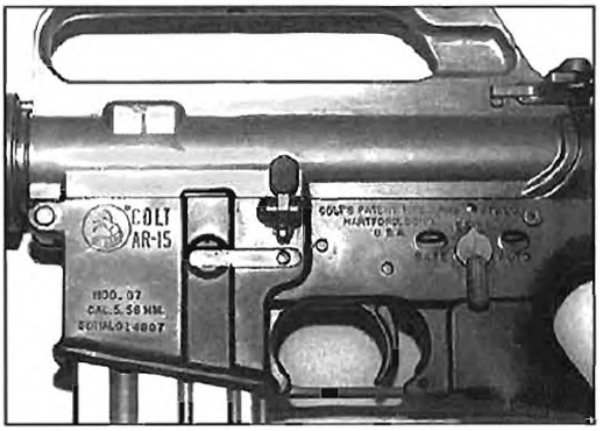
To increase the number of possible military sales of the CAR-15 to the military, especially the Army, Colt made a number of changes to the weapon while it still retained the designation CAR-15 submachine gun. The addition of the XM16E1 model forward bolt assist to the CAR-15 added about 0.2 pounds (0.09 kg) to the overall weight of the weapon. Though the forward bolt assist was not particularly desired by the SEALs, the CAR-15 certainly was. This resulted in a number of slightly different CAR-15 submachine guns being used in the Teams through the Vietnam War.

By late 1966, the Army and the Air Force had shown enough interest in the CAR-15 to have ordered several thousand from Colt. The first weapons examined for the Army were standard model 607s with the forward bolt assist added. During Army testing one serious drawback did stand out immediately when the CAR-15 was fired. The short barrel and standard flash hider gave the weapon a tremendous muzzle blast and loud report accompanied by a large fireball. At night, the muzzle blast from the Model 607 was dazzlingly bright.

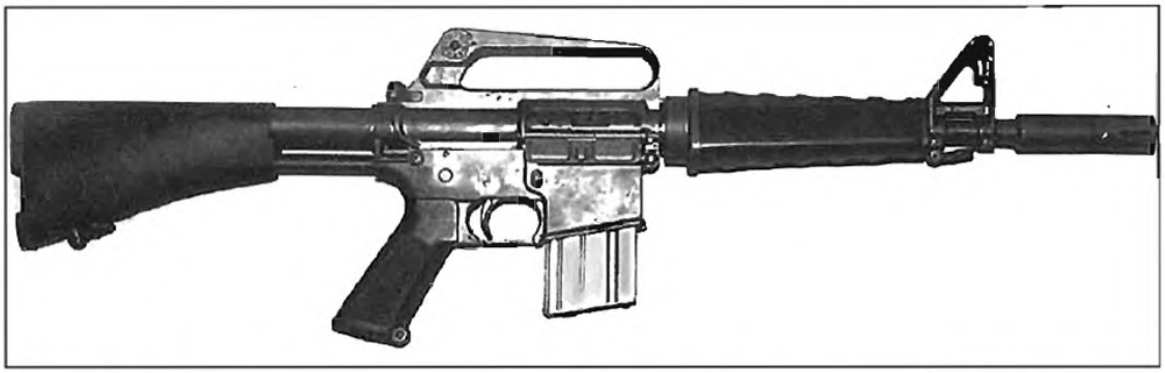
To reduce the muzzle blast and report of the CAR-15 submachine gun, Colt developed a combination flash/noise suppressor in September 1966. The first model flash/noise suppressor added only 1.3 inches (3.3 cm) to the overall length of the CAR-15 and about 0.1 pounds (0.045 kg) to its weight. The internal configuration of the combination suppressor eliminated a good deal of the muzzle flash and, when new, reduced the report of firing the CAR-15 to near that of the standard M16 rifle.

Though a number of the first-model flash/noise suppressors were made in the Fall of 1966, the design was not considered completely satisfactory. In order to cut down on the sound and flash of firing, the first model noise/flash suppressor had a tight muzzle hole, only slightly larger than the .223 projectile. Though the design of the suppressor did reduce the muzzle blast of the CAR-15 it also increased the amount of fouling deposited in the barrel of the weapon. The tight exit hole also caused tracer bullets to yaw badly when fired, destroying their accuracy. To limit the barrel fouling and allow tracer bullets to be accurately fired, a new flash/noise suppressor was developed.

The second model flash/noise suppressor had an overall length of 4.25 inches (10.8 cm) and a weight of

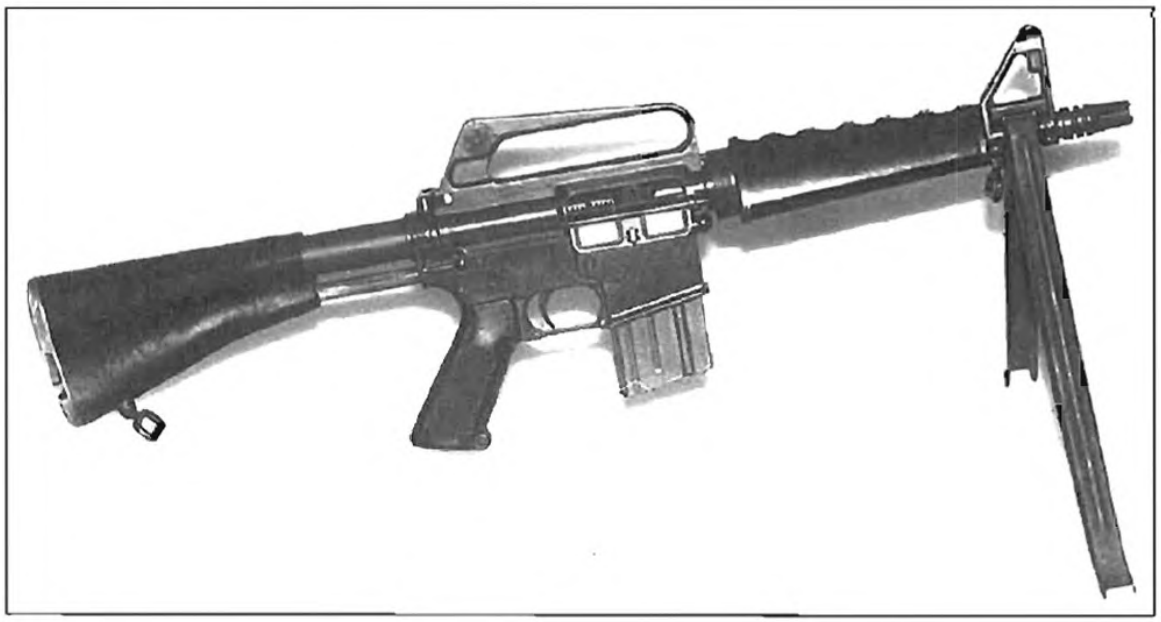


A left-side view of the Colt Model O7 submachine gun (CAR-15). The selector switch can be plainly seen, set at semiautomatic fire, directly above the pistol grip where it can be manipulated by the operator's thumb. The small rectangular part above and in front of the trigger guard is the retaining portion of the magazine catch. Above the rear of the magazine catch is the bolt stop. Pressing in on the serrated portion of the bolt stop releases the bolt allowing it to move forward.
PHOTO CREDIT: KEVIN DOCKERY/KNIGHT ARMAMENT COMPANY



The Colt Model 07 CAR-15 submachine gun. This specimen has the sliding stock fully extended and locked into place. The additional guide rod needed by this design of sliding stock can be seen as the small tube beneath the action spring guide at the rear of the receiver. The noise/flash suppressor on the muzzle of this weapon is the more common second type. This weapon also has an early-type of upper receiver with no allowance for a forward assist mechanism and a lower receiver with no raised guard ridge around the magazine release. The smooth bolt carrier, with no serrations for the forward bolt assist, is visible through the open ejection port.
PHOTO CREDIT: KEVIN DOCKERY

The right side of a Colt Model 07 CAR-15 submachine gun with the spring-operated M3 "clothespin" bipod clamped into place under the front sight. The buttstock is slid back to its open position and the smaller guide rail necessary for this model stock can be seen just below the larger action spring guide. The bolt carrier, visible through the ejection port, is a later model intended for the M16A1 with a bolt closure device. The notches seen on the rear section of the bolt carrier are where the plunger of the closure device would contact the carrier. This specimen has the second-model conical, open-prong flash hider which was mounted on some of the first examples of this model.
PHOTO CREDIT: KEVIN DOCKERY



TECHNICAL DATA—XM177E1 (Colt Model 609)
NSN 1005-00-930-5595
—XM177E2 (Colt Model **629**)
NSN 1005-00-021-2429
CARTRIDGE—.223 Remington (5.56x45mm)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 800 rpm
MUZZLE VELOCITY—2750 fps (838 m/s)
MUZZLE ENERGY—940 ft/lbs (1275 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable, battle aperture 0 to 300 meters, long range aperture 300 to 500 meters
FEED—20 or 30 round removable box magazines
WEIGHTS
WEAPON (EMPTY)—XM177E1 5.2 lbs (2.36 kg)
XM177E2 5.35 lbs (2.43 kg)

WEAPON (LOADED)—
XM177E1 6.62 lbs (3.0 kg) w/sling & 30 rd mag
XM177E2 6.77 lbs (3.07 kg) w/sling & **30 rd mag**
Sling 0.40 lbs (0.18 kg)
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (**0.08 kg**)
30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.71 lb (0.32 kg)
30 round 1.02 lbs (0.46 kg)
SERVICE CARTRIDGE—M193 Ball 182 gr (11.8 g)
PROJECTILE—56 gr (3.6 g)
LENGTHS
WEAPON OVERALL—XM177E1 28.3/31 in. (71.9/78.7 cm)
XM177E2 29.8/32.5 in (75.7/82.6 cm)
BARREL—XM177E1 - 10 in (25.4 cm)
XM177E2 11.5 in (29.2 cm)
The combination flash/noise suppressor adds about 3.5 inches to the overall barrel length
SIGHT RADIUS—14.72 in. (37.4 cm)

0.14 lbs. (0.6 kg). Threading the suppressor onto the 0.635 inch long threaded portion of the barrel muzzle, including a 0.1 inch thick lock washer, increased the overall length of the weapon by 3.72 inches (9.4 cm). The second model flash/noise suppressor was identified by Colt as part #62370. The inside of the second model noise/flash suppressor had a small expansion chamber surrounding a ported barrel extension much the same as the first model device, but the new suppressor had a longer body that incorporated a six-slotted end piece with a large internal diameter, like a standard flash suppressor.

The second model flash/noise suppressor was fitted onto all subsequent models of the CAR-15 and retrofitted onto older weapons as parts became available. Though at least somewhat effective at cutting down the sound and flash of firing the short-barreled AR-15 variations, the suppressor was still easily clogged with fouling and would quickly lose its effectiveness in a combat environment.

XM177, E1, E2 Models 610, 609, 629

The original sliding buttstock assembly of the Colt model 607 was considered too complex and costly for fielding with the Army. A new type of sliding buttstock was designed and put into production. The new stock was a more skeletal, tubular design while still retaining a full-sized buttplate. To extend or collapse the stock a lever underneath the sliding section was squeezed with the operators fingers, unlocking the rear portion of the assembly. A spring would engage to lock the stock in the extended or collapsed position when the operating lever was released. Lastly, the triangular handguards, which were found to be fragile, were replaced with short, cylindrical handguards with raised reinforcing ribs.

The new weapon, named the "Commando" by Colt, began to be delivered to the military on 7 November 1966 with an initial shipment of 1190 weapons out of a 2815 weapon contract. By January 1967, the Commando had been tentatively type-classified as the XM177 submachine gun (Air Force version) without a forward bolt assist and

This SEAL is holding an XM177E2 with an XM148 40mm grenade launcher mounted underneath the barrel. The XM177E2 is loaded with an early Colt extended magazine for the M16 weapon series. This magazine is three 20 round magazines welded together to feed straight through. This magazine did not work well in the field and only 35 were reported to have been made at the special request of SEAL Team Two. Hanging from around this man's neck is a hand-held AN/PRT-4 transmitter. The companion AN/PRR-9 receiver can be seen as the box with the spiral part at his left shoulder. The small radios were not well received by the Teams as they soon proved to have a very short range, as little as 40 meters, out in the field.
PHOTO CREDIT: FRANK MONCRIEF COLLECTION

Two SEALs coming out of the water after a training swim. Both men are armed with XM177E2 submachine guns. The weapon on the left has an early (2nd) model open-prong flash suppressor. The weapon on the right has the standard M16A1 (3rd model) "Birdcage" flash suppressor. Both weapons have their extra-long slings attached to the front sight, allowing them to be carried in a sights-up, muzzle-forward position ready for immediate use. The swimmer on the left has an older pair of UDT "Duck feet" swim fins hanging from his left arm. The swimmer on the right has a newer pair of "rocket" fins developed for the sport-diving industry. Both men are using Mk VI semi-closed circuit breathing rigs.
PHOTO CREDIT: UDT-SEAL MUSEUM

Going out on an operation in Vietnam, this SEAL is armed with an XM177E2. The additional 1.5 inches of barrel on the XM177E2 as compared to the XM177E1 is easily visible in this photo. This weapon has the second model noise/flash suppressor on the muzzle with the additional formed sheet metal washer between the suppressor and the barrel of the weapon. At his left shoulder, this SEAL is carrying a Navy Pilot's Survival knife with the grip covered in tape for additional waterproofing.
PHOTO CREDIT: RYAN McCOMBIE COLLECTION

the XM177E1 (Army version) with a forward bolt assist. The XM177E1 was sent to Vietnam beginning with the first shipments in November 1966 with the Army's distribution of 2800 weapons being completed by March 1967.

SEALs had been using the model 607 CAR-15 submachine gun from the time of their first combat deployments in Vietnam, circa 1966-1967. As the XM177E1 became available, it was picked up for use with the Teams. Development of the XM177 system continued with the Army, the intention being the future replacement of all M3 and M3A1 submachine guns in service as well as the M1911A1 .45 pistol and M16A1 rifle on a selective basis.

After extensive field testing, the XM177E1 was found to not be completely satisfactory. Problems in accuracy were noted and a number of improvements made. In mid-April 1967, the new Colt model 629 Commando was type-classified as the XM177E2. A contract for 510 XM177E2s was signed with Colt with the weapons to go to the Studies and Observation Group, Vietnam (MAC-V SOG). Delivery of the new weapons was to begin in late September, 1967.

Two noticeable aspects of the XM177E2 stand out in photographs of the weapon. The barrel was extended an additional 1.5 inches (3.8 cm) giving the XM177E2 a barrel length of 11.5 inches (29.2 cm). The additional barrel length was found to help cut down on the muzzle blast and increase the stability, and accuracy, of projectiles. Additionally, the longer barrel allows the XM148 40mm grenade launcher to be more easily attached to the XM177E2. Many elite units, including the SEALs, greatly liked the additional firepower of the XM148 launcher, but adding the weapon to the earlier CAR-15 and XM177E1 was difficult and required modifications to both weapons.

In addition to the longer barrel, the XM177E2 appears to have a third model flash and noise suppressor, one with a noticeable raised boss at the barrel end of the device. The boss is actually a stamped metal washer with an elongated cross section. The washer acts as a forward stop for the XM148 40mm grenade launcher and also allowed rifle grenades to be launched from the XM177E2, something that was rarely, if ever, done.

Since the XM177E1/E2 weapons incorporated all of the up-to-the-minute changes and improvements developed for the XM16E1/M16A1, the Commando was noticeably more reliable than many of the M16-type weapons already in Vietnam. By July 1967, thirty XM177E1 barrels with chrome plated chambers arrived in Vietnam. Later production XM177E2s were all produced with chrome plated chambers to help limit corrosion.

Accuracy of fire with the XM177E2 continued to be a problem throughout the life of the weapon, especially when firing tracer ammunition. In November 1968, Colt estimated that a complete ballistic and kinematic study of the XM177E2 would cost $400,000 and take six months to complete. Recommendations in December 1968 were for the XM177E2 to be reoriented to a $635,000, 29-month long R&D program. Due to the winding down of the US forces in Vietnam after 1970, no action was taken on the XM177E2 program and the weapon went out of production in 1970. Though thousands of the XM177E1/E2 weapons had been built, only a few hundred remained in use by the elite forces who strongly desired them. Cannibalization of damaged XM177s to keep the remaining weapons operational became quite common during the 1970's in the SEAL and UDT Teams.

The strong desire to keep the XM-177E1/E2 weapons operational with the SEALs is clearly shown in the mention of the production model weapons first arrival in the Teams. The excerpt is from SEAL Team Two's Command and Control History for 1969, page 14;

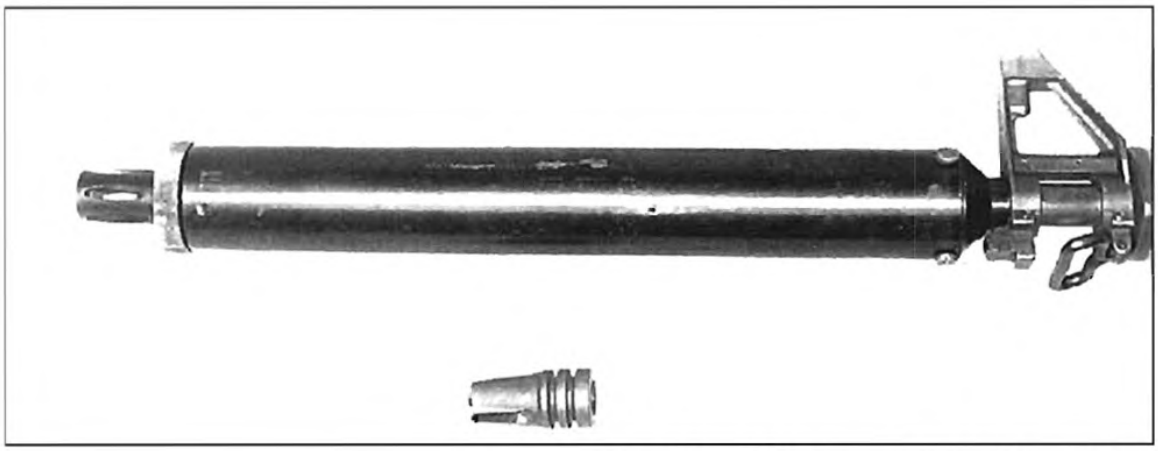
> "3. (U) The XM177E1 submachine gun, better known as the CAR 15, appeared at the SEAL Team late in the year [1969]. This weapon is a welcome addition to the Team's family of weapons, because it fills a size gap that had been left open by all our other weapons. Its main characteristic is its relatively short length which makes it perfect for those people in a patrol such as the patrol leader, radio man, and assistant patrol leader, who find the shorter weapon ideal for close-quarter searching and surveillance of prisoners."

On 23 February, 1967 the XM16E1 was adopted by the US Army as the M16A1 rifle. The weapon had received a number of improvements during its testing by the Army, some of which were necessitated by the Army changing the type of powder allowed in loading .223 ammunition. Among other changes the inside of the bolt carrier was chrome plated and the exterior parkerized with a dull finish. The chrome plating minimized corrosion while giving the carrier a non-reflective finish. Earlier bolt carriers had been entirely chromed and could be seen shining through an open ejection port.

A third model flash suppressor was added to the M16A1, this one having a closed muzzle giving it a "bird cage" appearance. The earlier open prong flash suppressors were reported by the Army to hang up on vines, tall grass, and brush, something not noticed by the SEALs. Other changes in the M16A1 included chrome plating the chamber, and later the entire bore, of the weapon. The SEALs simply liked the M16 family completely and used them interchangeably. In a single SEAL platoon in Vietnam could sometimes be seen AR-15s, M16A1s, CAR-15s (model 607s), XM177E1s, and XM177E2s. On the muzzles of the weapons could be found first, second and third model flash hiders, on both long and short barreled weapons, as well as first and second model flash/noise suppressors on the "shorty" weapons.

The SEALs' opinion of the M16E1 shows clearly in the following quote taken from the official Command and Control History for SEAL Team Two, 1967;

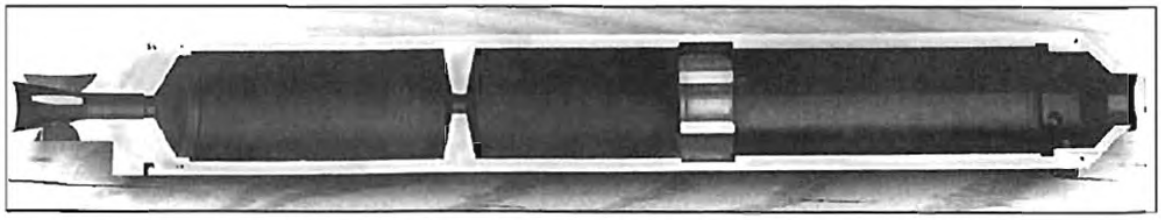
> "The M16E1 has proven a welcome addition to the SEAL arsenal. The weapon performs very well as long as it is kept reasonably clean.



This is the Mark 2 blast suppressor (1st model) mounted on a standard M16A1 rifle. The Mark 2 screws onto the muzzle of the weapon in place of the standard flash suppressor. The conical rear mount of the Mark 2 indexes on the bayonet lug. The suppressor body is turned to line up the screw holes, and the rear mounting screws inserted to lock the device into place. The flash suppressor is the 2nd type, conical, open-prong model. This blast suppressor was based on the earlier design of the Human Engineering Labs (HEL) M4 sound suppressor. Filed for a patent on 12 July, 1968 as a gun blast diffuser, the 1st model Mark 2 did not require the modifications to the weapon that the HEL M4 suppressor did in order to operate. A weapon fitted with the Mark 2 blast suppressor, developed for the Mark 4 rifle, worked equally well with our without the suppressor in place.
PHOTO CREDIT: KEVIN DOCKERY

"The HEL M4 suppressor was mounted as a permanent part of a modified M16A1 and was not intended to be removed.... With the suppressor removed, the modified M16A1 wouldn't operate except as a manually loaded repeater."

A sectioned view of the 1st model Mark 2 blast suppressor. This very simple design has two expansion chambers and a single baffle. The angular piece to the left of center is the threaded cruciform mounting plate that screws onto the barrel of the using weapon. Though outwardly resembling the HEL M4 suppressor, the Mark 2 blast suppressor is greatly more simplified, having only five major parts as compared to the over 16 parts in the HEL M4. The internal design of the Mark 2 blast suppressor allowed water in the system to easily drain out, something that could not be quickly done with the HEL M4.
PHOTO CREDIT: KEVIN DOCKERY



The chrome [plated] chambers and barrels should substantially lengthen the life of the barrel. It is believed that the bolt assist should be eliminated from the weapon."

For the SEALs' operations in Vietnam surprise was as much of a weapon as any ordnance that could be carried. Specialized weapons could sometimes give an additional edge to an operating group of SEALs deep in the bush. Normally, weapon specialization extended into giving the SEALs as much concentrated firepower, in terms of volume of fire, that they could effectively carry. But other types of weapons could increase the "surprise" factor in the SEALs' favor. And foremost among these weapons are suppressed guns where the sound of firing is eliminated as much as possible.

A suppressor, commonly called a silencer, cuts down on the noise of a weapon's firing, suppressing the sound of the shot. Usually, a suppressor does not effect the velocity of a fired projectile which, if it is moving faster than the speed of sound, causes a sonic "crack" as it passes through the air.

During the first years of the SEALs major deployments to Vietnam, few if any suppressed weapons were available to the Teams. Those that were usually consisted of old World War II weapons that were in very short supply. Back in the States, the US Army's Human Engineering Laboratory (HEL) at Aberdeen Proving Grounds was one of several places developing suppressors for the military, The HEL M4 suppressor became available to the SEALs in the summer of 1967. The HEL M4 suppressor was mounted as a permanent part of a modified M16A1 and was not intended to be removed. For proper operation with the HEL M4 suppressor attached, the bolt carrier of the designated M16A1 had an extra gas bleed-off hole drilled into it, centered and behind the two holes already in place. The extra hole allowed the weapon to function properly, firing in both semi and full automatic modes, but only with the suppressor attached. With the suppressor removed, the modified M16A1 wouldn't operate except as a manually loaded repeater.

A gas deflector shield was attached to the charging handle of the modified M16A1 to protect the firer's face and eyes from any excess propellant gases. The HEL M4 suppressor made the modified M16A1 very difficult to locate by sound when fired. At a distance of 50 meters or so, depending on the surrounding area, the sound of the shot could not be heard.

To increase the efficiency of the suppressor, the SEALs obtained a quantity of special downloaded .223 ammunition. The special ammunition would fire a subsonic projectile that did not break the speed of sound, about 1100 feet per second (335 m/s) at sea level, and yet still operate the action of the modified M16A1. Though very quiet and effective, the subsonic ammunition still would not operate the action as dependably as desired. Neither was the terminal effectiveness of the special ammunition as good as the standard round.

The suppressor-equipped M16A1 was used by the SEALs throughout their operations in Vietnam and was considered a valuable asset. As noted in the SEAL Team Two Command and Control history for 1968, page 8;

"A silencer has been produced which when used with special ammunition, has an indistinguishable noise level. The SEAL Team now has silencers for pistols and rifles."

The weapon was especially valuable on those missions that needed the longer range and accuracy of a suppressed rifle over that of a suppressed pistol or submachine gun. Off-duty SEALs sometimes found additional uses for the suppressed M16A1s they had.

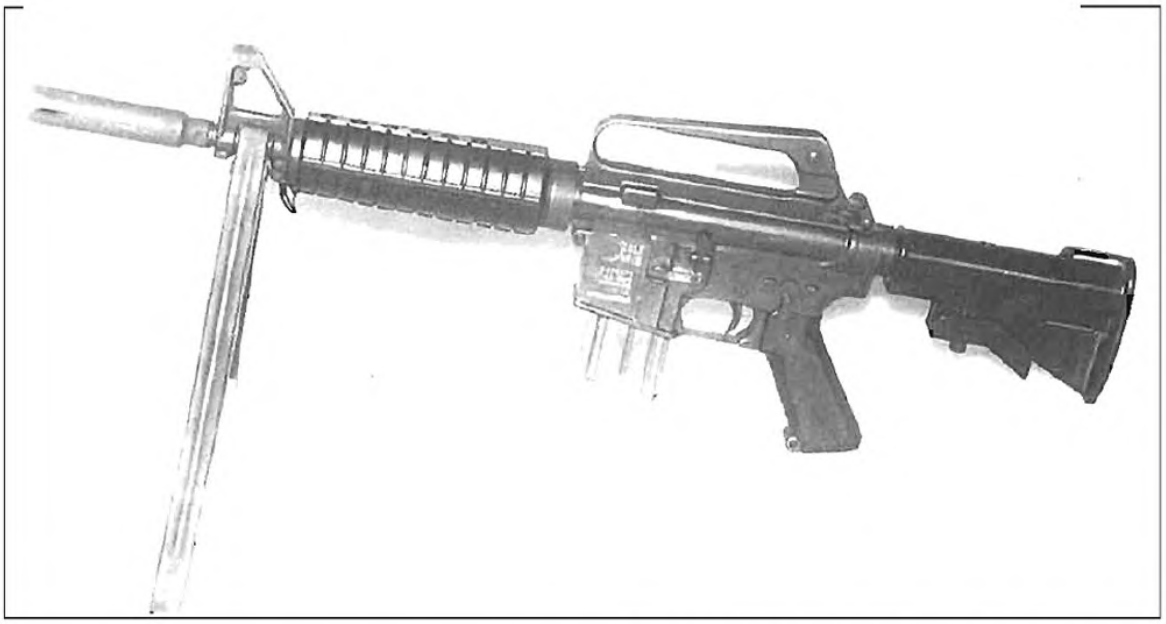
"We shipped out and went on to Song Ong Doc, where we were living on a barge. At night, you'd see groups of rats swimming out from shore in a column maybe twenty feet long, trying to reach the barge and climb up to get into the potatoes that were stacked amidships. When we didn't have operations, the guys would get M-16s with silencers (suppressors) on them and sit out on deck shooting the rats. As long as they used the silencers (suppressors) the officers didn't know what they were doing."

The SEALs were constantly looking for ways to augment the firepower of their small units. This was one of the reasons that the Teams first looked at the AR-15 weapon. One item that was attractive in the AR-15 was that it came outfitted with a twenty-round magazine. Though a thirty-round magazine had been available from Colt since at least 1964, technical difficulties with the large magazines design kept it from being commonly available.

The original Colt thirty-round magazine was a "fully curved" design, that is the magazine had a slight curve, to facilitate feeding rounds, through its entire length. Though the original magazine fed ammunition smoothly, the magazine well of the AR-15 was a straight rectangular hole. Allowances for a curved magazine had not been designed into the weapon. Simply put, not all of the AR-15/M16/XM16E1 weapons made would accept the original thirty-round magazine. If an individual weapon's tolerances were on the large side, it could accept the curved magazine, if not, it could only feed from the standard twenty-round magazine.

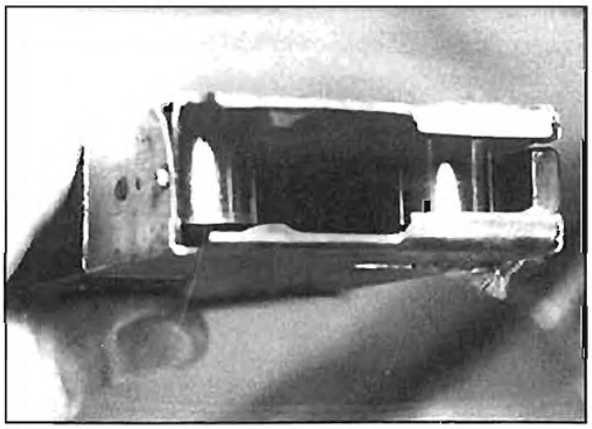
The few thirty-round magazines the SEALs had were carefully hoarded and used for combat duty. Though the Teams had at least a small number of the original thirty-round magazines in 1964-65, there were never enough for general issue. The Air Force also had a limited number of the early thirty-round magazines and occasionally individual mags would be "borrowed" by enterprising SEALs.

In January 1966, a requirement was put out for a thirty-round magazine to be delivered from Colt for the M16/XM16E1 program. The late 1966 contract for the XM177E1 Commando specified that the weapon come issued with seven thirty-round magazines. But the thirty-round magazine project was overshadowed at Colt by



"Later production XM177E2s were all produced with chrome plated chambers to help limit corrosion."

A Colt Model 609 XM177E1 "Commando" submachine gun. This specimen has the longer second model noise and flash suppressor mounted on its muzzle. The production model sliding buttstock is in its forward position in this photo. The weapon is loaded with a 20 round magazine and is supported with an M3 bipod clamped in place under the front sight.
PHOTO CREDIT: KEVIN DOCKERY



A top view of the Mod 3A 50 round M16 magazine. The cartridge follower has been removed in this photo to show the two constant-force extension springs. The constant-force springs resemble a roll of steel tape. The spring steel coils maintain a smooth pressure on the cartridge follower as the rounds are fed into the weapon with the same pressure driving the first cartridge as the last. Most coil spring designs build up pressure as the spring is compressed making the last rounds to be loaded into a long magazine difficult to insert. The constant-force spring design eliminates the spring-loading problem.
PHOTO CREDIT: KEVIN DOCKERY

Produced by the Naval Weapons Center at China Lake, these are commercially available polypropylene plugs used to block the muzzle of an M16, AR-15, or Stoner. The soft plastic plugs slip tightly into the bore of the flash suppressor where they seal the end of the barrel from mud or rain. The plugs could be simply removed by hand or even shot-off with no danger to the weapon or firer. One drawback of the internal-style rain/mud plug was that it would not work on the noise/flash suppressor found on the CAR-15 and XM177 series weapons.
PHOTO CREDIT: US NAVY

other problems and pushed back in priority. XM177E1s were issued with standard twenty-round magazines.

During the initial field testing of the XM177E1 by the US Army in Vietnam, only four early model thirty-round magazines were sent over for testing. This was along with the 2800 XM177E1s being issued. The four magazines ended up with the 5th Special Forces Group. Though the number of magazines available for testing was laughably small, ninety percent of the people asked in the survey that was part of the XM177E1 testing, stated they preferred the thirty-round magazine if available.

By June 1968, Colt had signed a contact with the Army to supply 1,000 new-model thirty-round magazines with delivery expected in 26 weeks. By 1969, the new model thirty-round magazines started to become available in Vietnam with the SEALs being among the first units to receive them. The new magazine has a straight top and bottom portion connected by a curved section and fit all of the AR-15/M16/16A1 weapons produced at the time of its adoption in 1969. The thirty-round magazine was enthusiastically received by the SEALs who accepted all that they could get their hands on.

SEAL Team Two Command and Control History, 1969, page 14:

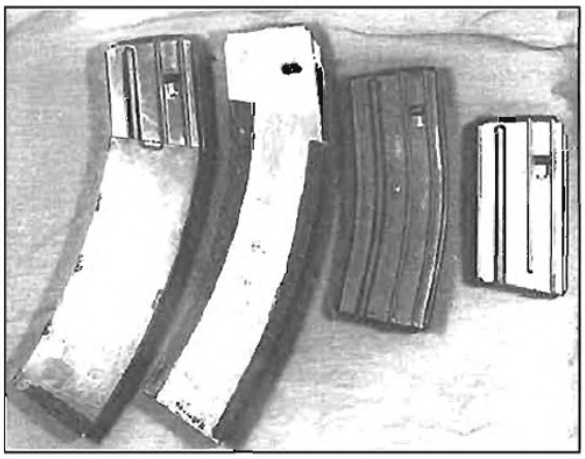
"8. (U) Another favorite piece of operational gear which is now present on the SEAL TWO inventory is the 30-round magazine for the M16 and CAR 15 weapons. This gives an extra 10 rounds per magazine which is a welcome development to a unit such as the SEAL Team which constantly tries to make up for its lack of numbers with superior firepower."

In 1968, the Naval Research and Development Unit - Vietnam (NRDU/V) sent a representative to Vietnam in order to assess the needs of the Navy units there. During his four-month tour, the NRDU/V representative spent a large portion of his time with the SEALs operating in the Mekong Delta. One of the strong impressions the man came away with was of the SEALs' requirement for sustained firepower with their M16 rifles. This was needed especially to maintain the high volume of fire during the first crucial moments of enemy contact.

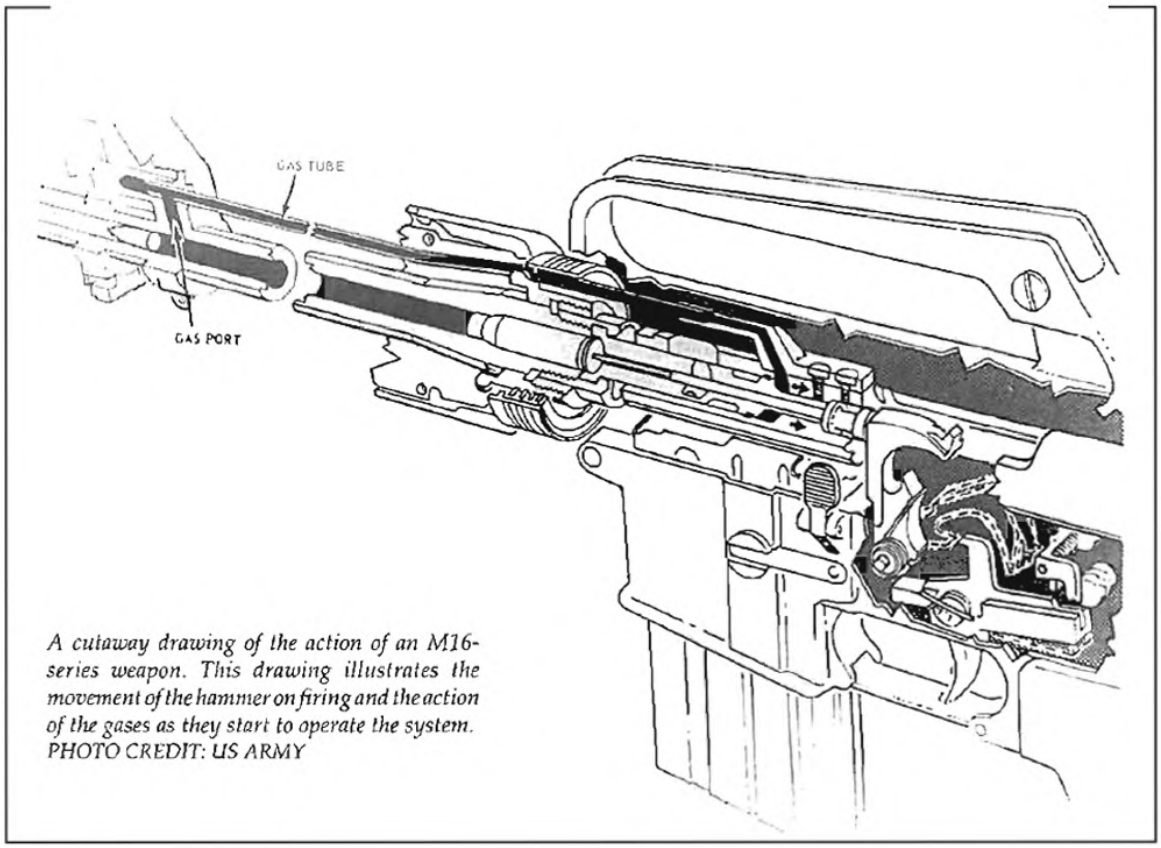
There was at least a year's wait before the thirty-round magazine would be available from Colt and the Naval Weapons Laboratory, Dahlgren, decided to address the problem. The first model of a new fifty-round magazine was delivered from Colt in April/May 1969. The Colt magazines were made up from three twenty-round magazines welded together end-to-end. Inside of the magazines were a new follower mechanism designed by the engineers at Dahlgren. Thirty-five of the Colt magazines were made and forwarded to the Navy for testing.

The major engineering problem with such a long magazine is the spring pressure needed to lift the heavy column of cartridges into the rifle. Too heavy a spring and the last rounds loaded will be difficult to insert into the magazine, too light a spring and all of the ammunition will not feed into the weapon. A normal coil spring, such as is used in the twenty-round magazine, "loads up", that is increases its spring tension as the magazine is filled. For the proposed fifty-round magazines, the pressure needed to load the final rounds against a coil spring would likely need a loading tool for assistance. In addition, the spring pressure could keep the first rounds in a full magazine from being stripped into the barrels by the weapon's bolt.

To answer this problem, the NRDU/V came up with a new method of pushing the rounds through the long magazine. The follower for the fifty-round magazines, the platform that actually pushes the ammunition itself,



Four of the magazines used by SEALs in Vietnam in the M16-series of weapons. The magazine to the far right is a standard, aluminum 20 round box magazine used in the M16 from its very early days. An earlier steel 20 round magazine was available for the AR-15 but was dropped in favor of the improved aluminum model. Second in from the right is the production-model aluminum 30 round magazine that started becoming available to the SEALs in some numbers in 1969. The production 30 round magazine has two straight sections connected by a curved portion of the body. An earlier 30 round magazine was available in small numbers but had a fully-curved body that did not fit all M16-series weapons due to tolerance differences between magazine wells. The magazine to the far left is the Childers/Monolo Mod 1 50 round magazine produced by the Naval Weapons Laboratory, Dahlgren in 1969. In the Mod 1 design, a curved extension was attached to a standard 20 round magazine body. In addition, a special constant-force extension spring and Teflon follower were part of the design. The Mod 1 design was not successful and only 10 specimens were produced with several being tested in Vietnam. The center magazine is the Mod 3A design, considered the most successful of the series. Ten of the Mod 3A magazines were made and tested by the SEALs in Vietnam and found a valuable addition to the initial volume of fire that could be put out on contact with the enemy. Though the 50 round magazine project was considered a success, the design was shelved in 1970 and no further work was done.
PHOTO CREDIT: KEVIN DOCKERY



A cutaway drawing of the action of an M16-series weapon. This drawing illustrates the movement of the hammer on firing and the action of the gases as they start to operate the system.
PHOTO CREDIT: US ARMY

The rarely seen patch of the NWC Special Projects Division at China Lake, California. This facility produced many specialized pieces of equipment on a quick-reaction basis for use by the SEALs during the Vietnam War and into the 1970's under the sponsorship of the Vietnam Laboratory Assistance Program (VLAP). The figure wearing the cloak and holding a dagger symbolizes the clandestine nature of much of the SEALs' work. The cactus represent the desert where China Lake is located and the background explosion the end effect of much of the material produced for the SEALs.
PHOTO CREDIT: US NAVY

was made of a low-friction plastic. In the base of the follower were placed two constant-force springs, much like the coiled springs in a clock movement. The ends of the springs were attached to the mouth of the magazine rather than pressing against the magazine's bottom. The constant-force springs would unwind as the magazine was loaded, keeping the same pressure on the last rounds loaded as on the first.

The Colt manufactured (first generation) magazines were made at the special request of SEAL Team Two as an interim measure prior to a magazine becoming available from Dahlgren. Results from using the first generation magazines in the field were poor as the magazines were particularly susceptible to mud and damage from the environment. All the first generation magazines were replaced as new designs became available.

The Naval Weapons Laboratory, Dahlgren (NWL) made a Mod 1 magazine consisting of a twenty-round magazine body attached to a curved magazine extension. The Mod 1 magazine used the constant-force springs and follower and operated much better than the Colt magazine. A further nine Mod 1 magazines were made for testing but remained in the United States.

To eliminate some of the problems noted in testing, a Mod 2 magazine was designed. In the Mod 2 magazine, the follower remained much the same as in the Mod 1 but the body of the magazine was made up of two machined halves rather than an extension being attached to an existing magazine. In the Mod 2 design, the curve of the magazine remained the same but the angle where the curved portion met the straight section was increased. The straight section of the magazine had to be retained for easy insertion into the M16 magazine well

The Naval Ordnance Station in Forest Park, Illinois fabricated forty-two Mod 2 magazines according to the NWL design. Testing established the viability of the magazine and the unusual follower design. Ten magazines were found to not operate properly and were removed from the test. Five of the Mod 2 fifty-round magazines were sent to other units in Vietnam and the majority of those remaining, twenty-seven units, were distributed to the members of SEAL Team Two operating in the Mekong Delta.

One difficulty with fifty-round box magazines was noted in particular by 8th Platoon in My Tho. The comment made was that the fifty-round magazine was too bulky and too long. When the platoon was operating from a defensive position, the men would have to expose 50% more of their bodies when firing with the fifty-round magazines from the prone position. It was also pointed out that the magazines operated best when only loaded with forty-five rounds rather than fifty.

All told, the fifty-round magazines were considered an effective and valuable piece of equipment by most of its users. A Mod 3 magazine incorporating several improvements over the Mod 2 design was developed. One improvement on the Mod 3 was the addition of a bolt stop to the follower. Now the weapon's bolt would lock open on an empty magazine when the last shot was fired. Ten of the Mod 3 magazines were made and seven were sent to SEAL Team Two elements in Vietnam.

By February 1971, a final report on the fifty-round magazine project was written as NWL Technical Report TR-2536 by Carroll D. Childers and Joseph C. Monolo. The report listed the recommendation put forward by the SEALs that the fifty-round magazine (Mod 3) be adopted for use and issued one per man as a weapon-ready magazine for deployed platoons. It was suggested that such magazines be serial numbers for positive control and not be considered a consumable item. Cutbacks in the post-Vietnam military kept any funding from being made available for the fifty-round magazine program and the project was shelved.

Other methods were used by the SEALs to extend the firepower of their firearms. The most common technique was to tape together two or more magazine together, upside down to one another. This method allows for a fast reload as the magazine assembly only has to be pulled from the weapon, flipped over, and reinserted. One strong drawback of this technique is that the bottom magazine has its first cartridges exposed to the environment. It is very easy for dirt or mud to enter the exposed magazine and cause a jam when it is used. This problem keeps the technique from being as widely used as it might be.

The problem of dirt and especially mud entering their magazine was one the SEALs discovered very soon after beginning operations in Vietnam. To answer this problem, the Special Operations Branch of the Navy Weapons Center at China Lake, California came up with plastic M16 magazine caps. The caps were simple, black plastic devices, one to fit on the bottom and the other over the top of any size M16 magazine. The caps effectively sealed the magazine against dirt and mud. The top magazine cap had a tab sticking out from one end. The tab could be pulled, with an operator's teeth if necessary, tearing off the cap and clearing the magazine for insertion into a weapon.

In addition to the magazine caps to keep out the mud, China Lake came up with two items to help keep the rain and mud of Vietnam out of the bore of an M16. One device was a simple white plastic plug that could be inserted into the flash suppressor of an M16. The plug was made of a soft plastic and was hollow. The tight fit of the plug into any of the three flash suppressors then in use would effectively seal the bore against rain or mud. But the plugs would not make the weapon waterproof from a full immersion, such as from an underway insertion.

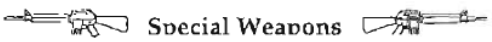
The plugs were just large enough to be pulled from the muzzle with the fingers, or the tip of a knife. The fit was such that the weapon could even be fired with the plug still in place, blowing out the plug with no damage to the weapon.

The other device China Lake found to help keep rain and mud out of the bore of a .223 caliber weapon was a plastic cap. The cap, resembling a plastic film container, could be pressed over any standard-sized flash suppressor on any .223 caliber weapon in the SEALs

TECHNICAL DATA —T 223 Rifle (Heckler & Koch HK33)
CARTRIDGE—.223 Remington (5.56x45mm)
OPERATION—Roller locked delayed blowback
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 40 rpm, A 160 rpm, Cyclic 650 to 750 rpm
MUZZLE VELOCITY—3150 fps (960 m/s)
MUZZLE ENERGY—1234 ft/lbs (1673 J)
SIGHTS—Open, Drum-type multiple aperture w/V-notch battle sight/blade, Adjustable, Battle sight 100 meters, apertures at 200, 300, and 400 meters
FEED—20 or 40 round removable box magazines

WEIGHTS
WEAPON (EMPTY)—7.65 lbs (3.47 kg)
MAGAZINE (EMPTY—20 round 0.25 lb (0.11 kg) 40 round 0.35 lbs (0.16 kg)
MAGAZINE (LOADED)—20 round 0.77 lb (0.35 kg) 40 round 1.39 lbs (0.63 kg)
SERVICE CARTRIDGE—M193 Ball 182 gr (11.8 g)
PROJECTILE—56 gr (3.6 g)
LENGTHS
WEAPON OVERALL—36.9 in. (93.7 cm)
BARREL—15.7 in (39.9 cm)
SIGHT RADIUS—18.9 in. (48 cm)

Transporting a captured VC, the SEAL in the center of this picture is armed with a Harrington & Richardson 5.56mm T223 rifle. This weapon is the US imported version of the Heckler & Koch HK33. This particular weapon is loaded with a 40 round magazine and has a China Lake plastic muzzle plug over the flash hider. Slung muzzle forward under the right arm of the center SEAL is an M72 Light Antitank Weapon (LAW). At the left of the photo is a SEAL carrying a radio and armed with an early model 07 CAR-15, the stock of which can be just seen behind his left hand, The CAR-15 is loaded with a early-style curved 30-round magazine. Underneath the radioman's left arm is a late-model Chicom Type 56 (AKM-47). The Type 56 is probably the weapon taken from the black pajama-clad prisoner who is wearing a three-pocket chest-type magazine carrier. PHOTO CREDIT: US NAVY



inventory. The cap fit snugly, even on Stoner machine-guns and XM177E1/E2s, sealing out mud, dust, and water. Originally, the caps were made of red plastic but this was soon changed to a black material. As with the muzzle plugs, the weapon could be fired with the cap in place with complete safety to the operator and the weapon. The muzzle cap idea worked so well and had such a universal application that they were adopted by the US Army as the Cap, protective, dust and moisture seal: muzzle, still available today as a standard-issue item.

Other materials produced by China Lake for the SEALs and their M16s predated equivalent Army items. By October 1968, a limited number of M16A1s had been modified by China Lake to have a jungle sling and integral cleaning kit. The jungle sling was simply a side mounted sling that allowed the operator to carry his weapon hanging at his side, muzzle forward, ready for use. To accept the sling, the normal rear sling swivel of the M16A1 was moved from the toe of the buttstock to the rear upper left side. The front sling swivel was moved from below the front sight to a sliding position along a one-piece cleaning rod fitted to the upper left side of the weapons's hand guard, from the front sight to the receiver.

In addition to the sling modifications, a complete cleaning kit was made part of the weapon. A lid was added to the bottom of the hollow pistol grip allowing cleaning materials to be securely stored. In addition, a second storage place was made in the buttstock, covered by a trap door in the buttplate of the weapon. Within a few years, a larger buttstock storage area with a latched cover and a redesigned cleaning kit with a sectioned rod was made part of every M16A1 accepted for US service.

Another accessory was made for the Team's M16s weapons family by China Lake. This item was particularly mundane in nature as it was simply a blank firing attachment. Using standard M200 blanks, the China Lake attachment allowed semi and full automatic functioning on the M16 and all of its variants. The unit screwed onto the weapon's barrel in place of the normal flash suppressor. The attachment would work as well on the XM177E1/E2 as it did on the M16A1. Even ball ammunition could be accidentally fired through the China Lake device without any danger to the firer or the weapon, though the attachment would be destroyed.

The China Lake blank firing attachment was much smaller and lighter than the Army's M15E1 blank firing adaptor. In addition, the China Lake device did not catch on brush and was dark in color as compared to the boxy, bright red M15E1 adaptor.

The Teams were sold on the .223 caliber class of weapons very soon after seeing the round's terminal effects in combat. Along with the M16 family of weapons, the SEALs had a commitment in the .223 round as it was used in their Stoner machine guns. But this commitment did not prevent the SEALs from constantly looking for additional weapons to augment their firepower. But one major requirement was that any new weapons use ammunition available in the US inventory.

Other countries in the NATO alliance could see a strong future for the .223 round after its official adoption by the US military. Several small arms companies developed a number of weapons chambered for the high-velocity round, known as the 5.56x45mm round in NATO terminology. Heckler and Koch of West Germany designed a version of their G3 rifle to use the 5.56mm cartridge. The new weapon, known as the HK33, was imported into the United States by Harrington and Richardson of Worcester, Massachusetts.

Marked as the H&R T 223 rifle, the weapon was submitted to the US Army's Small-Arms Weapon Systems (SAWS) study for evaluation. The SAWS study ran from December 1964 to the submission of the final report in December 1966. During the study, a number of weapons were examined including the T 223, M14, M16E1, AK47, and Stoner weapons system.

One result of the SAWS study was a number of weapons being brought to the attention of the SEALs. Even though the empty H&R T 223 was 0.9 pounds (0.41 kg) heavier than an empty M16E1, the weapon had a forty-round magazine available for it and that made it attractive to the SEALs.

> "Choice of weapons were left as much as possible up to the tastes of the individual SEAL ...For myself, I had taken a liking to the Harrington and Richardson T223 rifle... One thing that immediately made the T223 appeal to me was the fact that it came with forty-round magazines."

One SEAL from SEAL Team Two carried the H&R T 223 during his first combat tour in Vietnam, April to October 1968:

> "My H&R came with four forty-round magazines which I carried in the leg pockets on my cammies for awhile. The magazines tended to rattle around and make too much noise on patrol but were too long to fit in an American ammunition pouch. I solved my problem by getting one of the chicom AK47 chest-type magazine pouches and carrying my ammo in that..."

One interesting point of the H&R T 223 (HK33) is that it very much resembles a slightly smaller, 3.25 inch (8.3 cm) shorter, version of the 7.62mm NATO G3 rifle. In one much published picture of a number of SEALs in Vietnam, one SEAL is holding a T 223 but the weapon can only be seen from its top side. Since the HK33 and G3 are almost identical when viewed from the top, the weapon was identified as a G3 rifle which the SEALs did not use during the Vietnam war. In an earlier-generation copy of the same picture, the long, curved forty-round magazine can be seen sticking out from the bottom of the weapon.

During the SEALs time in Vietnam, a number of different rifles and carbines were used on an intermittent basis. For the most part, the men of the Teams stuck with the M16 family of weapons as their primary weapon. Unlike the other services, an individual SEAL would be

A group of SEALs preparing to go out on an operation in Vietnam. A number of weapons and equipment are visible in this photograph which has long been misidentified as evidence that the SEALs used the German G3 rifle in Vietnam. The SEAL at the top right corner of the photo is armed with an H&R T223 (HK33) rifle. From this top view, it is almost impossible to see the difference between a G3 rifle and this HK33. In an earlier-generation copy of this photograph examined by the author, the 40 round magazine unique to the HK33 can be made out loaded into this weapon. At the top center of this photo can be seen part of the front handguard and barrel of a Colt Model 07 submachine gun (CAR-15). The SEAL at the right-side center is armed with some form of 40mm grenade launcher as he is wearing an early-model nylon mesh grenade carrier vest.
PHOTO CREDIT: US NAVY

"Even though the empty H&R T 223 was 0.9 pounds (0.41 kg) heavier than an empty M16E1, the weapon had a forty-round magazine available for it and that made it attractive to the SEALs."

The unusual rifle with which this SEAL is armed is the Harrington and Richardson (H&R) 5.56mm T223. H&R was the US importer for the German Heckler and Koch HK33 rifle which H&R designated the T223. The specimen held by the SEAL in this photo is loaded with a 40 round magazine. The large capacity magazines that were available for the T223 are what made the weapon of interest to the Teams.
PHOTO CREDIT: US NAVY

TECHNICAL DATA—SKS (Chinese Type 56 Carbine)
CARTRIDGE—7.62 Intermediate (7.62x39mm)
OPERATION—Gas
TYPE OF FIRE—Semiautomatic
RATE OF FIRE—30 to 35 rpm
MUZZLE VELOCITY—2410 fps (735 m/s)
MUZZLE ENERGY—1573 ft/lbs (2133 J)
SIGHTS—Open, Tangent round-notch/post, Adjustable 0 to 800 meters in 100 meter graduations
FEED—10 round integral magazine

WEIGHTS
WEAPON (EMPTY)—8.5 lbs (3.86 kg)
WEAPON (LOADED)—8.86 lbs (4.02 kg)
MAGAZINE (LOADED)—10 rds 0.36 lb (0.16 kg)
10 rds w/stripper clip 0.39 lbs (0.18 kg)
SERVICE CARTRIDGE—M43 Ball 253 gr (16.4 g)
PROJECTILE—122 gr (7.9 g)
LENGTHS
WEAPON OVERALL—40.2 in. (102.1 cm)
BARREL—20.5 in (52.1 cm)

assigned his weapon while still in the States, carry it with him during his deployment, and return with the same weapon after his tour was over. Other services simply issued a man a weapon when he arrived incountry and he turned it back in for reissue when he left Vietnam. The SEAL system allowed a man to care for his own weapon in such a way as to instill maximum confidence and skill with it. It was when a platoon formed-up for deployment and began pre-deployment training that a man was assigned his weapon and began working with it:

> "At [Camp] Pickett the platoon worked on ambushes, popup target courses, weapons familiarization, and zeroing in your own weapon. Each man would take his own M16 and zero the sights on the 1,000 inch range.
>
> Carefully sandbagging his weapon, the firer would adjust his sights until he held a good three-shot group exactly 1 inch below his point of aim at 1,000 inches. For an M16, that would put the bullet's point of impact on the point of aim at 250 yards. After a man had zeroed his weapon's sights, that weapon would be assigned to him by serial number for his tour incountry..."

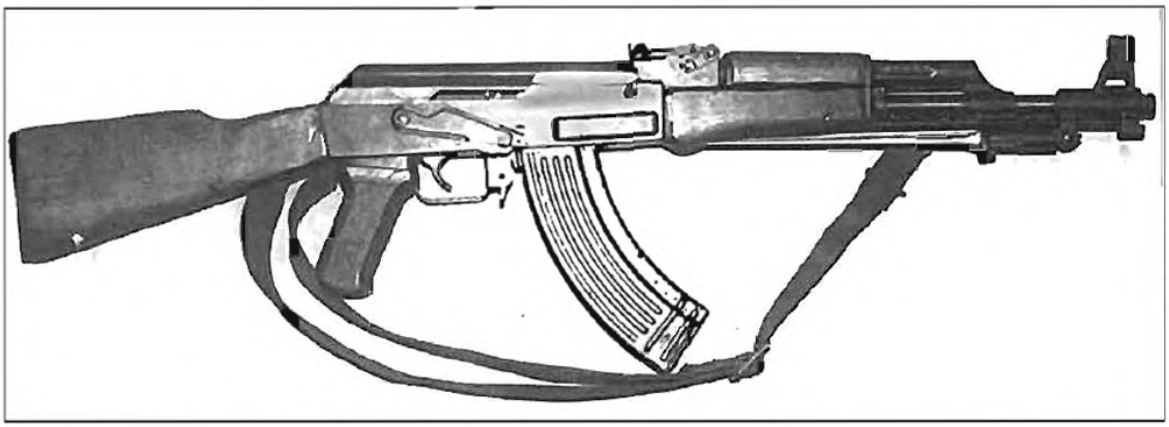
SKS

There were times when the SEALs carried foreign weapons in order to help confuse any enemy observers. In one instance in 1968, two SEALs on patrol deep in enemy territory were reported as a pair of Russian advisors due in part to the materials they carried. Some SEALs developed a taste for the AK47 and its variants and carried that weapon as a matter of preference. Sometimes, it was the mission parameters that determined the choice of weapons. This proved particularly true during the waning years of the SEALs combat deployments to Vietnam. The following was stated by a SEAL officer who was part of the last SEAL Team Two deployment to Vietnam:

> "The kind of operations we went on, it would be rare for someone to detect us, let alone fire directly at us. As rare as it would be for us to be shot at, it would be even more rare for us to return fire. With no support, we just didn't let ourselves be seen. With the few men we had, we just didn't have the firepower to take on an enemy unit. This situation greatly affected our choice of weapons. The AK47 and SKS had the same sound signature, muzzle flash and tracer color as the enemy's own weapons. An M-16, M-60, and especially a Stoner, would stand out to the VC and NVA, telling them where and possibly who we were..."

A Soviet-bloc produced AKMS-47 rifle with its folding stock extended. The long selector lever, above the trigger, is set to the mid-position for full-automatic fire. This specimen has the standard laminated wood forend and a plastic pistol grip.
PHOTO CREDIT: KEVIN DOCKERY

TECHNICAL DATA—AKM-47 (AKMS-47)
CARTRIDGE—7.62 Intermediate (7.62x39mm)
OPERATION—Gas
TYPE OF FIRE—Selective - Full automatic/semiautomatic
RATE OF FIRE—Practical SS 40 rpm, A 90 to 100 rpm, Cyclic 600 to 800 rpm
MUZZLE VELOCITY—2329 fps (710 m/s)
MUZZLE ENERGY—1469 ft/lbs (1992 J)
SIGHTS—Open, Tangent round-notch/post, Adjustable 0 to 1000 meters in 100 meter graduations
FEED—30 round removable box magazine
WEIGHTS
WEAPON (EMPTY)—AKM-47 6.46 lbs (2.93 kg)
AKMS-47 6.90 lbs (3.13 kg)
WEAPON (LOADED)—AKM-47 8.27 lbs (3.75 kg) late steel mag
AKMS-47 8.71 lbs (3.95 kg) w/late steel mag
MAGAZINE (EMPTY)—Early steel magazine 0.95 lbs (0.43 kg)
Late steel magazine 0.73 lbs (0.33 kg)
Aluminium magazine 0.37 lbs (0.17 kg)
MAGAZINE (LOADED)—Early steel magazine 2.03 lbs (0.92 kg)
Late steel magazine 1.81 lbs (0.82 kg)
Aluminium magazine 1.45 lbs (0.66 kg)
SERVICE CARTRIDGE—M43 Ball 253 gr (16.4 g)
PROJECTILE—122 gr (7.9 g)
LENGTHS
WEAPON OVERALL—AKM-47 34.5 in. (87.6 cm)
AKMS-47 25.20/35.04 in (64/89 cm)
BARREL—16.3 in (41.4 cm)
SIGHT RADIUS—14.8 in. (37.6 cm)



A right-side view of a late-model Chinese Type 56 rifle with a folding, spike bayonet. This is the Chicom version of the Soviet AK-47 and was the most common weapon of its type encountered by the SEALs in Vietnam.
PHOTO CREDIT: KEVIN DOCKERY

TECHNICAL DATA—AK-47 (AKS-47)
CARTRIDGE—7.62 Intermediate (7.62x39mm)
OPERATION—Gas
TYPE OF FIRE—Selective - Full automatic/semiautomatic
RATE OF FIRE—Practical SS 40 rpm, A 90 to 100 rpm, Cyclic 600 to 800 rpm
MUZZLE VELOCITY—2329 fps (710 m/s)
MUZZLE ENERGY—1469 ft/lbs (1992 J)
SIGHTS—Open, Tangent round-notch/post, Adjustable 0 to 800 meters in 100 meter graduations
FEED—30 round removable box magazine
WEIGHTS
WEAPON (EMPTY)—AK-47 8.53 lbs (3.87 kg)
AKS-47 7.65 lbs (3.47 kg)
WEAPON (LOADED)—AK-47 10.56 lbs (4.79 kg) early steel mag
AKS-74 9.68 lbs (4.39 kg) w/early steel mag
MAGAZINE (EMPTY)—Early steel magazine 0.95 lbs (0.43 kg)
Late steel magazine 0.73 lbs (0.33 kg)
Aluminium magazine 0.37 lbs (0.17 kg)
MAGAZINE (LOADED)—Early steel magazine 2.03 lbs (0.92 kg)
Late steel magazine 1.81 lbs (0.82 kg)
Aluminium magazine 1.45 lbs (0.66 kg)
SERVICE CARTRIDGE—M43 Ball 253 gr (16.4 g)
PROJECTILE—122 gr (7.9 g)
LENGTHS
WEAPON OVERALL—AK-47 34.25 in. (87 cm)
AKS-47 27.52/34.21 in (69.9/86.9 cm)
BARREL—16.30 in (41.4 cm)
SIGHT RADIUS—14.8 in. (37.6 cm)

A left-side view of a Soviet AKMS-47 with its stock folded. The pattern seen just above the buttplate on the wooden foregrip is distinctive of the laminated wood used in many Soviet Block-produced AK-47 series weapons. PHOTO CREDIT: KEVIN DOCKERY

The AK47 and its variations was the primary shoulder weapon of communist forces throughout the world from 1948 until the 1980's. The SKS which preceded the AK47, is a light semiautomatic carbine that was the first production weapon chambered for the 7.62x39mm round or 7.62mm Intermediate as it was called by Vietnam-era SEALs.

The SKS, for Samozaridnya Karabina Simonova, is a relatively simple carbine with a ten-round internal magazine. The magazine can be filled with loose rounds or quickly loaded from a ten-round stripper clip. The physical characteristics of the SKS made it a very good weapon for the small-stature Asian soldier. Manufactured in several variations in at least five countries, the most common model of the SKS captured in Vietnam was the Peoples Republic of China (PRC) Type 56 Carbine with an integral, folding, spike bayonet.

The 7.62x39mm round was proved out in the SKS carbine and has become arguably the most common military cartridge in the world. When fired in the SKS or AK-47, the 7.62x39mm round has a very unique sound signature, distinctly different from US weapons. In addition, the tracer loading of the 7.62x39mm round emits a green trace when fired as compared to the US, and NATO's, red trace.

AK-47, AKS-47

By far the most popular weapon chambered for the 7.62x39mm round is the AK47. The original AK47, for Avtomat Kalashnikov, is a very robust, compact, and powerful weapon well suited for the Southeast Asian environment as well as the guerrilla tactics of the Viet Cong. The AK47 will continue to function with little or no maintenance given to it over extended periods. Though not particularly accurate, especially after years in the jungle, the AK47 is capable of putting out a high volume of effective fire when used on full automatic.

AKM-47, AKMS-47

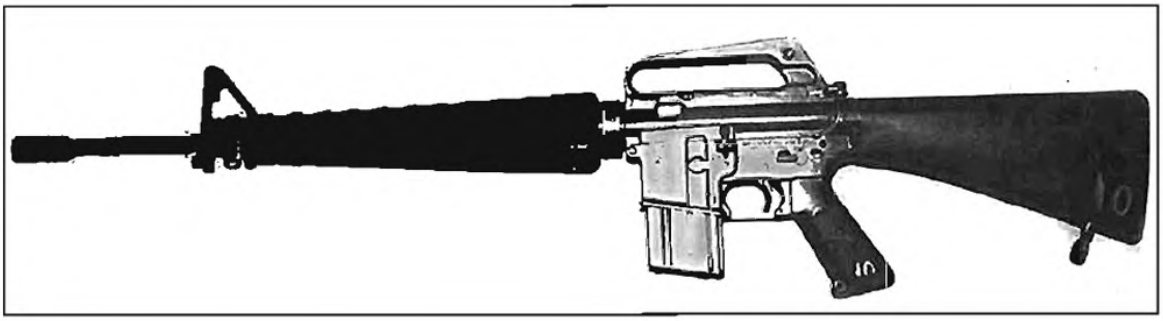
The receiver of the AK47 was manufactured as a complex machining from a solid block of metal. The later, and more common, AKM47 has its receiver made up of sheet metal stampings. Several improvements are incorporated into the AKM47 and it is somewhat lighter, but every bit as rugged, as the original AK47. The AKM47, for Avtomat Kalashnikova Modernizirovanniyi, is also found in a folding-stock version, the AKMS47. The earlier AK47 also had a folding stock version, the AKS47. In both versions, the folding stock swings underneath the weapon and can be locked in the open or closed position. With the stock folded, the AK makes a compact, if heavy, package of firepower.

Literally millions of AK47s have been produced in over ten countries. As found in the SKS, the most common AK47 variant found in Vietnam was the wooden stocked PRC Type 56 assault rifle, found both with and without a folding spike bayonet.

Initially, the AK47 was available in only small numbers to the Viet Cong fighting in South Vietnam. This resulted in the AK47 being something of a prestige weapon among the VC prior to 1968 and the Tet offensive. The SEALs were very quick to notice the importance of finding AK47 armed VC:

> "The AK-47 was in very short supply among the VC in 1967. Only the highest ranking VCI [Viet Cong Infrastructure], number one ichi ban, and their number one bodyguards were seen with the weapon..."

Very soon after deployments began in Vietnam, AK47s were kept in stock in the armories of both SEAL Teams. The weapons acted as both training aids and as a possible source of sterile (non-US) weapons if needed. AK47s and SKSs came from captures in Vietnam and elsewhere. Ammunition was also made available from supply caches



This is the Navy's Mark 4 version of the M16A1 rifle. The dark appearance of the metal parts is due to the special anticorrosion coating that is part of the Mk 4 conversion. A side-mounting sling swivel can be seen projecting just under the front sight assembly.
PHOTO CREDIT: KEVIN DOCKERY

"One of the last specialized weapons received by the UDTs and SEALs while they were still involved in Vietnam was a modified M16A1."

TECHNICAL DATA—Mark 4 Mod 0 w/Mk 2 Mod 0 Blast suppressor
NSN 1005-00-102-8649
CARTRIDGE—.223 Remington (5.56x45mm)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 800 rpm
MUZZLE VELOCITY—3250 fps (991 m/s)
MUZZLE ENERGY—1313 ft/lbs (1780 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable, battle aperture 0 to 300 meters, long range aperture 300 to 500 meters
FEED—20 or 30 round removable box magazines
WEIGHTS
WEAPON (EMPTY)—6.37 lbs (2.89 kg) w/o suppressor or flashhider
8.62 lbs (3.91 kg) w/suppressor
Mk 4 Mod 0 Blast suppressor 2.25 lbs (1.02 kg)
WEAPON (LOADED)—7.39 lbs (3.35 kg) w/30 rd mag, w/o suppressor or flashhider
9.64 lbs (4.37 kg) w/suppressor & 30 rd mag
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (0.08 kg)
30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.71 lb (0.32 kg)
30 round 1.02 lbs (0.46 kg)
SERVICE CARTRIDGE—M193 Ball 182 gr (11.8 g)
PROJECTILE—56 gr (3.6 g)
LENGTHS
WEAPON OVERALL—39 in (99.1 cm) w/o suppressor
45.38 in (115.3 cm) w/suppressor
BARREL—20 in
SUPPRESSOR LENGTH—8 in (20.3 cm)
SUPPRESSOR DIAMETER—1.75 (4.4 cm)
SIGHT RADIUS—19.75 in. (50.2 cm)
Suppressor reduction on the normal sound signature of the weapon, was -32 db. The suppressor is designed to be fully self-draining within eight seconds of removal from immersion.
The Mk 4 Mod 0 rifle is a modified M16A1. The changes are to allow the weapon to be carried at a depth of 200 feet without damage. Provisions are made for the rapid drainage of water from the system and additional protection from the corrosive effects of sea water. Modifications include:
Anticorrosion treatment by applying Kalgard coating to many of the functioning components
Drilling a 1/4 inch hole in the lower receiver extension tube and stock
Installing an O-ring on the end of the buffer assembly
Attachment of the Mk 2 Mod 0 Blast suppressor which is considered an integral part of the Mk 4 rifle.
Basic issue with the weapon includes a sling, complete cleaning kit, and six - 30 round magazines.

This combat swimmer has just left the water with his Mark 4 variation of the M16A1 rifle. Besides the normal protection from the water that is part of the Mark 4 conversion, this weapon also has a plastic muzzle cap over the flash hider to help keep water out of the barrel. The muzzle cap is plastic and can be easily fired through without any damage to the weapon.
PHOTO CREDIT: US NAVY

captured in the field by SEALs. As the war progressed, the US military had sterile (unmarked) 7.62x39mm rounds manufactured at US ammunition facilities. Though the cartridges themselves were unmarked, that was not the case with the cardboard boxes the rounds came packaged in. In plain black letters is printed *20 CARTRIDGES - AK 47 RIFLE AMMO - 7.62 X 39 MM - LOT xxx-xxx-xx*

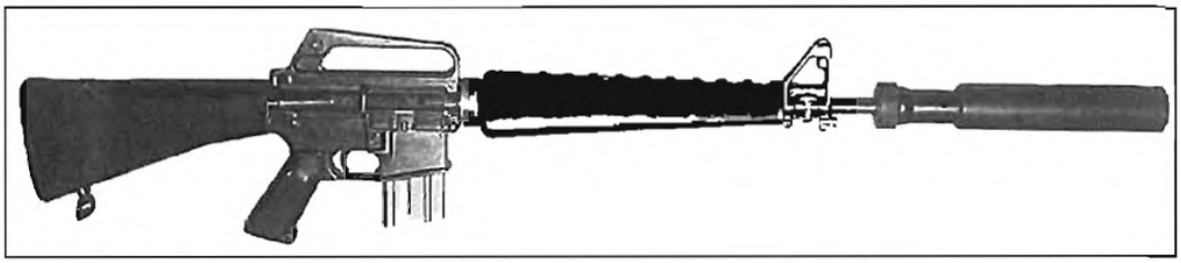
But for the Teams, the most common source of supply for 7.62x39mm ammunition was from the original people who made it, captured in Vietnam as shown in the following portion of a BARNDANCE card (Barndance cards were short reports filled out on each SEAL field operation conducted by a SEAL platoon while deployed to Vietnam):

BARNDANCE # 6-19 SEAL TEAM TWO; DET ALPHA; 6 PLT
DATE(S): 10 Jan 68
Located four enemy ammunition caches in vicinity of XT 270330. REMARKS (SIGNIFICANT EVENTS, OPEVAL RESULTS, ETC.): Captured the following: 67 - 75mm rockets, 29 - 57mm recoilless rockets, 197 - B40 rockets, 30 - 81mm mortars, 28,120 rounds of AK 47, 24 hand grenades, 1615 1o2 lb blocks of C-3, 6 ponchos, 1 gas mask. All ammunition except 7400 AK47 turned over to Army. 7400 rounds of AK47 retained for SEAL Team 2.

The AK47 and its variations have remained part of the SEALs training. Both the SKS and AK47 were listed as weapons a SEAL should be familiar with in the 1974 edition of the SEAL Training Handbook. It is interesting to note that one of the first weapons the SEALs faced in Vietnam, the AK47, was also one of the last weapons they carried on combat missions in Southeast Asia.

Mark 4 Mod 0 (M16)

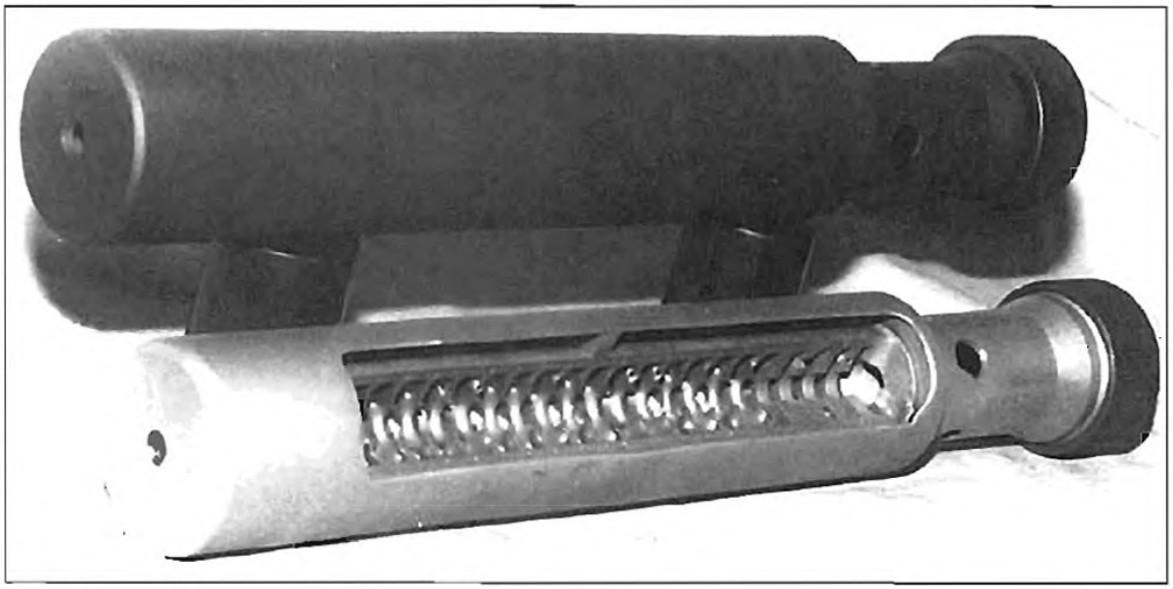
One of the last specialized weapons received by the UDTs and SEALs while they were still involved in Vietnam was a modified M16A1. The modifications done to the M16A1 were to waterproof the weapon and generally make it easier to transport underwater and prepare for immediate use by combat swimmers. Officially identified as the Rifle, 5.56mm Mark 4 Mod 0 at the time of its adoption in April 1970, modifications to the M16A1 included: an anticorrosion treatment consisting of coating many of the working parts of the weapon with Kal Gard gun coating; drilling a 1o2 inch hole in the lower receiver extension tube and stock; installing an O-ring on the end of the buffer assembly; and, attachment of the Mk 2 Mod 0 Blast suppressor



A right-side view of a complete Navy Mark 4 version of the M16A1 rifle with a Mark 2 blast suppressor in place on the muzzle. The Mark 4 package is issued complete with the Mark 2 blast suppressor and five magazines.
PHOTO CREDIT: KEVIN DOCKERY

"The KAC suppressor is a stainless steel, baffle type design with a central perforated baffle tube surrounded by an annular expansion space. The suppressor, now identified as the Mk 2 Blast Suppressor, is able to be fully immersed in water and completely self-draining within 8 seconds."

The Knight Armaments-produced Mark 2 blast suppressor. The top specimen is a standard-production model with the stainless steel body covered with a dark anticorrosion coating. The lower cutaway specimen shows the complex baffle arrangement inside the blast suppressor that slows down the escaping gas of a fired round. The multiple large holes in the reduced-diameter section of the Mark 2 allow a fired cartridge casing to be used to hold the Mark 2 while the collet is tightened or loosened. The collet used to secure the Mark 2 to the barrel of an M16 is adjusted by turning the serrated ring at the breech end of the suppressor.
PHOTO CREDIT: KEVIN DOCKERY/KNIGHT ARMAMENT COMPANY



Two SEALs during a beach insertion demonstration. Both men are holding Colt Model 653 carbines. The weapons are loaded with 30 round magazines and each is fitted with a China Lake blank adaptor on the muzzle. The flat, six-sided cross-section of the blank adaptor can be seen on the weapon at the right. One SEAL is wearing a floppy "boonie" hat while the other is wearing an olive-drab triangular bandage - commonly called a patrol rag - as a bandanna.
PHOTO CREDIT: UDT-SEAL MUSEUM

which is considered an integral part of the Mk 4 rifle.

The changes to the basic M16A1 are to allow the weapon to be carried at a depth of 200 feet without damage. Provisions are made for the rapid drainage of water from the system and additional protection from the corrosive effects of sea water. The basic issue of materials with the weapon includes a sling, complete cleaning kit, and six 30 round magazines.

The original suppressor issued with the Mk 4 was the first model Mk 2 Mod 0 blast suppressor based on the earlier HEL M4. By the late 1970's, the first model blast suppressor was no longer considered adequate for the Mk 4 rifle. Advances in suppressor technology had rendered the earlier design obsolete as a number of new suppressors were on the market with greater sound suppression and durability. After testing a number of available designs, the Navy chose the Knight's Armament Company's (KAC) model

The KAC suppressor is a stainless steel, baffle type design with a central perforated baffle tube surrounded by an annular expansion space. The suppressor, now identified as the Mk 2 Blast Suppressor, is able to be fully immersed in water and completely self-draining within 8 seconds. The advantages of this aspect of the design for the SEALs and UDTs are obvious. The KAC suppressor

Two combat swimmers come ashore in a more obvious manner than is usually done by the SEALs. The swimmers are both armed with Mark 4 versions of the M16A1 rifle. On their chests are Draeger LAR-V rebreathers and they still hold the breathing tubes in their mouths. The green-painted oxygen cylinder underneath the housing of the Dreger is visible on the front SEAL. PHOTO CREDIT: US NAVY

A right-side view of the Colt Model 653 carbine. The buttstock is in the maximum extended position and the weapon is loaded with a production 30 round magazine. The forward bolt assist can be seen on the upper receiver just above the pistol grip. The spring-loaded ejection port is closed in this picture. The weapon is supported by an M3 bipod clamped below the front sight and the muzzle is mounted with the third model "birdcage" flash suppressor.
PHOTO CREDIT: KEVIN DOCKERY

"Since the carbine did not require the longer flash/sound suppressor but had the shorter standard flash hider, the overall length of the model 653 carbine was only slightly longer than the XM177E2. A favorite weapon of the SEALs is produced when the short, handy carbine is mated with the M203 40mm grenade launcher. The powerful combination of automatic rifle and high explosive grenade launcher became a common sight in SEAL hands."

TECHNICAL DATA—Colt Model 653 Carbine
NSN 6D1005-01-029-3866
CARTRIDGE—.223 Remington (5.56x45mm)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 800 rpm
MUZZLE VELOCITY—3020 fps (920 m/s)
MUZZLE ENERGY—1134 ft/lbs (1538 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable, battle aperture 0 to 300 meters, long range aperture 300 to 500 meters
FEED—20 or 30 round removable box magazines
WEIGHTS
WEAPON (EMPTY)—5.6 lbs (2.54 kg)
WEAPON (LOADED)—7.02 lbs (3.18 kg) w/sling & 30 rd mag
Sling 0.4 lbs (0.18 kg)
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (0.08 kg)
30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.71 lb (0.32 kg)
30 round 1.02 lbs (0.46 kg)
SERVICE CARTRIDGE—M193 Ball 182 gr (11.8 g)
PROJECTILE—56 gr (3.6 g)
LENGTHS
WEAPON OVERALL—29.8/33 in. (75.7/83.8 cm)
BARREL—14.5 in (36.8 cm)
SIGHT RADIUS—14.72 in. (37.4 cm)

This SEAL takes aim with his Colt Model 653 Carbine while undergoing desert training. His radio is an AN/PRC-77 with the handpiece pulled under his left arm while he is seated. His loadbearing equipment is the nylon All Purpose Lightweight Individual Carrying Equipment (ALICE) gear adopted by the Army in 1974. He is also wearing 1st pattern desert camouflage BDUs (Battle Dress Uniform) made familiar to the public in the pictures from Desert Storm.
PHOTO CREDIT: SPECIAL OPERATIONS COMMAND PAO

acts as a muzzle blast device and has a very strong barrel attachment system that is still easily removable. In addition to its being made of noncorroding materials and self-draining design, the KAC Mk 4 suppressor is able to withstand full automatic fire from the M16 at the maximum rate possible without being damaged from the heat or blast.

By the end of their involvement in the Vietnam War, the SEALs and UDTs were already experiencing cutbacks in their numbers and financing. New weapons were relatively few in number and parts difficulties were making repair of some of the Vietnam era weapons difficult.

With the ending of the CAR-15 project by Colt in 1970, spare parts unique to the XM177/E1/E2 family were available in very limited numbers. The short barrels that helped make the CAR-15 weapons so popular were particularly rare. Most units, including the Teams, husbanded their remaining CAR-15s carefully and repaired some weapons by cannibalizing other more worn pieces for parts.

The short barrel of the CAR-15 weapons was never noted for its accuracy and when the barrels became worn, accuracy dropped quickly to unacceptable levels. When finally no more worthwhile 11.5 inch CAR-15 barrels were available, Colt offered their 14.5 inch carbine barrel. The M16A1 carbine was a new weapon from Colt that shared many features with the CAR-15 weapons. Some XM177E1 and E2 receivers were rebarreled for use with the carbine barrel and became hybrid weapons, appearing to be carbines but marked as XM177E1/E2s.

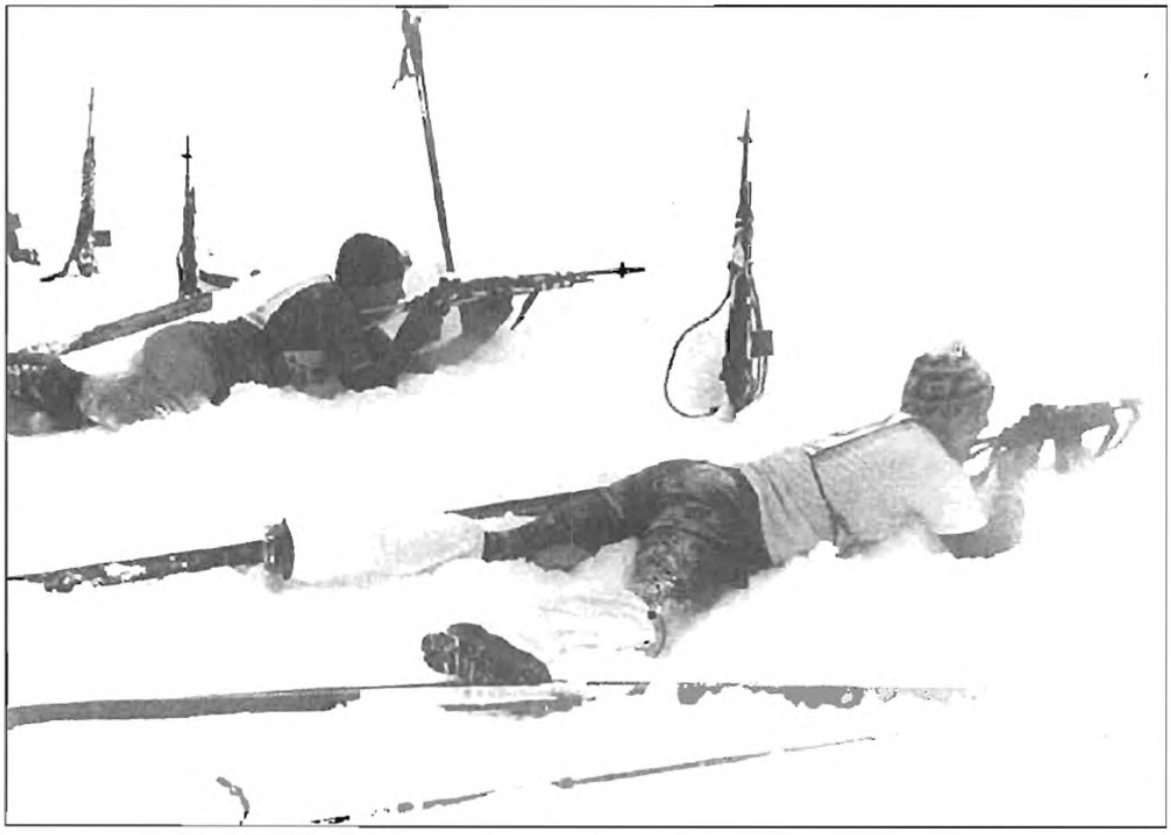
With the declaration by the ATF (Alcohol, Tobacco, and Firearms) department of the Treasury that the CAR-15 flash/sound suppressor qualified as a silencer under the law, and the State Department's outlawing export silencer sales under the Carter administration, Colt changed the design specifications of the CAR-15 to meet market requirements. Since the flash/sound suppressor of the XM177 weapons was a major sticking point, Colt simply extended the barrel of the new carbine weapon to the point where flash and sound could be held to reasonable levels. In addition, the slightly longer barrel of the carbine made it more accurate than the earlier CAR-15 weapons as the bullets had more time to stabilize for flight.

Colt Carbine Model 653

The Colt Model 653 M16A1 carbine was eventually adopted by the SEALs and UDTs in some small numbers.

At a demonstration, the SEAL in the center is wearing a full set of winter equipment including a white camouflage cover for his uniform and pack as well as aluminum-frame snowshoes. His weapon is a folding-stock M14A1 only found used by the SEALs. The stock on this specimen is folded forward and the magazine removed; that is in the SEAL's left hand. The buttplate of the folding stock is covered by a pad and is still in the extended (vertical) position. The SEAL to the right in this photo is equipped for Close Quarters Battle. A 3-cell pouch for 30 round MP5 magazine can be seen at his waist. Below the magazine pouch is a special 3-cell pouch for holding Flash-Crash (stun) grenades.
PHOTO CREDIT: KEVIN DOCKERY

Members of SEAL Team Two take part in a military biathlon competition while undergoing cold weather training in Norway. The men are target shooting with their folding-stock M14 rifles after having completed a portion of the cross-country skiing part of the competition. Additional weapons have been thrust into the snow butt-first to indicate additional firing positions on the line. Note the folding stocks on the weapons being fired.
PHOTO CREDIT: RYAN McCOMBIE COLLECTION



The model 653 shared the same sliding buttstock and short cylindrical handguards as the XM177E2. The most visible difference between the two weapons is the longer barrel of the carbine protruding well beyond the front sight.

The longer carbine barrel is fitted with the Type 3 flash suppressor as found on the standard M16A1s of the era. Since the carbine did not require the longer flash/sound suppressor but had the shorter standard flash hider, the overall length of the model 653 carbine was only slightly longer than the XM177E2. A favorite weapon of the SEALs is produced when the short, handy carbine is mated with the M203 40mm grenade launcher. The powerful combination of automatic rifle and high explosive grenade launcher became a common sight in SEAL hands.

More compact and powerful weapons have long been a priority with the Teams and especially the SEALs. Room is limited at best on many transports and it is at an absolute premium aboard submarines and Swimmer/SEAL delivery vehicles.

M14 WITH FOLDING STOCK

Facing much the same problem of space limitations in their armored vehicles, the Army examined fitting the, then standard, M14 rifle with a folding stock during the early 1960's. Four different models of folding stock were developed by the engineers at Springfield Armory. With the winding down of M14 production, the project was abandoned by the Army.

Few of the Army folding M14 stocks were ever made and even fewer still were available for later use by the Teams. A near-duplicate of the M14/M1 Garand was produced by Italy as their BM 59 series of weapons. The Parachutists and Alpine versions of the BM 59 are fitted with folding stocks that proved to be easily adapted to fit the M14 rifle.

The modified M14 stocks with the BM 59 folding buttstock design were obtained by the Teams by the late 1970's. With the stock folded, the M14 is a more compact package, not a great deal larger than an M16A1. The added power and range of the 7.62mm NATO round and the M14 rifle, combined with the compact folding stock gives the Teams the option of fielding the weapon as the tactical situation dictates.

Through the latter half of the 1970's trials were being conducted by the NATO countries to locate a candidate cartridge and possible weapon for NATO standardization. Though the trials did not locate a weapon design that was acceptable to all NATO members, they did focus on a superior cartridge.

What developed out of the NATO trials was not a new cartridge but a better loading for an existing round. The loading chosen was the Belgium SS109 heavy bulleted 5.56mm round. This loading was duplicated in the US counterpart, the XM855 round. The new loading called for a steel-cored, partial armor piercing 61.7 grain (4 g) bullet to be fired from a barrel with a 1 in 7 inch (1 in 30.5 cm) twist. The new projectile held excellent accuracy and terminal effects out to ranges near that of the 7.62mm NATO round.

M16A2

By late 1979, the US Marine Corps was already discussing the possibility of a new issue rifle. The improved range of the XM855 round caught the Marine's attention as a possible answer to their desire for more of a "rifleman's" weapon to arm the Corps. Requirements later formalized for the Marines desired new weapon, a modified M16A1, were as follows: an adjustable sight good to 800 meters; a projectile with good accuracy to 800 meters and able to penetrate all known helmets and military body armor at that range; stronger plastic and metal parts on the weapon to stand up better to the heavier demands placed on it by Marine training doctrine; and, elimination of the full automatic position and its replacement with a controlled 3-round burst setting.

Additional tests conducted by the Navy added more parameters and suggestions to the physical changes in a possible new Marine rifle. Test weapons were ordered from Colt and examined to see if a modified M16A1 would fit the Marines desires. This led to the development of the third-generation M16, the M16A2.

The Joint Services Small Arms Program (JSSAP) approved a joint-services approach to a new and improved M16A1 by ordering 50 Product Improvement Program (PIP) M16A1s from Colt to be delivered in November 1981. Designated the M16A1E1, the new rifles were extensively tested by the Marines during the last weeks of 1981. The results of the testing gave very favorable reports on the accuracy, range, effectiveness, and handling qualities of the M16A1E1. By September 1982, the M16A1E1 was type-classified as the M16A2.

The Marines ordered 76,000 M16A2's as quickly as they were able. The Army did not have as strong a desire for the new rifle to be immediately available, stocks of M16A1s being considered sufficient to cover several years needs. By 1986, the Army contracted for the purchase of 100,176 M16A2 weapons from Colt.

The M16A2 as issued to the US military is identified by Colt as their model 705. The major differences between the M16A1 and the A2 model include:

Modification of the flash hider to a fourth type without bottom slots. The lack of bottom slots on the M16A2 flash hider prevents dust and dirt from flying up when the weapon is fired in the prone position. The flash hider also acts as a muzzle compensator, helping to hold the muzzle down when firing bursts.

A barrel with a heavier contour from the front sight forward. In addition, the new barrel is rifled with a one in 7 inch twist for use with the M855 round.

Different front and rear sights with the rear sight adjustable to 800 meters range with an easily moved elevation drum.

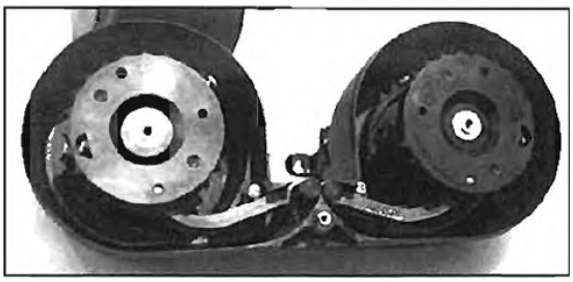
New cylindrical, ribbed handguards. Stronger and more efficient at cooling than the earlier triangular M16A1 handguards, the new handguards are also ambidextrous. Either one will fit on the right or left side of the barrel. An angled slip ring making it easier to remove the handguards for routine maintenance.

A strengthening of the upper receiver.

TECHNICAL DATA—Colt Model 723
NSN OA1005-LL-L99-5287
CARTRIDGE—.223 Remington NATO (5.56x45mm NATO)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 950 rpm
MUZZLE VELOCITY—2900 fps (884 m/s)
MUZZLE ENERGY—1158 ft/lbs (1570 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable, battle aperture 0 to 300 meters, long range aperture 300 to 500 meters
FEED—20 or 30 round removable box magazines

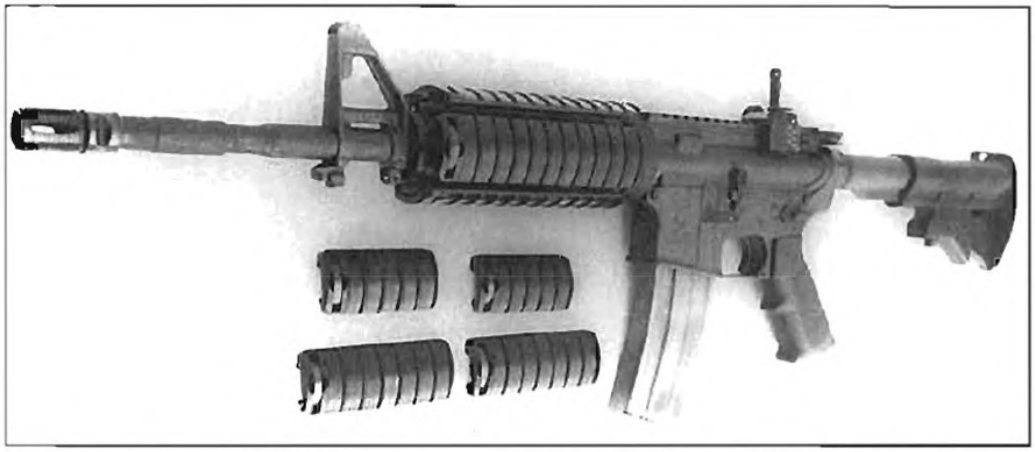
WEIGHTS
WEAPON (EMPTY)—5.9 lbs (2.68 kg)
WEAPON (LOADED)—7.35 lbs (3.33 kg) w/sling & 30 rd mag
Sling 0.4 lbs (0.18 kg)
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (0.08 kg)
30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.73 lb (0.33 kg)
30 round 1.05 lbs (0.48 kg)
SERVICE CARTRIDGE—M855 Ball 190 gr (12.3 g)
PROJECTILE—62 gr (4 g)
LENGTHS
WEAPON OVERALL—29.8/33 in. (75.7/83.8 cm)
BARREL—14.5 in (36.8 cm)
SIGHT RADIUS—14.72 in. (37.4 cm)

A Colt Model 723 Carbine with its sliding stock in the fully-extended position. The weapon is loaded with a C-MAG 100 round double-drum magazine. The C-MAG magazine holds 50 rounds on either side of the magazine well of the weapon and feeds rounds alternately from each drum as the weapon is fired. The low-silhouette of the C-MAG design is illustrated in this photograph. The notch around the barrel of the Model 723 carbine is for the mounting of an M203 40mm grenade launcher without further modification to the carbine or launcher.
PHOTO CREDIT: KEVIN DOCKERY



A rear-view of the Beta Company 100 round C-Mag without the central magazine or rear cover. The two drums hold over forty round of ammunition in a double column around their circumference when fully loaded. The two pusher bars, braced at the center of the magazine for this photograph, drive the ammunition around the edges of the drum and up through the central magazine assisted by the sprockets at the center of each drum. As the magazine is emptied, the drums feed rounds alternately into the central magazine, maintaining a balance in the system.
PHOTO CREDIT: KEVIN DOCKERY

"A short carbine version of the M16A2 has been available to the Teams and is much preferred over the M16A2 rifle."



A left-side view of the SOCOM M4A1 carbine with the 800 meter rear sight raised and the forend mounting surfaces covered by grip plates. The different length grip plates below the weapon can be used to cover the forend mounting surfaces when only a portion of the mount is used by a sight or other accessory. On the muzzle of the weapon is the Knight Armament QD muzzle compensator.
PHOTO CREDIT: KNIGHT ARMAMENT COMPANY

A longer buttstock.
A pistol grip that is slightly larger and has a single finger rest.
All plastic parts are now made of a supertough nylon plastic, ten to 12 times stronger than the original M16A1 parts.
A bulge in the upper receiver acts as a brass deflector allowing easier left-handed firing of the weapon.
Replacement of the full auto position with a controlled 3-round burst.

The replacement of the full automatic fire capability in the M16A2 is one of the most discussed arguments against the new weapon. Though having other good characteristics, the lack of full automatic fire limits the appeal of the M16A2 to the Teams. In addition, flaws were quickly noticed by operators who used the 3-round burst position on the M16A2.

If a 3-round burst is attempted to be fired from the M16A2, and the weapon stops or runs out of ammunition, the mechanism does not reset when the trigger is released. If the weapon runs out of ammunition on the second round of a 3-round burst, when the operator reloads and again pulls the trigger, only a single shot will be fired. If the operator releases the trigger when only a single shot of a 3-round burst has been fired, when he pulls the trigger again, 2 rounds will be fired. This fault is part of the design of the M16A2 controlled burst mechanism and cannot be changed.

Colt Model 723

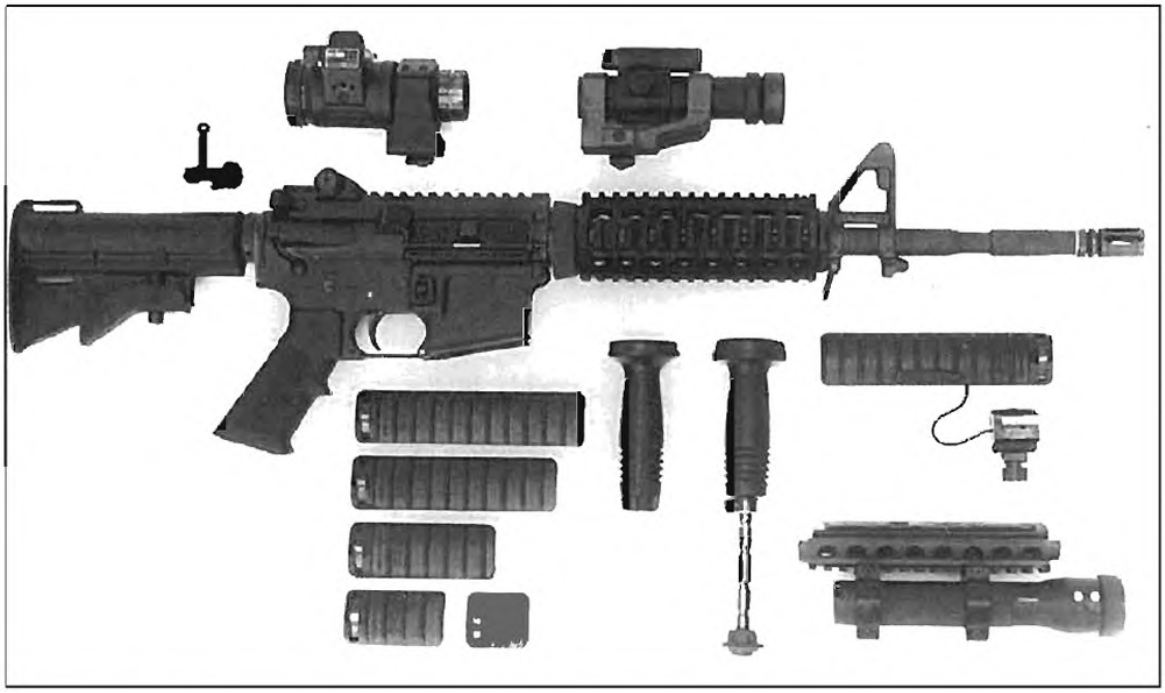
As the new standard issue shoulder arm in the US military, the M16A2 is issued to the SEALs as well as all the other branches of the service. A short carbine version of the M16A2 has been available to the Teams and is much preferred over the M16A2 rifle. The M16A2 carbine is identified by Colt as their model 723 weapon. Virtually identical to the earlier model 653 M16A1 carbine, the model 723 weapon has the larger pistol grip of the M16A2, the fourth model flash hider, and the 1 in 7 inch rifling twist. The full automatic capability, sights, and other characteristics of the model 653 carbine, including the thinner contour barrel, remain the same on the new model 723 carbine.

M4 carbine (Colt Model 720, model 727)

Another version of the M16A2 system is seeing duty with the SEAL teams and is being much more enthusiastically received than the M16A2 rifle. The M4 carbine is a another shortened version of the M16A2 but retains many of the new features found on the full-sized rifle.

The sights on the M4 are the same long range adjustable model as found on the M16A2. The M4 also has the heavier barrel, fourth model flash hider, and brass deflector as on the M16A2. The heavy barrel of the M4 carbine has a slight step in the barrel diameter roughly midway between the muzzle and the front sight. The step is so that the M203 40mm grenade launcher can be mounted on the M4 with no modifications needed on either weapon.

The M4/M203 combination is a very popular one with the Teams. Given the proper circumstances, entire platoons have been armed with the M4/M203 such as during operation JUST CAUSE in Panama. Two different models of the M4 are issued in the military. The Colt model 720 is an M4 carbine with the 3-round controlled burst setting and no other capability for full automatic fire. The Colt model 727 M4 carbine has the capability of full automatic fire and is the preferred model for use by the SEALs.



The complete Knight Armaments Company (KAC) Modular Weapon System recently adopted by the Special Operations Command (SOCOM) for issue to their forces including the Navy SEALs as the M4A1 carbine. The basic weapon is the Colt Model R0927 carbine version of the M16A2 rifle with the KAC Rail Interface System (RIS) in place of the standard front handguard. The RIS has four MIL-STD-1913 mounting rails that will accept a wide range of accessories for both aiming or controlling the weapon. Accessories in this photo include (above the weapon from left to right) the KAC low-profile folding 300 meter rear sight, the ITT "pocketscope" night vision device on a KAC mount, and the Aimpoint 5000 also on a KAC mount. Below the weapon from left to right are; the five different lengths of handguard sections that can fit on the RIS forend different lengths filling in for the space remaining from various devices, the KAC basic vertical foregrip, the KAC monopod vertical foregrip assembly with the monopod extended. Directly below the barrel is the Leupold visible laser aiming device with its companion panel switch module. Below the Leupold assembly is the tactical Streamlight poly flashlight package held to the mounting plate with KAC rings. In addition to these devices, a folding bipod assembly is also available to go on the RIS-equipped M4A1 carbine
PHOTO CREDIT: KNIGHT ARMAMENT COMPANY

TECHNICAL DATA—M4 Carbine (Colt Model 720)
CARTRIDGE—.223 Remington NATO (5.56x45mm NATO)
OPERATION—Gas
TYPE OF FIRE—Selective - semiautomatic/full automatic
RATE OF FIRE—Practical SS 45 to 65 rpm, A 150 to 200 rpm, Cyclic 700 to 800 rpm
MUZZLE VELOCITY—2900 fps (884 m/s)
MUZZLE ENERGY—1158 ft/lbs (1570 J)
SIGHTS—Open, Flip-type aperture/post, Adjustable, battle aperture 0 to 200 meters, adjustable long range small aperture 300 to 800 meters in 100 meter graduations
FEED—20 or 30 round removable box magazines

WEIGHTS
WEAPON (EMPTY)—5.65 lbs (2.56 kg)
WEAPON (LOADED)—7.1 lbs (3.22 kg) w/sling & 30 rd mag Sling 0.4 lbs (0.18 kg)
MAGAZINE (EMPTY)—20 round aluminium 0.19 lb (0.08 kg) 30 round aluminium 0.24 lbs (0.11 kg)
MAGAZINE (LOADED)—20 round 0.73 lb (0.33 kg) 30 round 1.05 lbs (0.48 kg)
SERVICE CARTRIDGE—M855 Ball 190 gr (12.3 g)
PROJECTILE—62 gr (4 g)
LENGTHS
WEAPON OVERALL—29.8/33 in. (75.7/83.8 cm)
BARREL—14.5 in (36.8 cm)
SIGHT RADIUS—14.72 in. (37.4 cm)

The M4A1 carbine with the Knight RIS system. Mounted on the top rail of the RIS forend is an infrared aiming light. On either side of the forend are "11 rib" full length handguard sections. On the bottom of the RIS, held in a firing position by the operator, is the KAC "Masterkey" shotgun, a modified 12 gage Remington 870 pump shotgun used primarily for opening doors by blasting off the hinges/lock.
PHOTO CREDIT: KNIGHT ARMAMENT COMPANY

As of February, 1994, Special Operations Command (SOCOM) awarded a contract to Colt for production of 5,000 to 6,000 M4A1 carbines. The new M4A1, Colt model 927, is intended specifically for Special Operations forces including the SEALs. Firing settings for the M4A1 will be full and semi automatic, with the sights, barrel, and other aspects retained from the standard M4 carbine. The major change will be in the rear sight system.

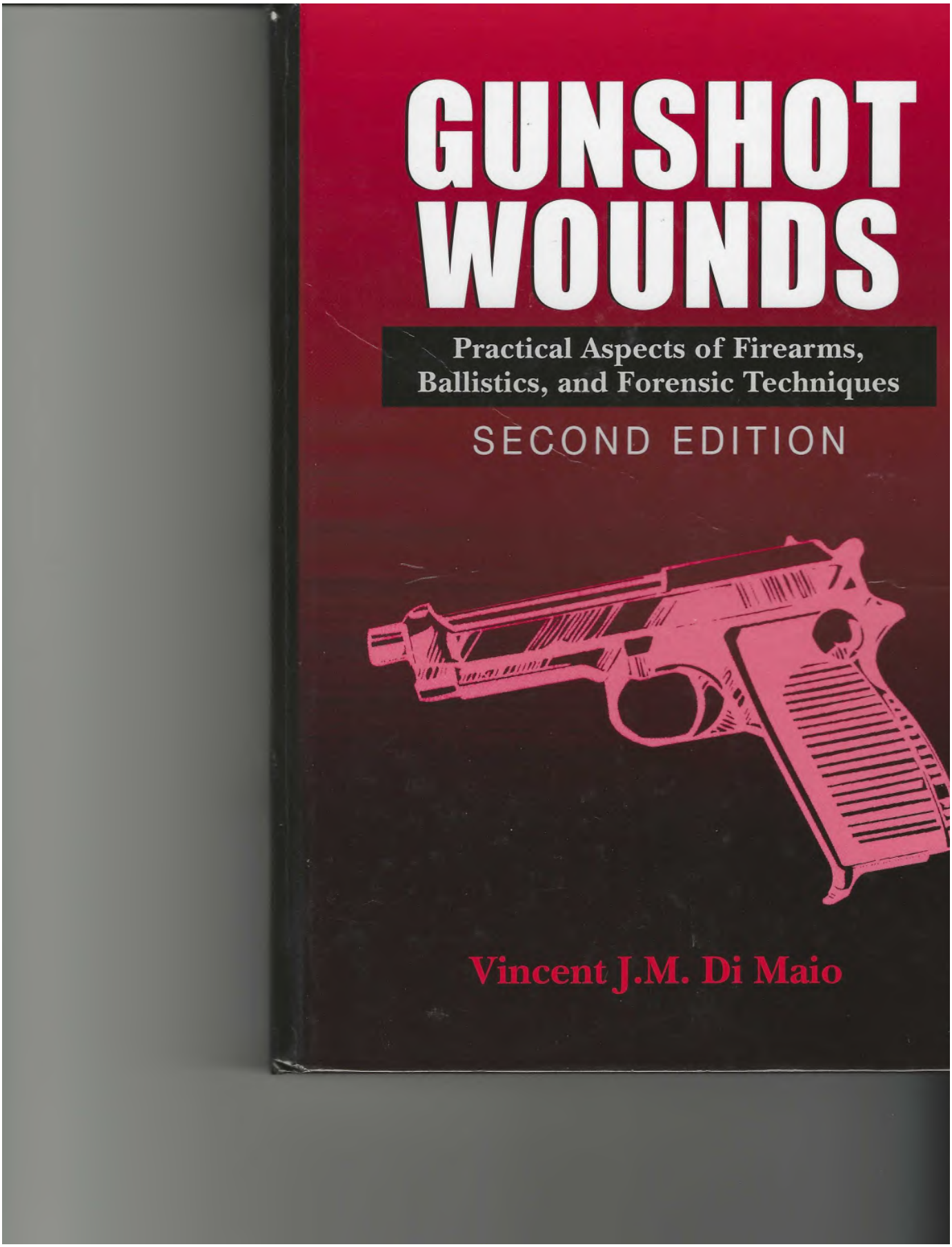
The M4A1 will be equipped with the "Picatinny Rail" mounting located under the removable carrying handle. The carrying handle will retain the standard M16A2 rear sight but can be removed to allow different sighting devices to be mounted. Mounting on the Picatinny Rail makes for a much lower weapon outline as well as giving a more solid and accurate mounting interface than the handle of the weapon. Other modifications on some M4A1s will allow a laser sight or 12 gauge shotgun to be mounted underneath the barrel for close-quarters combat. Production of the M4A1 was planned to begin in May 1994.

To increase their available volume of fire, the SEALs and Special Forces have obtained a number of special C-MAG 100 round drum magazine for the M16 family of weapons. The C-MAG drum is a large capacity, highly dependable feed device that will fit any magazine well that accepts an M16 magazine.

The C-MAG weighs 2.21 pounds (1.00 kg) empty and will accept and feed a full 100 rounds of ammunition. The use of dual drums feeding from either side of the magazine extension allows the C-MAG to have a very low profile when mounted on the M16 weapon. The drums are spring driven and feed their rounds along a spiral track on the outside diameter of the drum. The rounds feed up into the magazine extension alternating one from each drum.

As the ammunition empties onto the magazine extension, flexible feed chains move from the drums up into the magazine extension. The feed chains insure positive tension is kept on the ammunition until the last round is fed into the weapon. When the last round is fired, the C-MAG activates the bolt lock just as a standard magazine would. The design of the C-MAG is such that the weapon actually has a lower profile with the 100 round drum loaded than it does with a standard 30-round box magazine.

Exhibit I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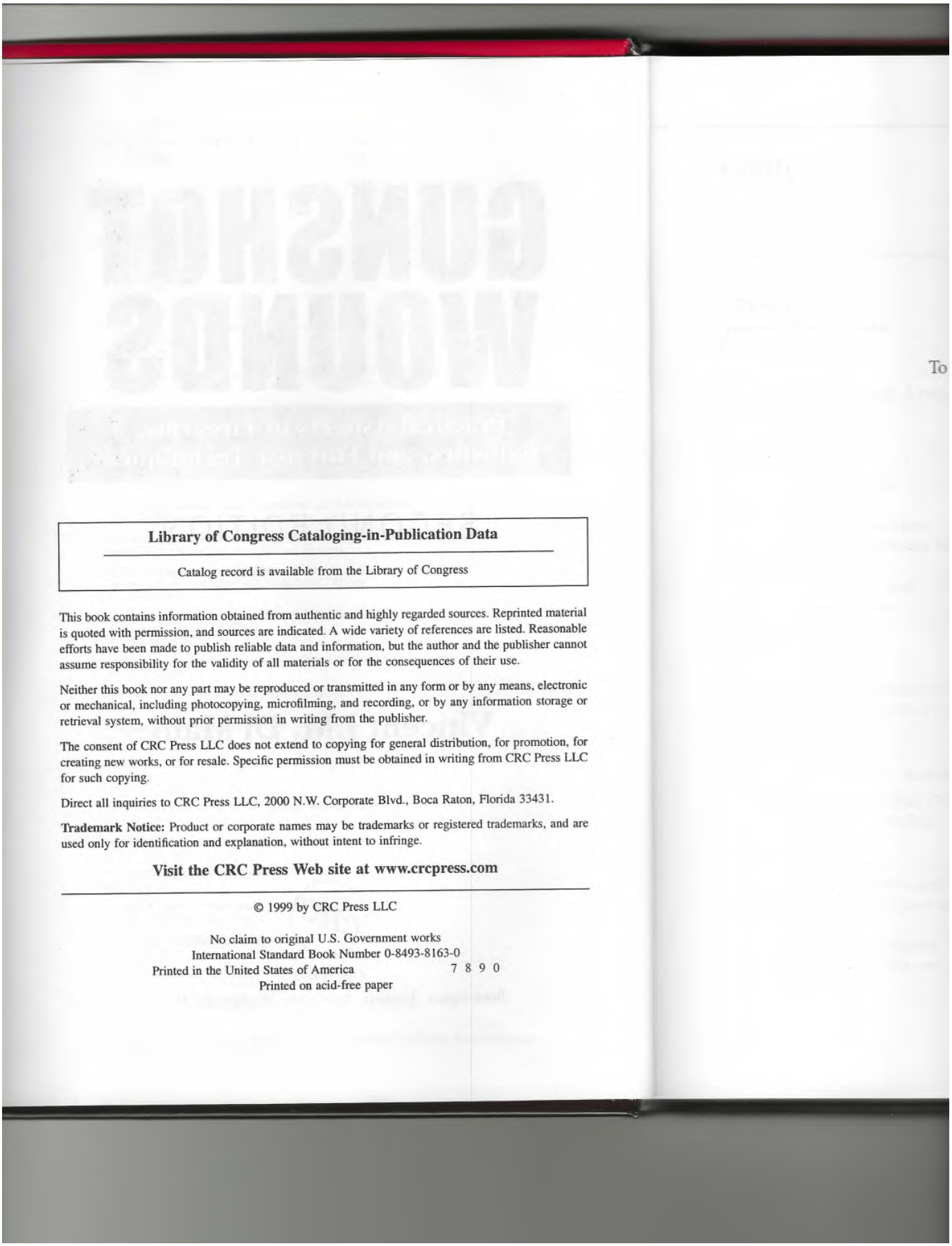

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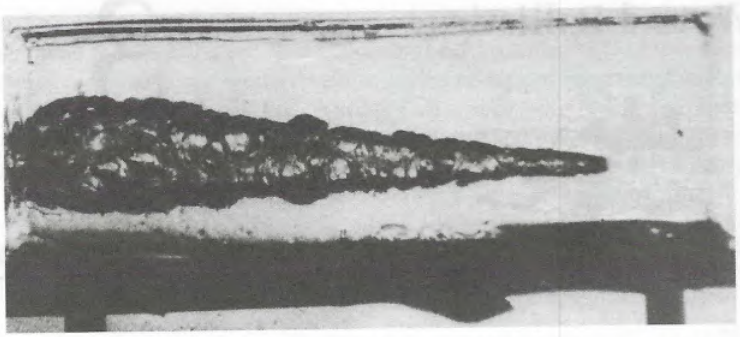

Figure 3.1 Temporary cavity produced in gelatin block by 110-gr. semi-jacketed hollow-point .38 Special bullet.

adjacent to the bullet path (shearing, compression, and stretching) that determines the final extent of a wound.

The location, size, and the shape of the temporary cavity in a body depend on the amount of kinetic energy lost by the bullet in its path through the tissue, how rapidly the energy is lost, and the elasticity and cohesiveness of the tissue. The maximum volume and diameter of this cavity are many times the volume and diameter of the bullet. Maximum expansion of the cavity does not occur until some time after the bullet has passed through the target. The temporary cavity phenomenon is significant because it has the potential of being one of the most important factors in determining the extent of wounding in an individual. For this potential to be realized, however, not only must a large temporary cavity be created but it must develop in strategically important tissue, e.g., a cavity in the liver is more significant than one located in the thigh.

In the case of handgun bullets, the bullet produces a direct path of destruction with very little lateral extension within the surrounding tissues, i.e., only a small temporary cavity is produced. As a general rule, the temporary cavity plays little or no role in the extent of wounding. To cause significant injuries to a structure, a handgun bullet must strike that structure directly. The amount of kinetic energy lost in the tissue by the bullet is insufficient to cause the remote injuries produced by a high-velocity rifle bullet.

The picture is radically different in the case of a high-velocity rifle bullet. As the bullet enters the body, there is a "tail splash," or backward hurling of injured tissue. This material may be ejected from the entrance. The bullet passes through the target, creating a large temporary cavity whose maximum diameter is up to 11 to 12.5 times the diameter of the projectile.[3] The maximum diameter of the cavity occurs at the point at which the maximum rate

of loss of kinetic energy occurs. Thi
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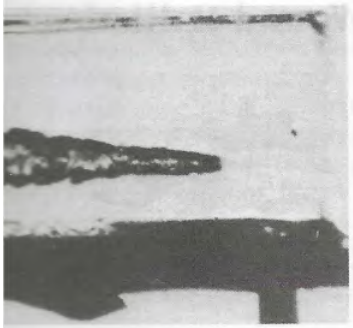

gelatin block by 110-gr. semi-jacketed

npression, and stretching) that deter-

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of loss of kinetic energy occurs. This occurs at the point where the bullet is at maximum yaw, i.e., turned sideways (at a 90° angle to the path) and/or when it fragments. If fragmentation does not occur and the path is long enough, the yawing continues until the bullet rotates 180° and ends up in a base-forward position. The bullet will continue traveling base first with little or no yaw as this position puts the center of mass forward.

The temporary cavity will undulate for 5 to 10 msec before coming to rest as a permanent track. Positive and negative pressures alternate in the wound track, with resultant sucking of foreign material and bacteria into the track from both entrance and exit. In high-velocity centerfire rifle wounds,, the expanding walls of the temporary cavity are capable of doing severe damage. There is compression, stretching and shearing of the displaced tissue. Injuries to blood vessels, nerves, or organs not struck by the bullet, and a distance from the path, can occur as can fractures of bones, though, in the case of fractures, this is relatively rare.[3] In the author's experience, fractures usually occur when the bullet perforates an intercostal space fracturing ribs above and below the bullet path.

The size of both the temporary and the permanent cavities is determined not only by the amount of kinetic energy deposited in the tissue but also by the density and elastic cohesiveness of the tissue. Because liver and muscle have similar densities (1.01 to 1.02 and 1.02 to 1.04), both tissues absorb the same amount of kinetic energy per centimeter of tissue traversed by a bullet.[4] Muscle, however, has an elastic, cohesive structure; the liver, a weak, less cohesive structure. Thus, both the temporary and the permanent cavities produced in the liver are larger than those in the muscle. In muscle, except for the bullet path, the tissue displaced by the temporary cavity returns to its original position. Only a small rim of cellular destruction surrounds the permanent track. In liver struck by high-velocity bullets, however, the undulation of the temporary cavity loosens the hepatocytes from the cellular supporting tissue and produces a permanent cavity approximately the size of the temporary cavity. Lung, with a very low density (specific gravity of 0.4 to 0.5) and high degree of elasticity, is relatively resistant to the effects of temporary cavity formation, and has only a very small temporary cavity formed with very little tissue destruction.[4]

It is not the high velocity of the rifle bullet per se that is responsible for the aforementioned picture, but rather the amount of kinetic energy possessed by the bullet by virtue of the high velocity and which is deposited in the tissue. With most modern rifles, the kinetic energy possessed by the bullet is acquired by virtue of high velocity. A high level of kinetic energy can also be acquired by increasing the mass of the bullet, though this is not as efficient. To illustrate this point, consider the .223 (5.56 × 45-mm) and the .45–70 cartridges. The 5.56 × 45-mm cartridge, fired in the M-16 rifle series, is the

most famous of the new high-velocity military cartridges. It fires a 55-gr. bullet at 3250 ft/sec with a muzzle kinetic energy of 1320 ft-lbs (1790 J). The .45–70 U.S. government black powder cartridge, adopted by the U.S. Army in 1873, fired an all-lead bullet of 405 gr. at a velocity of 1285 ft/s and with a muzzle kinetic energy of 1490 ft-lbs (2020 J), 170 ft-lbs (230.5 J) more than that of the .223 bullet. These bullets, a light-weight, high-velocity one and a heavy, slow-moving one, possess relatively equivalent amounts of kinetic energy and, thus, are capable of producing identical-sized temporary cavities. What will determine their effectiveness is where in the body they will produce their respective cavities.

Energy loss along a wound track is not uniform. Variations may be due either to behavior of the bullet or changes in the density of the tissue as the bullet goes from one organ to another. An increase in kinetic energy loss is reflected by an increase in the diameter of the temporary cavity. A full metal-jacketed rifle bullet will produce a cylindrical cavity until it begins to yaw. At this time, the bullet's cross-sectional area will become larger, and the drag force will be increased. The result is an increase in kinetic energy loss and thus an increase in the diameter of the temporary cavity (Figure 3.2A). In addition to the increase in size of the temporary cavity, there will also be an increase in the amount of tissue crushed as the bullet is presenting a larger impacting surface area. For the 7.62-mm NATO M 80 bullet, gelatin studies reveal that yawing begins after 15 cm of penetration, with maximum tissue disruption at approximately 28 cm where the yaw is 90 degrees.[3]

Projectile fragmentation can amplify the effects of the temporary cavity increasing the severity of a wound (Figure 3.3). This is the reason for the effectiveness of the 5.56 × 45-mm cartridge and the M-16 rifle. For the M-193 55-gr. bullet, on the average, the yaw becomes significant at 12 cm with marked tissue disruption occurring most commonly at 15 to 25 cm due principally to bullet fragmentation.[3,5]

In contrast to full metal-jacketed military bullets, with hunting ammunition, the bullet begins to expand (mushroom) shortly after entering the body, with a resultant rapid loss of kinetic energy. Thus, a large temporary cavity is formed almost immediately on entering the body (Figure 3.2B). This is augmented by shredding of the lead core.

A lead shotgun pellet produces a cone-shaped temporary cavity with the base of the cone at the entrance (Figure 3.2C). The diameter of the cavity gradually lessens as the velocity of the pellet decreases. The loss of velocity is much more rapid for shotgun pellets because of their unfavorable ballistic properties (large cross-sectional area in relation to mass).

It has been found that above a certain critical velocity 800 to 900 m/sec (2625 to 2953 ft/sec), the character of a wound changes radically with tissue destruction becoming much more severe.[2] Trans- or supersonic flow within

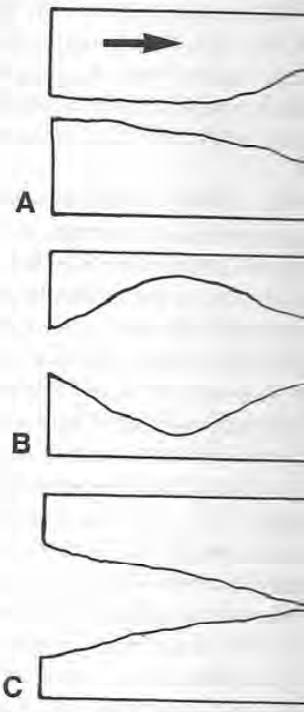
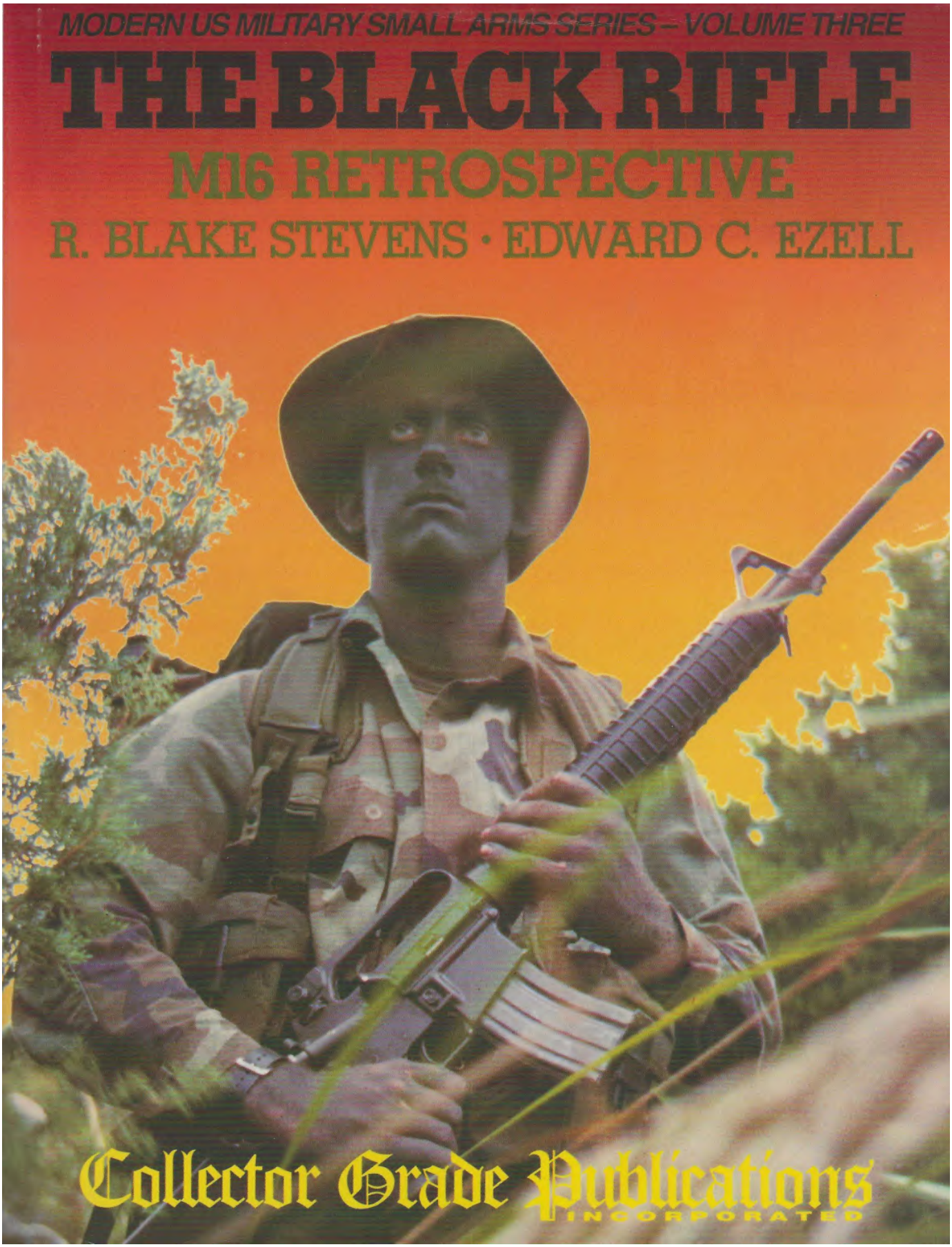


Figure 3.2 Appearance of temporary metal-jacketed rifle bullet, (B) hunting

the tissue causing strong shockwaves this effect. In experiments by Rybeck 0.86 g were fired at the hind legs of 510 m/sec, the volume of macroscop larger than the diameter of the bullet. devitalized muscle was seen to be 20 t cavity.

It is the author's belief that rath above which the severity of wounds i critical level (amount) of kinetic ener becomes radically more severe. This le When a bullet or missile exceeds this temporary cavity that the organ or tis exceeds the elastic limit of the organ. organ "bursts." For full metal-jackete this critical level of kinetic energy lo

Exhibit J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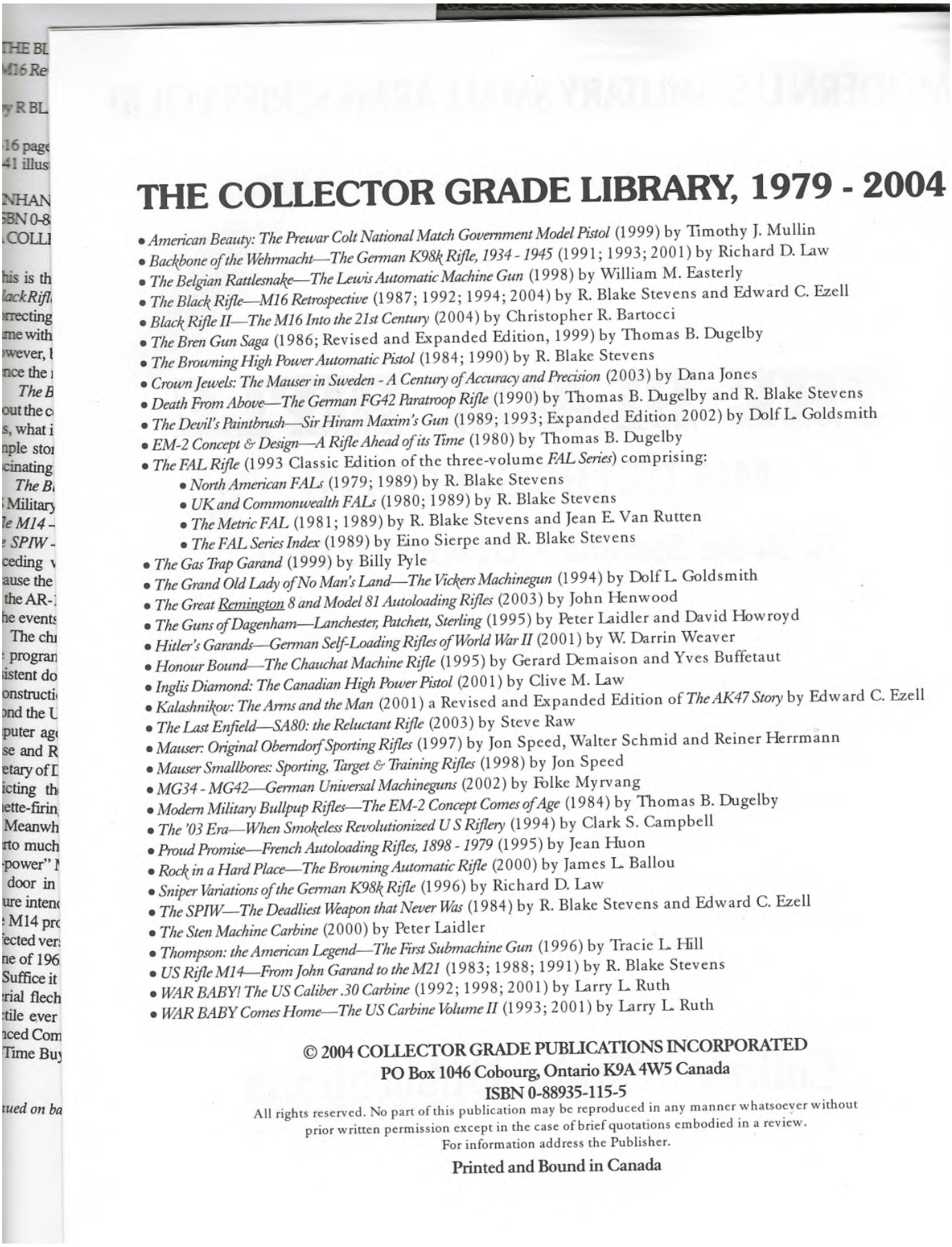

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115. Closeup of receiver markings of Colt AR-15 serial no. 000614, used in the Aberdeen "Test of Rifle, Caliber .223, AR-15" September, 1960. Photo credit: Eric Long, Smithsonian Institution

Abstract

Three rifles were subjected to the light automatic rifle test and two rifles were subjected to additional accuracy tests. A total of 24,443 rounds were fired. The AR-15 rifle, which has a weight of 6.92 pounds when fully loaded and an overall length of 38.8 inches, fires Cartridge, caliber .223. The average velocity of the 55-grain bullet at 78 feet was 3,104 fps. In the 100-yard bench-rest accuracy test the average mean radius for 10-round targets was 1.5 inches. The average number of rounds fired semi-automatically in one minute in the rate-of-aimed-fire test was 84.2 and the average number of hits obtained on the "E" target at a range of 100 yards was 77.8. During automatic firing in this test, the average number of rounds fired was 128.7, and the average number of hits was 41.3. The average malfunction rate with the rifle held normally was 0.25 per hundred rounds. Only ten parts were broken in firing 18,000 rounds in the endurance test. One of these parts, an extractor spring, was broken during disassembly of the extractor. The AR-15 rifle gave near-normal performance in the unlubricated, dust, extreme-cold and rain tests, and it completed the mud test. [A modified rain test was also conducted, wherein the bolt was retracted slightly with the muzzle held down to facilitate drainage, before firing]. A cook-off occurred after firing 140 rounds in 54 seconds, but no cook-off occurred in firing 120 rounds in 39 seconds. When fired with a telescopic sight from a bench rest at 100 yards two rifles gave an average mean radius of 1.1 inches for four 10-shot groups from each rifle with each of two lots of ammunition.

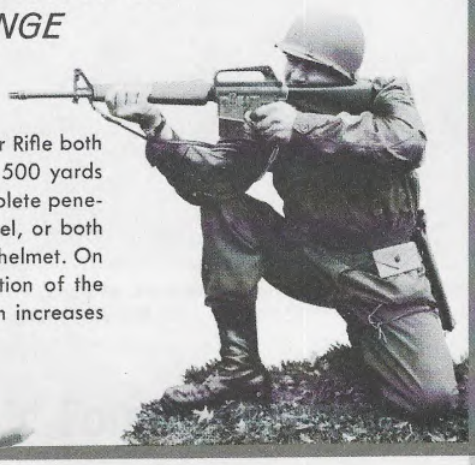
Even in the absence of conclusions and recommendations it appears from the above that the performance of the 1960 Colt AR-15s, especially in the scoped-accuracy and adverse condition tests, was little short of phenomenal. Indeed, a perusal of other standard light rifle tests, such as are to be found in previous Collector Grade books, will show the above results superior to most if not all the developmental weapons of the period, including the M1 and T44E4 "control" rifles. However, even though Dr. Carten's report to the Chief of R&D grudgingly summed up the AR-15 as only "reasonably satisfactory", the AR-15 was approved for Air Force trial as requested.

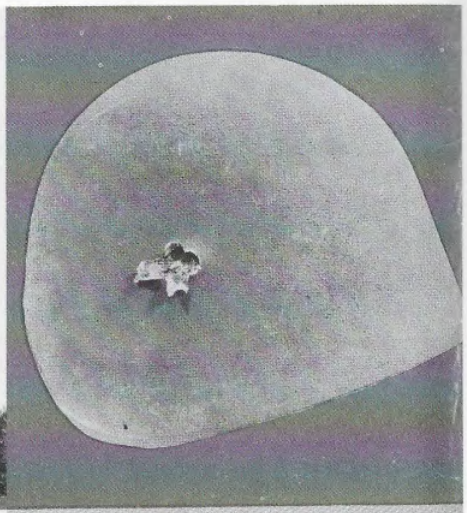
COLT ARMALITE AR-15 for today and tomorrow

Controlled FIREPOWER...

ACCURATE, POWERFUL AT LONG RANGE

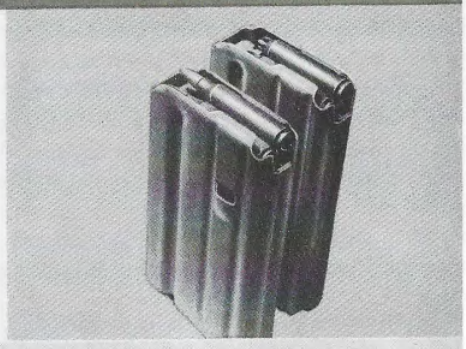
Unsurpassed as a Sniper Rifle both accurate and lethal, at 500 yards the AR-15 makes a complete penetration of 10 gauge steel, or both sides of a steel combat helmet. On impact the tumbling action of the .223 caliber ammunition increases effectiveness.





GRENADE LAUNCHER

Converts instantly without the use of supplementary attachments or adjustments with complete interchangeability of grenade launching or combat ammunition.



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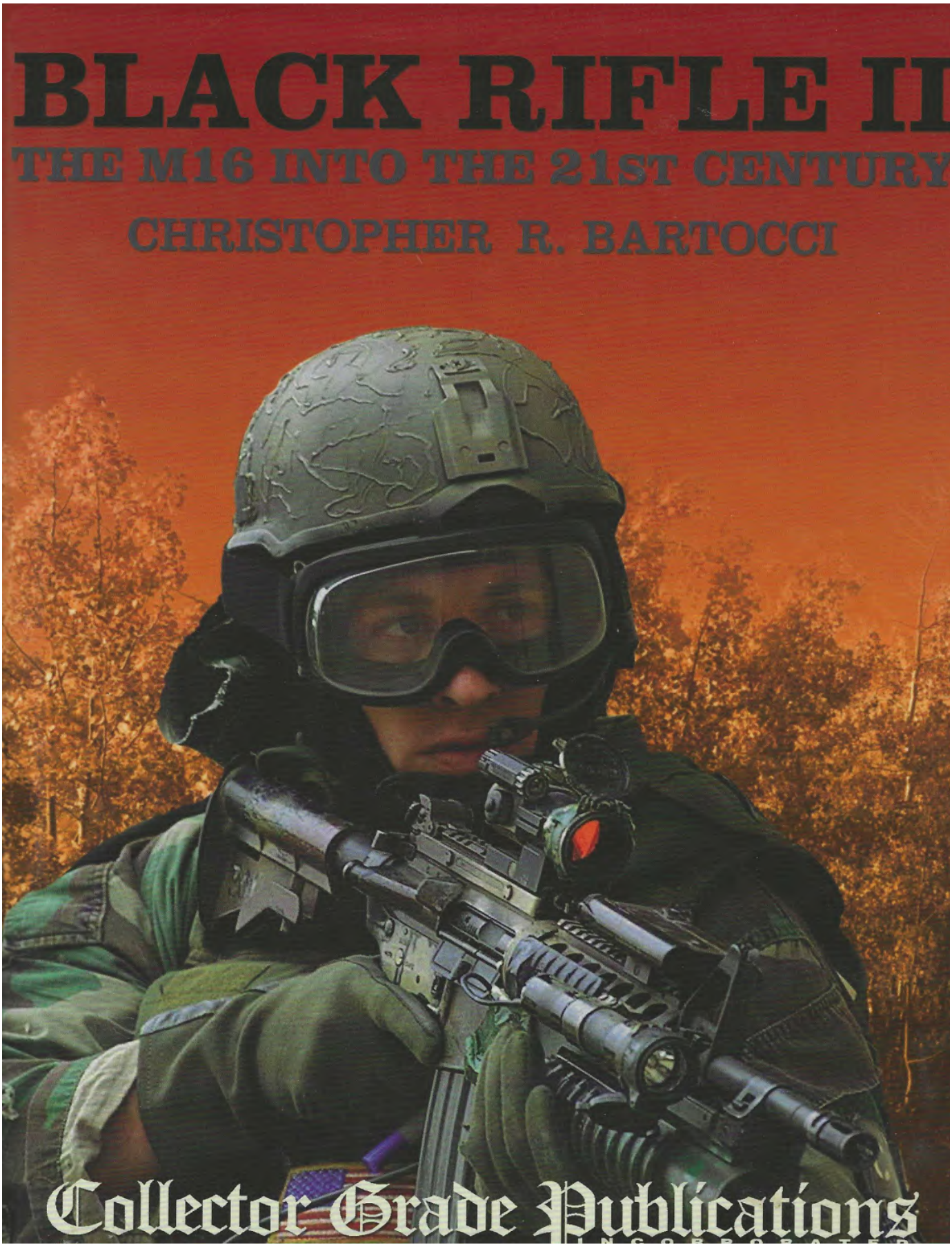
CABLE "COLT" HARTFORD, U S A

117. From the first Colt AR-15 brochure, produced in a desperate attempt to interest somebody - anybody - in the merits of the AR-15's "unmatched superiority".

Exhibit K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350. Right side closeup of the original semi-automatic-only pilot model, serial no GX 4968. The faint two-line hand-stamped marking on the magazine well reads "Colt Gun Room".

1. Removal of the automatic sear.
2. Elimination of the automatic sear hole in the lower receiver.
3. Elimination of the automatic sear well in the lower receiver.
4. Removal of the automatic sear hook on the hammer.
5. Removal of the automatic sear trip notch from the bottom rear portion of the bolt carrier.
6. Modification of the selector to eliminate the automatic setting.
7. Elimination of the "AUTO" position identification marking on the lower receiver.
8. Mechanical restriction of selector lever movement to two positions only: SAFE and FIRE.
9. Enlargement of the front pivot pin holes in both upper and lower receivers, and use of a larger-diameter front pivot pin.

On October 25,1963, the Treasury Department advised Colt that in addition to these nine changes, they wanted the upper and lower receiver pin lugs relocated, in order to further prevent the interchangeability between semi-auto-only and selective-fire receivers. This was done by moving the enlarged pivot pin holes in the upper and lower receivers down and rearward.

Permission was granted on December 10, 1963 for Colt to commence production of the semi-automatic only AR-15, embodying the above ten changes. On January 2, 1964, the initial "Original First Issue" Colt AR-15 Sporter rifles were released for commercial sale.

Exhibit L

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Popular Science

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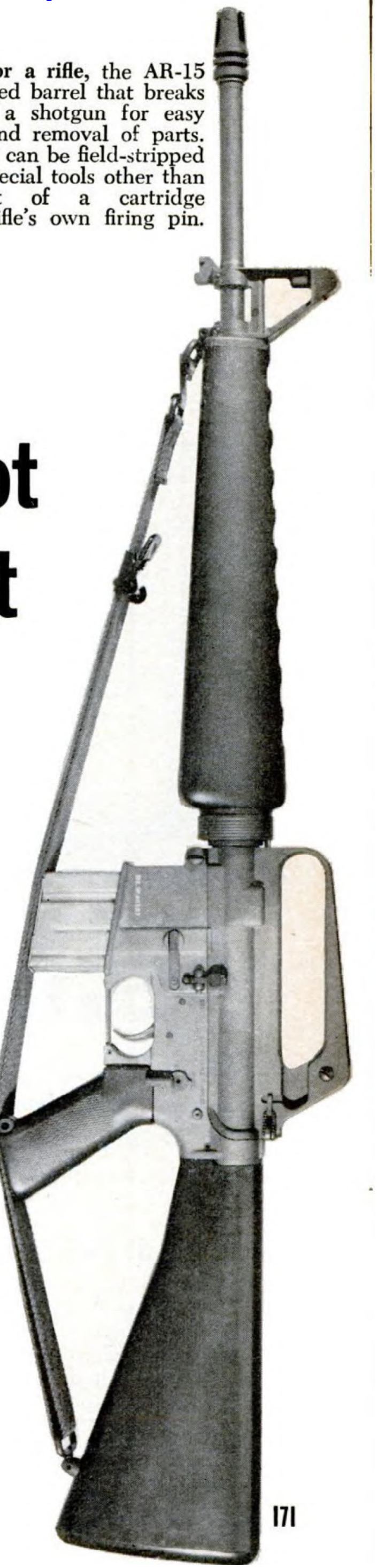
LBJ's HEART
What the medics have learned about his— and yours

RACE CARS of the WORLD
—a complete spec chart

WHICH COMPACT FOR YOU?
PS test-drives Falcon, American, Valiant, Chevy II

TINY TV SETS ARE "IN"
A Buyer's Guide

24 PAGES ON BOATS, HULLS, DOCKS, ETC., ETC.



Unusual for a rifle, the AR-15 has a hinged barrel that breaks open like a shotgun for easy cleaning and removal of parts. Entire gun can be field-stripped with no special tools other than the point of a cartridge and the rifle's own firing pin.

Now You Can Buy a Hot Combat Rifle for Sport

OUT of the jungles of Vietnam comes a powerful, battle-proven rifle ready for sale to civilians for hunting and target use. It's the Army's rakish AR-15, famed for its success in guerrilla fighting. The sport version is an exact duplicate of the military weapon except for one alteration. Because machine guns are illegal for civilian use, the action is semiautomatic rather than fully automatic. It fires as fast as you can pull the trigger, but won't keep firing if you hold the trigger back.

Originally developed by ArmaLite and now sold by Colt, the jaunty AR-15 looks like a cross between a G-man's submachine gun and something out of Buck Rogers' 25th Century. It has both a pistol grip and conventional butt stock, can be fired from either the waist or shoulder. There's a handy carrying handle on top that doubles as a precision rear peep sight. A flash suppressor on the muzzle is a hangover from military needs.

Highly accurate, the AR-15 sporter fires the hot new .223 Remington cartridge, a soft-point civilian version of the famous full-jacketed 5.56mm military round. The combination of small caliber and high muzzle velocity—3,300 feet per second—gives the .223 Remington the same deadly precision found in high-velocity varmint cartridges. In tests, the gun consistently shoots three-inch or better groups at 100 yards—and that's good shooting.

Weighing only 6¼ pounds, the rifle is light, compact, and easy to handle. It has a 20-inch barrel, is 39 inches overall. Most similar rifles heft over seven pounds and are several inches longer. The magazine holds 20 rounds, but can be reduced to five with a spacer for certain hunting requirements. Price: $189.50. Colt's Firearms, Hartford, Conn.—*Paul Wahl.*

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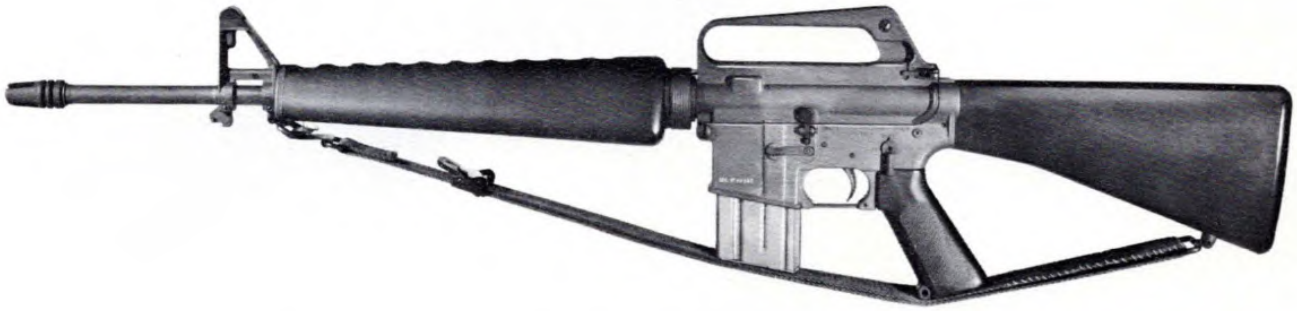
Exhibit M



COLT AR-15 SPORTER SEMI-AUTOMATIC RIFLE

.223 CALIBER

Colt's answer to the demand for a semi-automatic version of the AR-15 automatic rifle purchased by The United States Armed Forces. Painstaking engineering redesign efforts have resulted in a Government-approved conversion of the Colt AR-15 automatic rifle without sacrificing any performance or weight characteristics. The semi-automatic AR-15 Sporter weighs only 6.3 pounds. Its recoil is light and barrel rise minimal.

Lightweight • Extremely accurate • Easy to handle • Straight line construction — barrel, bolt, recoil buffer unit and stock assembled in a straight line • Rapid semi-automatic fire is more controllable than with rifles of commercial design • Simple to maintain.

MODEL	RETAIL PRICE*
R-6000	$189.50

CALIBER	BARREL LENGTH	OVERALL LENGTH	CAPACITY	SIGHTS	SAFETY	WEIGHT
.223	21″	39″	5 rounds	Double tang rear peep sight adjustable for windage. Post type front sight adjustable for elevation.	Rotary safety—selector lever	Approx. 6¾ lbs.

*The suggested retail price of the Sporter is $189.50 and includes two magazines (each blocked for five rounds), sling, flash suppressor, rubber recoil pad, cleaning rod assembly, cleaning brush, and the Colt AR-15 Sporter Operation and Maintenance manual.

Exhibit N

Arm your men with confidence

Colt's AR-15 Semi-Automatic Rifle

MODEL R-6000

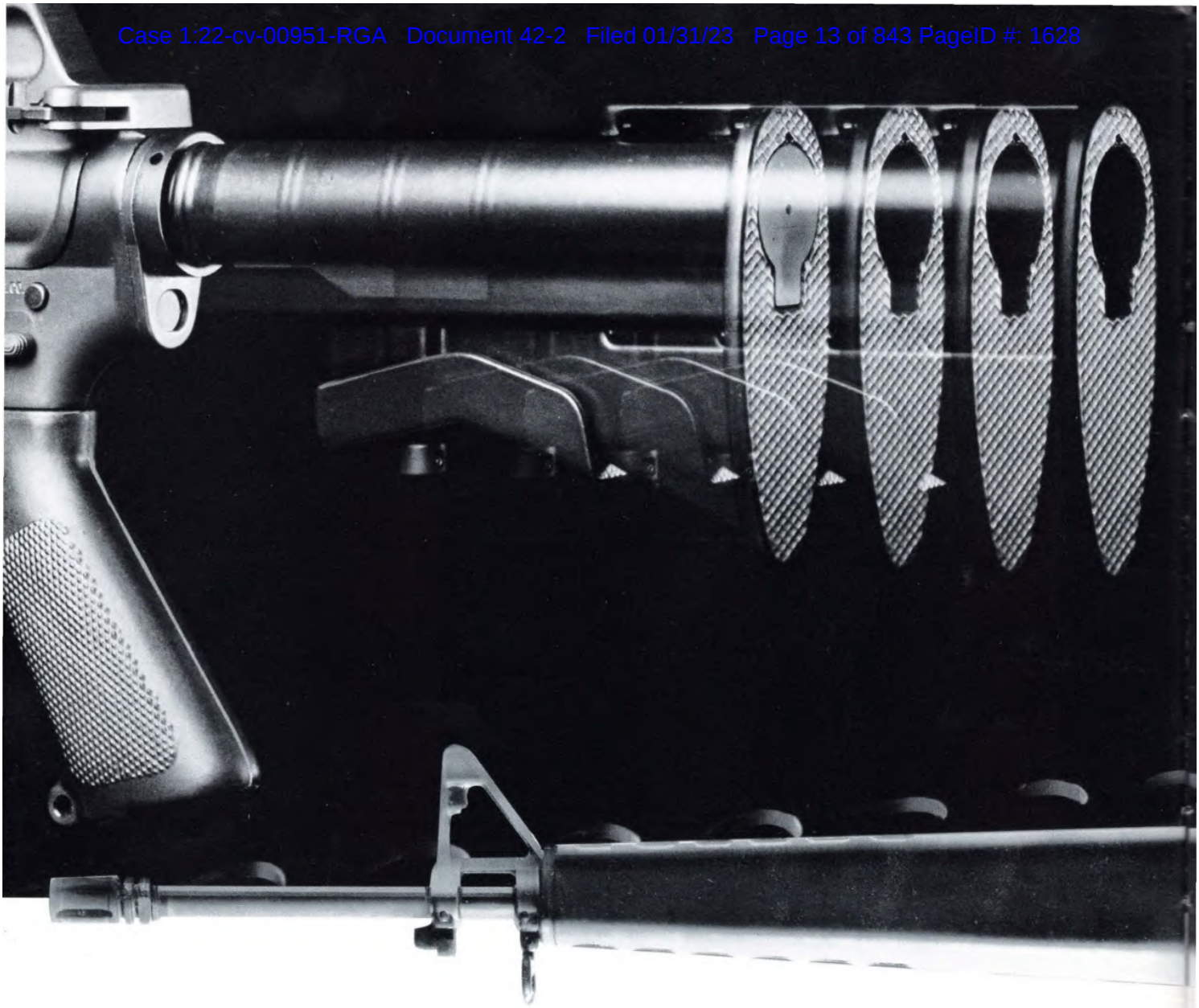
- Lightweight
- Weighs only 6.3 pounds
- Easy to handle
- Extremely accurate
- Straight line construction
- Simple to maintain

Colt's answer to the law enforcement agencies' demands for a semi-automatic version of the M16 automatic rifle purchased by the United States Armed Forces. Painstaking engineering redesign efforts have resulted in government-approved conversion of the automatic military rifle to a semi-automatic police weapon without sacrificing any performance or weight characteristics.

Colt Industries

Colt's Small Arms Division
Security Equipment
150 Huyshope Avenue, Hartford, Conn. 06102

Exhibit O



AR-15 Sporter

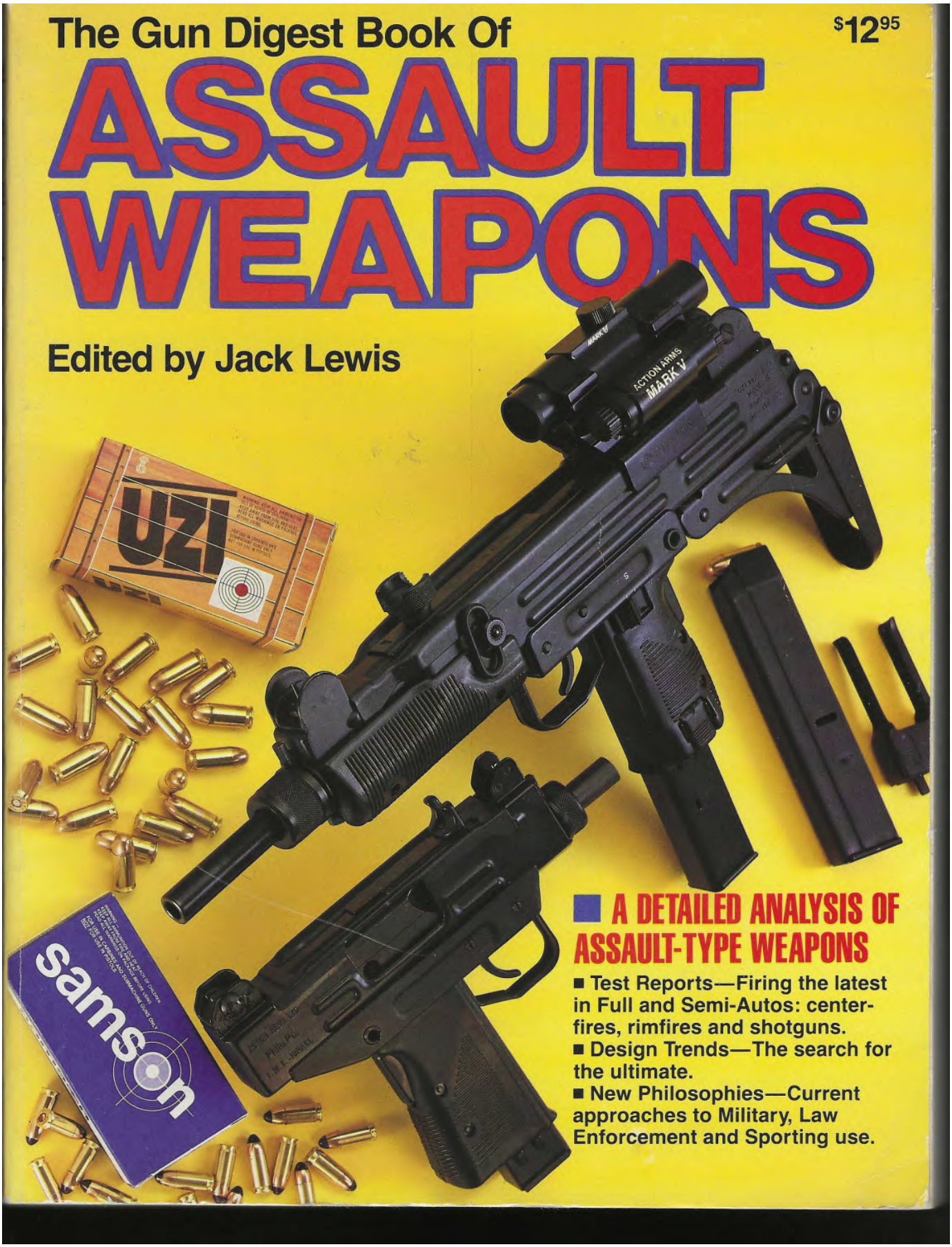
The semi-automatic version of the U.S. Military M16A1 which meets the highest standards of function and dependability. Lightweight and rugged. Clip fed with two 5-round magazines. 3 power scope is available as an accessory item. Extremely effective for varmint control and hunting small game. Excellent for the ranch or farm.

AR-15 Sporter with Collapsable Butt Stock

The collapsable butt stock and redesigned forearm offer a more compact version of the AR-15.

	Barrel length	Overall length	Stock	Finish	Weight (empty)	Length of pull	Magazine capacity	Sights	Fittings
AR-15 Sporter 223 (5.56mm)	20″	39″	Reinforced polycarbonate with butt-stock storage compartment	Black anodized receiver, black oxide barrel	7-1/2 lbs. with 5-rd. magazine	13″ 19-3/4″ sight radius	5 rds. with detachable magazine	Windage adjustment quick-flip rear Elevation adjustment front post	Optional 3x scope

Exhibit P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ABOUT OUR COVERS

It all started in the early 1950s. There it was, alone, awash in a sea of competing submachine guns. During the next three decades, the UZI 9mm submachine gun became, quite simply, that by which all others were measured. Then something new happened.

The UZI carbine — in long-barrel semiauto persuasion — hit the scene in the late 1970s. It was, and is, a solid success. Action Arms, the UZI's importer, recently announced the introduction of their UZI Carbine in .45 ACP. That new offering, and the equally new UZI 9mm Pistol appear on our front cover. The good news for UZI Pistol fanciers is the fact that it too will soon be available chambered for the big .45 ACP. Next to the UZI Carbine is Action Arms' new line of UZI Pistol (9mm or .45 ACP) ammo. Below the UZI ammo is a box of the popular Samson ammo which is available in .380 ACP, .38 Special, .357 magnum, .44 magnum, .223, .308 and .30/06.

Also seen on the front cover is Action Arms' new MARK V optical sight mounted on the UZI Carbine. The MARK V is adjustable for brightness as well as windage and elevation. It's available with an optical polarizing filter.

On the back cover is another Action Arms offering — the Galil semiauto assault rifle. The Galil is available in either .308 or .223, comes complete with folding stock. The Galil, in full auto dress, is the main battle rifle of the Israeli army.

It could be easily said that both the Galil and UZI are two of the most popular and recognizable firearms ever produced. We are indeed proud to have them on our covers.

Photos by John Hanusin

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CHAPTER 11

This Reproduction Of The FAL 7.62mm NATO Assault Rifle Follows Tradition

Springfield's SAR-48

IN VIEW of his strict Mormon upbringing, there is no doubt that John Moses Browning thought of himself as a man of God and a man of peace. Nonetheless, the military armament he designed over his lifetime has done much to change the world. Many of his designs still serve as the basis for arms in use around the world today.

This paradox is reminiscent of the fact that Darwin, who suggested mankind descended from apes rather than Adam and Eve, was a constant churchgoer despite his seemingly contradictory scientific theory.

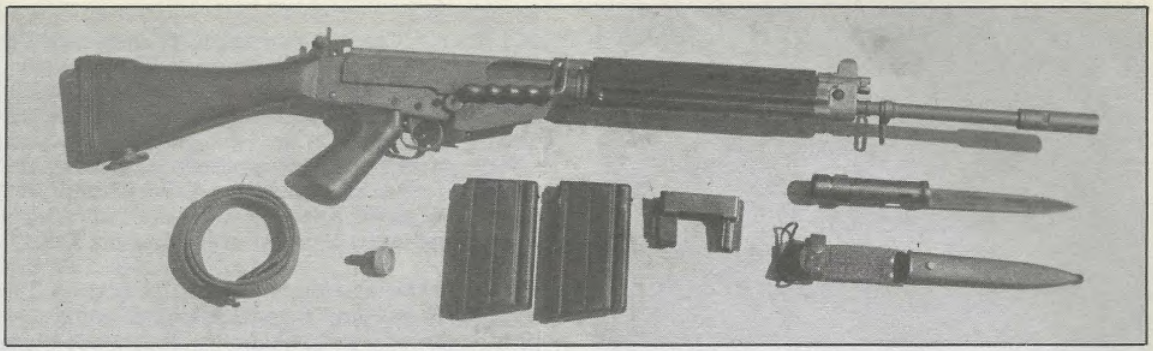
The Browning Automatic Rifle, so dear to U.S. troops through three wars, has been phased out of our Armed Forces inventory. A direct descendent of that design continues to be used around the globe by a host of nations. This is the FAL, manufactured originally by Fabrique Nationale de'Armes of Belgium. Into the Seventies, the FAL, officially known as the Fusil Automatique Leger — or the 7.62 FN Light Automatic Rifle — was used by as many as seventy countries as a primary infantry weapon. Others were produced under license with one variation produced in England and another in Canada.

These models varied from country to country, with the differences in external details: barrels, flash suppressors, bayonets, extractors, butt stocks, handguards, butt plates, bipods and loading devices. The basic action remained the same.

In some armies, the FAL has given way to more sophisticated weaponry, but a number of nations still use this model as a staple of their defense.

Now a version is being produced in the United States by Springfield Armory of Geneseo, Illinois. Designated as the SAR-48, this reproduction is based upon the FAL design used by the Rhodesian Army — when there still was a Rhodesia. The country now appears on modern maps as Zimbabwe. While hunting there years ago, I noted that the FAL 7.62mm automatic rifle still is kept close at hand in farming communities as a deterrent against the bandits and outlaws that have pervaded the country in the wake of the revolution.

Headquarters for Springfield Armory and its sister company, Rock Island Armory, occupy this structure in Geneseo. The firm was originated on a local grain farm.



The Illinois-produced SAR-48 is marketed with accessories that include extra twenty-round magazine and a bayonet.

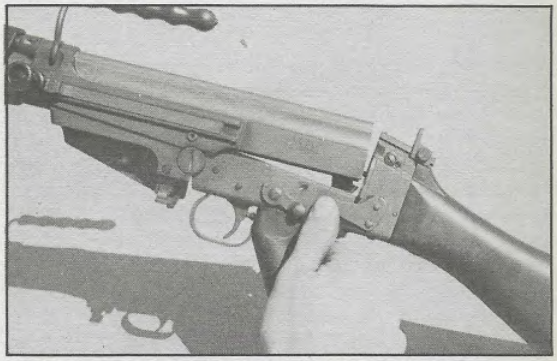
The SAR-48 is based upon the design of the 1962 FAL model, but takes advantage of latter-day technology to incorporate high-impact plastic for the stock, pistol grip and handguard.

All of this, of course, may lead one to question why such a weapon of war is being produced in an Illinois farming community. To learn the answer to that, one must know something about the Reese family, who own and operate Springfield Armory and a sister corporation, Rock Island Armory.

Bob Reese, the patriarch of the clan, farmed for decades in the community bordering the Mississippi River. Throughout, he had a continuing interest in firearms. Sometime after World War II, he bought some war surplus items and began to dabble in wholesale military parts. When the demand for the old military M1 rifle could not be answered among shooters and collectors, he began to weld together parts of receivers that had been cut in two, providing the basis for reassembling rifles. It wasn't long before he decided that it was simpler to machine a new receiver than attempt to weld together sections.

Today, most of the 640-acre Reese farm is leased out to other farmers, but the barns and outbuildings serve as storage areas for surplus gun parts from a host of countries. One entire barn I visited was filled with cases of mint-condition stocks for M-1 carbines.

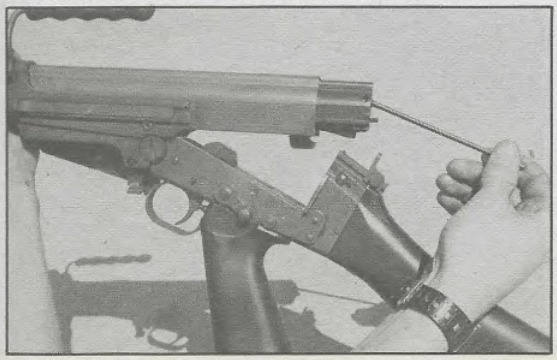
Out of all this came the Springfield Armory and its sister corporation, the Rock Island Armory. The latter firm bears absolutely no connection to the government's Rock Island Arsenal located a few miles up the river. The Rock Island Armory, however, is devoted largely to supplying overseas military customers, while the Springfield Armory aims its efforts at the civilian and law enforcement markets.



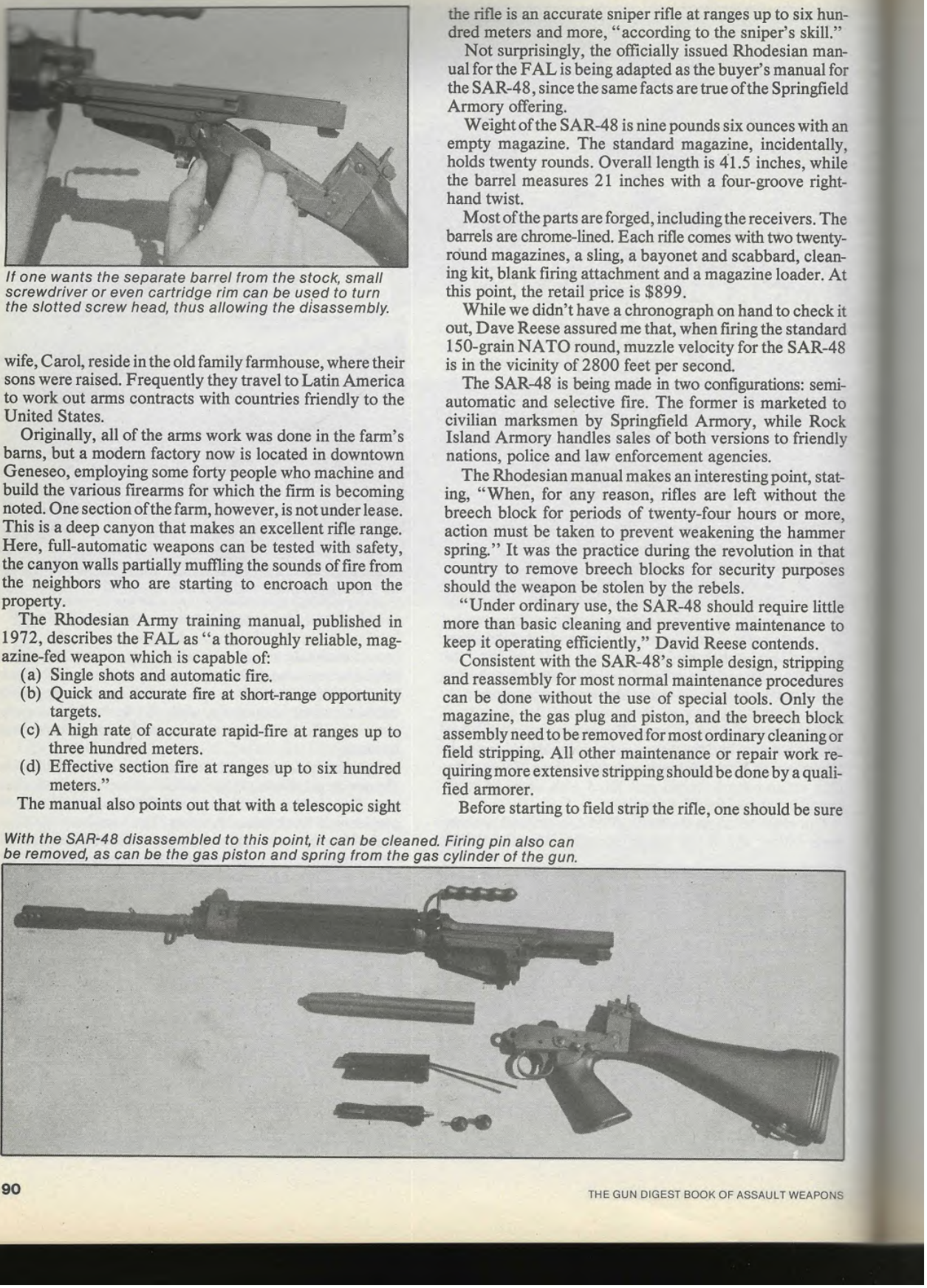
No tools are required to field strip the SAR-48. One presses locking lever straight up with the thumb, then pulls butt and trigger group down; it then swings open.

Bob Reese serves as chairman of the board, while son Dennis is president of Springfield Armory and another son, Tom, is vice president. A third Reese son, David, is president of Rock Island Armory. The sons keep the day-to-day business running, while the senior Reese and his

Remove the entire breech block and slide assembly by gently pulling the slide rod that is hinged to slide.



After cover has been removed from body by sliding it to the rear, one can separate slide from breech block. Following instructions, block can be separated easily.



If one wants the separate barrel from the stock, small screwdriver or even cartridge rim can be used to turn the slotted screw head, thus allowing the disassembly.

wife, Carol, reside in the old family farmhouse, where their sons were raised. Frequently they travel to Latin America to work out arms contracts with countries friendly to the United States.

Originally, all of the arms work was done in the farm's barns, but a modern factory now is located in downtown Geneseo, employing some forty people who machine and build the various firearms for which the firm is becoming noted. One section of the farm, however, is not under lease. This is a deep canyon that makes an excellent rifle range. Here, full-automatic weapons can be tested with safety, the canyon walls partially muffling the sounds of fire from the neighbors who are starting to encroach upon the property.

The Rhodesian Army training manual, published in 1972, describes the FAL as "a thoroughly reliable, magazine-fed weapon which is capable of:

(a) Single shots and automatic fire.
(b) Quick and accurate fire at short-range opportunity targets.
(c) A high rate of accurate rapid-fire at ranges up to three hundred meters.
(d) Effective section fire at ranges up to six hundred meters."

The manual also points out that with a telescopic sight the rifle is an accurate sniper rifle at ranges up to six hundred meters and more, "according to the sniper's skill."

Not surprisingly, the officially issued Rhodesian manual for the FAL is being adapted as the buyer's manual for the SAR-48, since the same facts are true of the Springfield Armory offering.

Weight of the SAR-48 is nine pounds six ounces with an empty magazine. The standard magazine, incidentally, holds twenty rounds. Overall length is 41.5 inches, while the barrel measures 21 inches with a four-groove right-hand twist.

Most of the parts are forged, including the receivers. The barrels are chrome-lined. Each rifle comes with two twenty-round magazines, a sling, a bayonet and scabbard, cleaning kit, blank firing attachment and a magazine loader. At this point, the retail price is $899.

While we didn't have a chronograph on hand to check it out, Dave Reese assured me that, when firing the standard 150-grain NATO round, muzzle velocity for the SAR-48 is in the vicinity of 2800 feet per second.

The SAR-48 is being made in two configurations: semi-automatic and selective fire. The former is marketed to civilian marksmen by Springfield Armory, while Rock Island Armory handles sales of both versions to friendly nations, police and law enforcement agencies.

The Rhodesian manual makes an interesting point, stating, "When, for any reason, rifles are left without the breech block for periods of twenty-four hours or more, action must be taken to prevent weakening the hammer spring." It was the practice during the revolution in that country to remove breech blocks for security purposes should the weapon be stolen by the rebels.

"Under ordinary use, the SAR-48 should require little more than basic cleaning and preventive maintenance to keep it operating efficiently," David Reese contends.

Consistent with the SAR-48's simple design, stripping and reassembly for most normal maintenance procedures can be done without the use of special tools. Only the magazine, the gas plug and piston, and the breech block assembly need to be removed for most ordinary cleaning or field stripping. All other maintenance or repair work requiring more extensive stripping should be done by a qualified armorer.

Before starting to field strip the rifle, one should be sure

With the SAR-48 disassembled to this point, it can be cleaned. Firing pin also can be removed, as can be the gas piston and spring from the gas cylinder of the gun.

the SAR-48 is unloaded, that the safety is on *Safe* and that the magazine has been removed.

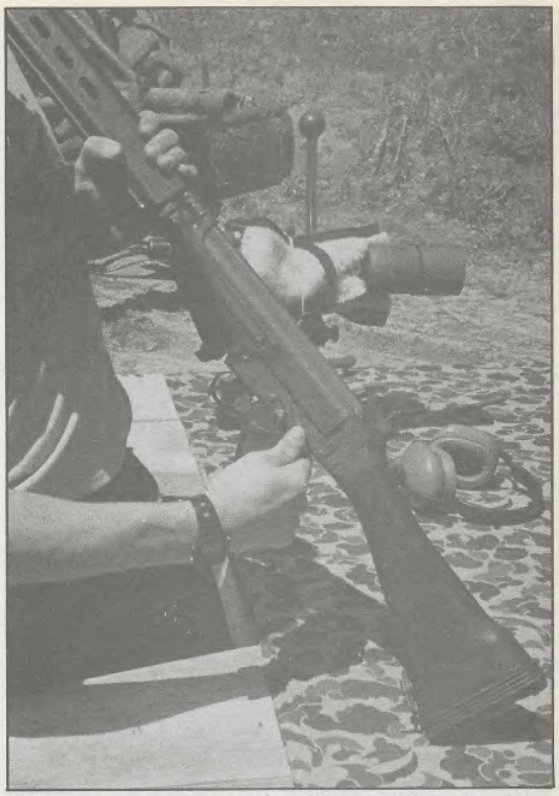
Check to make sure your SAR-48 is unloaded by first pulling back the cocking handle into the cocked position with your left hand and holding it in place while you look into the chamber from the rear to be certain it's empty. Then, with your hand still on the cocking handle, allow the breech block and slide to move forward slowly. Do not let the slide "slam" into place. Note: The SAR-48 must always be in the "cocked" position before being broken open for field stripping or cleaning.

(1) Stripping the mechanism is a simple procedure that requires no tools. First, using your right thumb, press the locking lever on the left side of the trigger frame straight up. At the same time, pull the butt and trigger group down with your right hand while holding the barrel group steady with your left hand. The rifle swings open on a pivot pin much like a shotgun.

(2) Remove the entire breech block and slide assembly by gently pulling on the slide rod that's hinged to the slide.

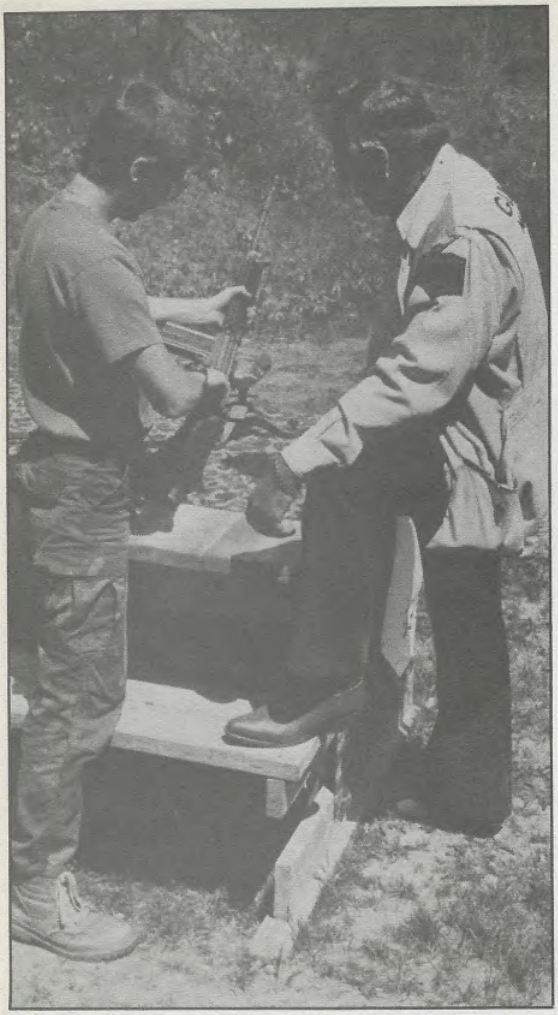
(3) Remove the cover from the body by sliding it to the rear.

(4) Separate the slide from the breech block. First, allow the front part of the breech block to fall down and away from the slide. Then, complete the disassembly by levering the rear of the breech block away from the rear of the slide while applying pressure to the firing pin with your thumb — much like pushing a button or a spring-loaded pin. The breech block will separate from the slide quite easily.



Modern manufacturing techniques are used to produce the SAR-48. The classic military rifle features clean lines.

The simplicity of the design makes field stripping an easy chore in the field for immediate action repairs.



Tim Dillon (left) explains the setting of the sights of the rifle to the author during canyon shooting session.

(5) Removing the firing pin is a simple, three-step procedure:

Press on the rear of the firing pin with your thumb, as if you're pressing it farther into the rear end of the breech block. You'll feel the firing pin spring "give" as the firing pin moves inward.

While holding in the firing pin with your thumb, push out the small retaining pin on the side of the breech block. The nose of a cartridge can be used to push on the retaining pin until it falls out.

When the retaining pin has been removed, gradually release your thumb pressure from the rear of the firing pin. Without the firing pin to hold it, the firing pin spring will push the firing pin out of its housing so you can grasp it and remove it with your fingers.

(6) Remove the gas plug by pressing in on the plunger of the gas plug with the nose of a cartridge, then turning the gas plug a quarter of a turn clockwise. The gas plug will then be pushed from its housing by the piston spring. Remove the gas plug with your fingers.

(7) Next, remove the gas piston and spring from the gas cylinder and separate the piston spring from the piston ring. These are all extremely simple manual operations.

Under ordinary conditions, disassembling the rifle beyond this point will not be necessary and is not recommended for anyone other than a trained armorer. Always field strip the SAR-48 in the order described above. To simplify reassembly, lay out the parts on a clean, dry surface as they are removed from the rifle. Keep them in order, because they will be reassembled in the exact reverse order.

The Rhodesian manual then has a note that is offered herewith in the spirit in which it was intended. "You must not strip the rifle further than this. If you do, the chances are that you will assemble it incorrectly and the rifle will be inoperative."

The cleaning procedures recommended by Springfield Armory, after the rifle has been fired and it is field stripped, pretty much follow the steps suggested in the Rhodesian Army manual for their version of the FAL.

(1) Use the bore brush to clean all residue from the barrel, visually checking the barrel regularly. A lightly oiled cleaning patch or piece of clean flannel cloth might help remove all vestiges of dirt or grime. If an oiled cleaning patch is used, complete the cleaning process with a clean, dry patch or a dry rag.

Follow the above procedure to clean the chamber, using the chamber brush rather than the bore brush.

Using a clean, lightly oiled rag, thoroughly clean the slide, the rear part of the barrel and inside the receiver, the breech block, the top cover, the gas plug, the gas piston, the spring, the firing pin, the firing pin housing, and the firing pin spring. Dry them after they're cleaned.

Using a cleaning rod, run a clean, lightly oiled rag through the front end of the gas cylinder. Do not run a cleaning rod through the small hole in the rear end of the gas cylinder.

Finish the whole cleaning process by lightly oiling all moving parts with a good quality lubricating gun oil, like Springfield Armory LSA Lubricant.

(2) Complete barrel cleaning (the barrel requires special periodic attention).

Wash the bore with soapy water, using a solution of approximately 15% non-acid soap. A good-quality bore

Shooting from a bench, but sans sandbags, the author found that the Springfield Armory rifle performed well. Firing several hundred rounds, there was no malfunction.

solvent can also be used. Be sure to keep soapy water out of the mechanism. Dry thoroughly with a clean flannel rag. Dry the outside of the barrel with another dry rag.

If the rifle is to be stored for any length of time, barrel grease should be applied to the bore after cleaning.

Before firing your SAR-48, it should be cleaned again to remove excess oil from all parts. Most surfaces should be thoroughly dry, except for the breech block and the inside surface of the slide.

The SAR-48 is a gas operated rifle, controlled by an adjustable gas regulator which, in turn, is designed on the exhaust principle. The adjustable gas system allows the flexibility of controlling the amount of recoil or adapting the rifle to different ammunition loads. It further allows the rifle to operate efficiently on minimum gas intake to prevent excess wear and tear on the moving parts.

The gas regulator adjustment is located immediately behind the front sight. It moves in precise clicks from right to left (the farthest right position being fully open; the farthest left is fully closed). It should move easily with your fingers or with the nose of a cartridge. Begin finding the correct adjustment with the regulator set fully closed, or screwed flush against the rear part of the gas block. Turn the regulator one click at a time and fire one round after each adjustment, until the mechanism is engaged and short recoil ceases. Verify this adjustment by firing five rounds. If any shot results in a short recoil, repeat the process.

An incorrectly adjusted gas regulator or faulty ammunition are the most common causes of feeding or ejection failures. If cartridges repeatedly fail to feed or eject properly, always check those two potential problem areas before disassembling your rifle to look for more serious causes.

The original FAL has a reputation for having too light a barrel, which causes it to climb excessively, even when equipped with a light bipod. The SAR-48 has the same type of light barrel and we fired it without a bipod from a bench. At a range of something over two hundred yards, Tim Dillon, a member of the Springfield staff, placed a bowling pin against the dirt backstop formed by the wall of the gulch.

Somewhat gingerly, I took my place at the shooting bench to check out the Rock Island Armory full-auto version. I positioned the selector switch for semi-automatic fire. With the flip-type sight set for two hundred meters, I squeezed off a couple of rounds and discovered I was firing about six inches low.

The rear sight consists of a ramp with the ranges marked from two hundred to six hundred meters, much in the manner of the old Springfield rifle sights. The lowest setting, when the slide is down, is two hundred.

To set the sight, one presses the thumb catch on this rear sight with the right thumb and moves the slide forward or backward until the slide matches the appropriate number. For battle shooting, the Rhodesians suggested leaving the sight set at three hundred meters.

The front sight resembles that of the M1 rifle, complete to the protective ears on each side. I had sighted on the bowling pin with a sight picture as recommended by the Rhodesian manual, placing the top of the front sight on the bottom of the pin. Rather than make minute sighting adjustments, I simply raised the sight picture to center on the top of the pin, angled the selector switch to the full-automatic mode and squeezed off a three-shot burst. Dirt kicked up in the vicinity of the bowling pin and it began to roll down the embankment. I squeezed off another burst, following the pin through the sights.

"Well, if you didn't hit it," Tim Dillon opined, "you scared it to death." Later inspection revealed that the pin had been splintered by two of the 7.62mm rounds.

Dillon is a 22-year-old veteran, who served as a small-arms repairman with the Army. Since his discharge, he has been a technician with Springfield Armory, putting his service-learned knowledge to work in a job he loves.

"I get a chance to shoot a lot," is the way he explains his satisfaction with the job.

It was Dillon who demonstrated to me that the SAR-48 may be more controllable than some shooters are willing to admit. He fired it from the hip into a nearby stream, the bullets kicking up a spray of water in an arc that spread some six feet across his front. Still, the manner in which he held the gun at the thirty-yard range didn't allow the muzzle to climb perceptibly. The SAR can be controlled.

Young Dillon is one of forty employees who build the guns for the sister corporations, Springfield Armory and Rock Island Armory. While Bob Reese still maintains a machine shop on his farm and putters with some of the war surplus armament he has imported from around the world, the vast majority of the gun-making is accomplished in the modern plant in Geneseo. Duke Ballengee is in charge of manufacturing and oversees the building of an entire line of weaponry steeped in nostalgia. In addition to the SAR-48, the Illinois firm turns out M-60 machine guns; several variations of the M1 and M-24 rifles and a reproduction of the Beretta BM59. Plans are in the mill for further expansion and other firearms.

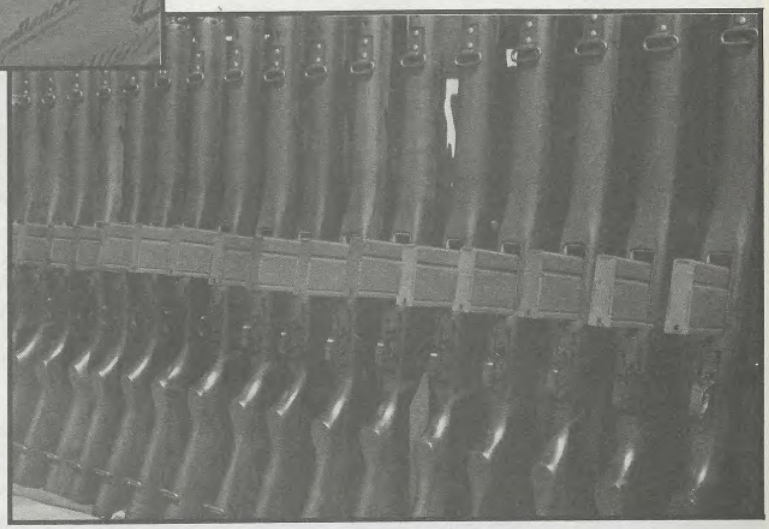
As for the designation of the rifle we tested there in the hidden canyon, I asked what SAR stood for. The logical answer was "Springfield Automatic Rifle." That figures — *Jack Lewis.*

acceptance came when the Marines began to use them in China and Nicaragua.

For a long time, the Thompson carried the bum rap of being a criminal's gun. So much so that a British War Office official is said to have rejected a request for Thompsons for the early Commandos with the cryptic remark that English gentlemen would not be armed with an American gangster's weapon.

The Thomposn was, and is, an efficient if somewhat heavy submachine gun. In view of the fact that they are so widely recognized as the epitome of lethal firepower, the present owners of the company which produced the gun considered producing a civilian-legal version.

The GI M1 was a 30/.06, but there's not much match grade ammo available these days. Springfield makes these M1s to shoot the more commonly seen 7.62mm round. Right: Racks of legal M1As awaiting shipment from the factory at Springfield Armory.



They were able to do so by doing two things. First, the gun would have to be converted to fire only semi-automatic. This was done by changing to a closed-bolt firing mode and by making some changes in the shape and function of internal parts. The resulting gun was a true semi-auto, classified as a rifle under the law. But because the law mandated a minimum barrel length of sixteen inches, they also were required to use barrels longer than those of the original Thompsons. The end result was an unusual weapon with a long barrel that had most of the original features of the old Tommy gun. They sell quite steadily to the present day.

This all has happened within the last dozen years or so and a small industry has grown up in response to the legal Thompson. You can now buy perfectly legal versions of the UZI, MAC10, M16, Sterling and countless other modern assault weapons. The vast majority of these weapons were built for and sold to the same sort of individual that wanted a souvenir M1 rifle or carbine. In other words, for reasons of nostalgia, curiosity or military display value.

Despite the use of the semi-autos for innocuous and even non-firing purposes, the fact remains that they are guns. And for some purposes, they are effective guns. Nothing is much more intimidating than a Thompson with a full drum. That's plainly a lethal-appearing combination. The illegal interloper in the distant ranch or forest home is not likely to pay a great deal of attention to the fact that the gun pointed at him has a barrel too long to be a real Thompson. If he does choose to pursue illegal actions to the point that legal defensive force is warranted, he might find out why so many Thompons have been sold.

Particularly in the case of rural areas, legal semi-autos in assault weapon configuration make excellent choices as defensive weapons. The reason for emphasizing their use in rural areas is simply because so many of them are chambered for long-range cartridges that would tend to overpenetrate in urban areas.

Just as the Thompson got the gangster gun rap so many years ago, many of these other guns also are falling into criminal hands. Some of them are being reconverted to a full-auto firing mode. When that is done, a host of criminal laws is violated. When the gun is criminally altered, it takes an act of human volition to do it, just as a human decision is required for the same gun to be used in the commission of a criminal act. In neither case can the gun itself be held responsible.

Modern assault weapons — the legal civilian versions — are high tech guns. They're on the far end of the scale from Saturday Night Specials (whatever they are). There is just as much justification for the one as there is for the other.

Whatever a shooter's reasons may be for wanting one, he'll be able to find one of these civilian-legal semi-auto assault weapons on dealer's shelves. A number of them are covered in detail on the following pages.

Exhibit Q

DEPARTMENT OF THE TREASURY
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS
WASHINGTON, D.C. 20226

JUL 06 1989

MEMORANDUM TO: Director

FROM: Associate Director (Compliance Operations)

SUBJECT: Report and Recommendation on the Importability of Certain Semiautomatic Rifles

The working group has completed its evaluation of the semiautomatic rifles whose importation was suspended pending a determination as to whether these weapons are, as required by 18 U.S.C. § 925(d)(3), of a type "generally recognized as particularly suitable for or readily adaptable to sporting purposes".

Attached for your review and approval is the report and recommendation on the importability of these rifles.

Daniel R. Black
Daniel Black

Attachment

Approved: Stephen E. Higgins 7/6/89

Disapprove: _____

REPORT AND RECOMMENDATION OF THE ATF WORKING GROUP ON THE IMPORTABILITY OF CERTAIN SEMIAUTOMATIC RIFLES

SUSPENSION OF ASSAULT-TYPE RIFLE IMPORTATIONS

On March 14, 1989, ATF announced that it was suspending, effective immediately, the importation of several makes of assault-type rifles, pending a decision as to whether these weapons meet the statutory test that they are of a type generally recognized as particularly suitable for or readily adaptable to sporting purposes. The announcement stated that ATF would not approve, until further notice, the importation of AKS-type weapons, Uzi carbines, FN/FAL-type weapons, FN/FNC-type weapons and Steyr Aug semiautomatic weapons. On April 5, 1989, the suspension was expanded to include all similar assault-type rifles.

For purposes of this suspension, assault-type rifles were rifles which generally met the following criteria:

a. military appearance

b. large magazine capacity

c. semiautomatic version of a machinegun

Based on these criteria, ATF suspended action on pending applications and suspended outstanding permits covering certain firearms listed in Attachment 1. These included both centerfire and .22 rimfire caliber firearms. At that time, ATF indicated that the reexamination of these weapons would take approximately 90 days.

This ATF working group was established to conduct the reevaluation of the importability of these semiautomatic rifles. This report represents the findings and recommendations of the working group.

BACKGROUND

Section 925(d)(3) of Title 18, United States Code, as amended, provides in pertinent part that:

> The Secretary shall authorize a firearm. . .to be imported or brought into the United States . . if the firearm . .
>
> > (3) is of a type that does not fall within the definition of a firearm as defined in section 5845(a) of the Internal Revenue Code of 1954 and is generally recognized as particularly suitable for or readily

> adaptable to sporting purposes, excluding surplus military firearms. . .

This provision was originally enacted by Title IV of the Omnibus Crime Control and Safe Streets Act of 1968, and was also contained in Title I of the Gun Control Act of 1968, which amended Title IV later that year. According to the Senate Report on Title IV, this provision was intended to "curb the flow of surplus military weapons and other firearms being brought into the United States which are not particularly suitable for target shooting or hunting." S. Rep. No. 1097, 90th Cong. 2d Sess. 80, 1968 U.S. Code Cong. and Admin. News 2112, 2167.

Moreover, there is legislative history which indicates that Congress intended the standard to allow the importation of traditional sporting rifles, while excluding military-type rifles. The Senate Report on the Gun Control Act observed that the importation standards ". . . are designed and intended to provide for the importation of quality made, sporting firearms, including . . . rifles such as those manufactured and imported by Browning and other such manufacturers and importers of firearms." S. Rep. No. 1501, 90th Cong. 2d Sess. 38 (1968). Significantly, the rifles being imported by Browning at that time were semiautomatic and manually operated traditional sporting rifles of high quality.[1]

An explanation of the effect of this section by one of the sponsors of the bill specifically stated that military firearms would not meet the "sporting purposes" test for importation. The mere fact that a military firearm may be used in a sporting event does not make it importable as a sporting firearm[2].

There is a reference in the Senate Report on Title IV which notes that the importation prohibition ". . . would not interfere with the bringing in of currently produced firearms, such as rifles . . . of recognized quality which are used for hunting and for recreational purposes, or for personal protection." S. Rep. No. 1097, 90th Cong. 2d Sess. 80, 1968 U.S. Code Cong. and Admin. News 2112, 2167. However, this language is not inconsistent with the expressed purpose of restricting importation to firearms particularly suitable for target shooting or hunting since firearms particularly suitable for those purposes can obviously be used for other purposes such as recreational shooting and personal protection.

The determination of a weapon's suitability for sporting purposes "rest[s] directly with the Secretary of the Treasury." 114 Cong. Rec. 27465 (1968) (Statement of Sen. Murphy). While the legislative history suggests that the term "sporting purposes" refers to the traditional sports of target shooting, trap and skeet shooting, and hunting, the statute itself provides no criteria beyond the "generally recognized" language of section 925(d)(3). S. Rep. No. 1097, 90th Cong. 2d Sess. 80, 1968 U.S. Code Cong. and Admin. News 2167. The Senate Report on the Gun Control Act stated:

> The difficulty of defining weapons characteristics to meet this target [of eliminating importation of weapons used in crime] without discriminating against sporting quality firearms, was a major reason why the Secretary of the Treasury has been given fairly broad discretion in defining and administering the import prohibition.

S. Rep. No. 1501, 90th Cong. 2d Sess. 38 (1968).

Following enactment of the Gun Control Act in 1968, the Secretary established a Firearms Evaluation Panel to provide guidelines for implementation of the "sporting purposes" test of section 925(d)(3). This panel was composed of representatives from the military, law enforcement, and the firearms industry. The panel focused its attention on handguns and recommended the adoption of factoring criteria to evaluate the various types of handguns. These factoring criteria are based upon such considerations as overall length of the firearm, caliber, safety features, and frame construction. An evaluation sheet (ATF Form 4590) was developed thereafter by ATF and put into use for evaluating handguns pursuant to section 925(d)(3). Attachment 2.

The 1968 Firearms Evaluation Panel did not propose criteria for evaluating rifles and shotguns under section 925(d)(3). Other than surplus military firearms which Congress addressed separately, long guns being imported prior to 1968 were generally conventional rifles and shotguns specifically intended for sporting purposes. Thus, in 1968, there was no cause to develop criteria for evaluating the sporting purposes of rifles and shotguns. Until recently, all rifles and shotguns were approved for importation so long as they were not otherwise excluded by section 925(d)(3). Only rifles and shotguns covered by the National Firearms Act (NFA), 26 U.S.C. S 5845(a) (for example, machineguns and short-barreled rifles and short-barreled shotguns), and surplus military rifles and shotguns had been denied importation.

The Firearms Evaluation Panel did briefly comment on whether a model BM59 Beretta, 7.62mm NATO Caliber Sporter Version Rifle was suitable for sporting purposes. Minutes of the Firearms Advisory Panel, December 10, 1968. Attachment 3. It was the consensus of the Panel that this rifle did have a particular use in target shooting and hunting. Accordingly, it was recommended that importation of the Beretta BM59, together with the SIG-AMT 7.62mm NATO Caliber Sporting Rifle and the Cetme 7.62mm NATO Caliber Sporting Rifle, be authorized for importation. (The Beretta BM59 and the Cetme, the predecessor to the HK91, are two of the rifles whose importation has been suspended. The SIG-AMT is no longer being produced.) However, the Panel recommended that importation of these weapons should include the restriction that they not possess combination flash suppressors/grenade launchers.

The working group found the Panel's consideration of these rifles to be superficial and unpersuasive. The vast majority of the work of the 1968 Panel was devoted to handguns and the establishment of the factoring criteria for the importation of handguns. Indeed, we found compelling evidence that these rifles are not generally recognized as particularly suitable for sporting purposes.

The first time that ATF looked beyond the restrictions on NFA and surplus military rifles and shotguns and undertook a meaningful analysis under the "sporting purposes" test was in 1984. At that time, ATF was faced with a new breed of imported shotgun. It was clear that the historical assumption that all shotguns were sporting was no longer viable. Specifically, ATF was asked to determine whether the Striker-12 shotgun was suitable for sporting purposes. This shotgun is a military/law enforcement weapon initially designed and manufactured in South Africa for riot control. When the importer was asked to provide evidence of sporting purposes for the weapon, ATF was provided information that the weapon was suitable for police/combat style competitions. ATF determined that this type of competition did not constitute "sporting purposes" under the statute, and that this shotgun was not suitable for traditional sporting purposes, such as hunting, and trap and skeet shooting. Accordingly, importation was denied. Attachment 4.

Thereafter, in 1986, the Gilbert Equipment Company requested that the USAS-12 shotgun be classified as a sporting firearm under section 925(d)(3). After examination and testing of the weapon, ATF found that it was a semiautomatic version of a selective fire military-type assault shotgun. In this case, ATF determined that, due to its weight, size, bulk, designed magazine capacity, configuration, and other factors, the USAS-12 was not particularly suitable for or readily adaptable to sporting purposes. Again, ATF refused to recognize police/combat competitions as a sporting purpose under section 925(d)(3). The shotgun was reviewed on the basis of its suitability for traditional shotgun sports of hunting, and trap and skeet shooting and its importation was denied. Attachment 5. This decision was upheld by the United States District Court in Gilbert Equipment Company, Inc. v. Higgins, 709 F. Supp. 1071 (S.D. Ala. 1989). The case is currently on appeal to the Eleventh Circuit.

These two cases involving shotguns represent ATF's first thorough examination of the suitability of certain combat-type weapons for sporting purposes. In these cases ATF adopted an interpretation of sporting as being limited to certain traditional sports and not simply any lawful activity in which the weapons might be employed.

ANALYSIS

A. Defining the type of weapon under review.

As noted above, section 925(d)(3) expressly provides that the Secretary shall authorize the importation of a firearm that is of a type that is generally recognized as particularly suitable for sporting purposes. The legislative history also makes it clear that the Secretary shall scrutinize types of firearms in exercising his authority under section 925(d). Specifically, in its explanation of section 925(d)(3), the Senate Report on the Gun Control Act stated:

> This subsection gives the Secretary authority to permit the importation of ammunition and certain types of firearms--(1) those imported for scientific or research purposes or for use in competition or training under chapter 401 of title 10 of the United States Code; (2) an unserviceable firearm other than a machinegun; (3) those firearms not coming within the purview of the National Firearms Act (26 U.S.C. 5801, et seq.) and suitable for sporting purposes (in the case of surplus military weapons this type is limited to shotguns and rifles) and those taken out of the United States. (Emphasis added.)

S. Rep. No. 1501, 90th Cong. 2d Sess. 38 (1968).

In light of the statutory mandate that types of firearms be scrutinized, the working group first attempted to determine whether the semiautomatic rifles suspended from importation fall within a type of firearm.

The working group determined that the semiautomatic rifles in question are generally semiautomatic versions of true selective fire military assault rifles.[3] As a class or type of firearm they are often referred to as "assault rifles," "assault-type rifles," "military style rifles," or "paramilitary rifles."[4] Since we are only concerned with semiautomatic rifles, it is somewhat of a misnomer to refer to these weapons as "assault rifles." True assault rifles are selective fire

weapons that will fire in a fully automatic mode.[5] For the purposes of this paper, it was necessary to settle on one term that best describes the weapons under consideration, and we will refer to these weapons as "semiautomatic assault rifles." They represent a distinctive type of rifle distinguished by certain general characteristics which are common to the modern military assault rifle. The modern military assault rifle, such as the U.S. M16, German G3, Belgian FN/FAL, and Soviet AK47, is a weapon designed for killing or disabling the enemy and, as described below, has characteristics designed to accomplish this purpose.

We found that the modern military assault rifle contains a variety of physical features and characteristics designed for military applications which distinguishes it from traditional sporting rifles.[6] These military features and characteristics (other than selective fire) are carried over to the semiautomatic versions of the original military rifle. These features and characteristics are as follows:

1. Military Configuration.

   a. Ability to accept a detachable magazine. Virtually allmodern military firearms are designed to accept large, detachable magazines.[7] This provides the soldier with a fairly large ammunition supply and the ability to rapidly reload. Thus, large capacity magazines are indicative of military firearms. While detachable magazines are not limited to military firearms, most traditional semiautomatic sporting firearms, designed to accommodate a detachable magazine, have a relatively small magazine capacity. In addition, some States have a limit on the magazine capacity allowed for hunting, usually 8 rounds or less.[8] That a firearm is designed and sold with a large capacity magazine, e.g., 20-30 rounds, is a factor to be considered in determining whether a firearm is a semiautomatic assault rifle.

   b. Folding/telescoping stocks. Many military firearms incorporate folding or telescoping stocks.[9] The main advantage of this item is portability, especially for airborne troops. These stocks allow the firearm to be fired from the folded position, yet it cannot be fired nearly as accurately as with an open stock. With respect to possible sporting uses of this feature, the folding stock makes it easier to carry the firearm when hiking or backpacking. However, its predominant advantage is for military purposes, and it is normally not found on the traditional sporting rifle.

   c. Pistol grips. The vast majority of military firearms employ a well-defined pistol grip that protrudes conspicuously beneath the action of the weapon.[10] In most cases, the "straight line design" of themilitary weapon dictates a grip of this type so that the shooter can hold and fire the weapon. Further, a pistol grip can be an aid in one-handed firing of the weapon in a combat situation. Further, such grips were designed to assist in controlling machineguns during automatic fire. On the other hand, the vast majority of sporting firearms employ a more traditional pistol grip built into the wrist of the stock of the firearm since one-handed shooting is not usually employed in hunting or competitive target competitions.

   d. Ability to accept a bayonet. A bayonet has distinct military purposes.[11] First, it has a psychological affect on the enemy. Second, it enables soldiers to fight in close quarters

with a knife attached to their rifles. We know of no traditional sporting application for a bayonet.

e. Flash suppressor. A flash suppressor generally serves one or two functions. First, in military firearms it disperses the muzzle flash when the firearm is fired to help conceal the shooter's position, especially at night. A second purpose of some flash suppressors is to assist in controlling the "muzzle climb" of the rifle, particularly when fired fully automatic.[12] From the standpoint of a traditional sporting firearm, there is no particular benefit in suppressing muzzle flash. Those flash suppressors which also serve to dampen "muzzle climb" have a limited benefit in sporting uses by allowing the shooter to reacquire the target for a second shot. However, the barrel of a sporting rifle can be modified by "magna-porting" to achieve the same result. There are also muzzle attachments for sporting firearms to assist in the reduction of muzzle climb. In the case of military-style weapons that have flash suppressors incorporated in their design, the mere removal of the flash suppressor may have an adverse impact on the accuracy of the firearm.

f. Bipods. The majority of military firearms have bipods as an integral part of the firearm or contain specific mounting points to which bipods may be attached.[13] The military utility of the bipod is primarily to provide stability and support for the weapon when fired from the prone position, especially when fired fully automatic. Bipods are available accessory items for sporting rifles and are used primarily in long-range shooting to enhance stability. However, traditional sporting rifles do not come equipped with bipods, nor are they specifically designed to accommodate them. Instead, bipods for sporting firearms are generally designed to attach to a detachable "sling swivel mount" or simply clamp onto the firearm.

g. Grenade launcher. Grenade launchers are incorporated in the majority of military firearms as a device to facilitate the launching of explosive grenades.[14] Such launchers are generally of two types. The first type is a flash suppressor designed to function as a grenade launcher. The second type attaches to the barrel of the rifle either by screws or clamps. We are not aware of any particular sporting use for grenade launchers.

h. Night sights. Many military firearms are equipped with luminous sights to facilitate sight alignment and target acquisition in poor light or darkness.[15] Their uses are generally for military and law enforcement purposes and are not usually found on sporting firearms since it is generally illegal to hunt at night.

2. Whether the weapon is a semiautomatic version of a machinegun.

The vast majority of modern military firearms are selective fire, i.e., they can shoot either fully automatic or semiautomatic. Since machineguns are prohibited from importation (except for law enforcement use) the manufacturers of such weapons have developed semiautomatic versions of these firearms.[16]

3. Whether the rifle is chambered to accept a centerfire cartridge case having a length of 2.25 inches or less.

Modern military assault rifles and submachineguns are generally chambered to accept a centerfire cartridge case of 2.25 inches or less.[17] On the other hand, while many traditional sporting rifles will fire a cartridge of 2.25 inches or less, such firearms usually do not have the other military features outlined in Items 1a-h.

These features and characteristics are not usually found on traditional sporting firearms.[18] This is not to say that a particular rifle having one or more of the listed features should necessarily be classified as a semiautomatic assault rifle. Indeed, many traditional sporting firearms are . semiautomatic or have detachable magazines. Thus, the criteria must be viewed in total to determine whether the overall configuration places the rifle fairly within the semiautomatic assault rifle category.

Using these criteria, we determined that, on balance, all of the firearms on the original suspension list are properly included in the semiautomatic assault rifle category, with the exception of the .22 rimfire caliber rifles and the Valmet Hunter. While the .22 rimfire caliber rifles bear a striking resemblance to the true assault rifle, these rifles employ, by and large, conventional .22 rimfire caliber semiautomatic mechanisms.[19] Moreover, they are not semiautomatic versions of a machinegun and contain only a few of the other relevant characteristics. Further, the working group determined that, in general, .22 caliber rifles are generally recognized as suitable for small game hunting. The Valmet Hunter, while based on the operating mechanism of the AK47 assault rifle, has been substantially changed so that it is now akin to a traditional sporting rifle and does not properly fall within the semiautomatic assault rifle category. More specifically, its receiver has been modified and its pistol grips, bayonet, and flash suppressor have been removed. The trigger mechanism has been moved to the rear of the modified receiver to facilitate its use with a traditional sporting stock. Also, its military-style sights have been replaced with traditional sporting-style sights. See Attachment 6.

B. Scope of "Sporting Purposes".

The second step of our process was to determine the scope of "sporting purposes" as used in the statute. This is a critical aspect of the process. The broadest interpretation could take in virtually any lawful activity or competition which any person or groups of persons might undertake. Under this interpretation, any rifle could meet the "sporting purposes" test. A narrower interpretation which focuses on the traditional sports of hunting and organized marksmanship competition would result in a more selective importation process.[20]

To determine the proper interpretation, we consulted the statute itself, its legislative history, applicable case law, the work of the original Firearms Evaluation Panel, and prior interpretations by ATF. In terms of the statute itself, the structure of the importation provisions would suggest a somewhat narrow interpretation. In this regard, firearms are prohibited from importation (section 922(1)) with certain specific exceptions (section 925(d)(3)). A broad interpretation which permits virtually any firearm to be imported because someone may wish to use it in some lawful shooting activity would render the statute meaningless.

As discussed earlier, the legislative history suggests a narrow meaning and indicates that the term "sporting purposes" refers to the traditional sports of target shooting, skeet and trap shooting, and hunting. Moreover, the history discussed earlier strongly suggests that Congress intended the provision to allow the importation of traditional sporting type rifles while excluding military type rifles. There is nothing in its history to indicate that it was intended to recognize every conceivable

type of activity or competition which might employ a firearm. To the contrary, the history indicates that mere use in some competition would not make the rifle a sporting rifle.

Finally, the 1968 Firearms Evaluation Panel specifically addressed at least one informal shooting activity and determined that it was not a legitimate sporting purpose under the statute. The panel addressed what is commonly referred to as "plinking" (shooting at randomly selected targets such as bottles and cans). It was the Panel's view that "while many persons participated in this type of activity and much ammunition was expended in such endeavors, it was primarily a pastime and could not be considered a sport for the purposes of importation. . ."
See Attachment 3.

Based on the above, the working group determined that the term "sporting purpose" should properly be given a narrow reading. It was determined that while hunting has been a recognized rifle sport for centuries, and competitive target shooting is a recognized rifle sport, the so-called activity of plinking is not a recognized sport. Moreover, we believe that reference to sporting purposes was intended also to stand in contrast to military and law enforcement applications. Consequently, the working group does not

believe that police/combat-type competitions should be treated as sporting activities. This position is supported by the court's decision in Gilbert Equipment Company, Inc., v Higgins, 709 F. Supp. 1071 (S.D. Ala. 1989) and is consistent with prior interpretations of ATF as noted on pages 4 and 5 in discussing the Striker-12 shotgun and USAS-12 shotgun.

C. Suitability.

The final step in our review involved an evaluation of whether semiautomatic assault rifles are a type of rifle generally recognized as particularly suitable for or readily adaptable to the traditional sporting applications discussed above.

The criminal misuse of semiautomatic assault rifles is a matter of significant public concern and was an important factor in the decision to suspend their importation. Nevertheless, the working group did not consider criminal misuse as a factor in its analysis of the importability of this type of rifle. Instead, the working group confined its analysis to the question of whether this type of rifle meets the test provided in section 925(d)(3).

Rather than criminal misuse, our comprehensive examination of this issue focused on the legal analysis and technical assessment of these firearms discussed earlier. In addition, the working group used the information gathered under Items 1-7 outlined in the next section in determining whether this type of firearm is generally recognized as particularly suitable for sporting purposes. These items take into account technical and marketing data, expert opinions, the recommended uses of the firearms, and data on the actual uses for which the weapons are employed in this country.

In evaluating these firearms, we believe that all rifles which are fairly typed as semiautomatic assault rifles should be treated the same. Therefore, the fact that there may be some evidence that a particular rifle of this type is used or recommended for sporting purposes should not control its importability.[21] Rather, all findings as to suitability of these rifles as a whole should govern each rifle within this type.

This is consistent with the approach taken with respect to handguns since 1968. Although certain handguns may be used or recommended for sporting purposes, they may fall within the type of easily concealable handguns barred from importation by the administrative factoring criteria used by ATF to determine the importability of handguns. Furthermore, a pistol specifically designed for target shooting, but lacking a safety as required by the factoring criteria, would be a type of handgun prohibited from importation as not particularly suitable for sporting purposes for this reason. Finally, just as ATF allows handguns to be modified so as to meet the factoring criteria, a semiautomatic assault rifle could be modified into a sporting configuration and be importable, as was done in the case of the Valmet Hunter referred to earlier.

D. Evaluation of Information from Outside Sources

As part of our comprehensive analysis as to whether semiautomatic assault rifles meet the statutory criteria for importation, the following sources of information were also considered:

1. How has the weapon been advertised, marketed and categorized by the manufacturer and/or importer?

2. How has the use of the rifle been described by firearms technical writers?

3. What is the rifle's reported use by importers?

4. Do hunting guides recommend the rifle?

5. Do editors of hunting magazines recommend the rifle?

6. Is the rifle used in target shooting competitions?

7. Do State game commissions allow the use of the rifle to hunt?

Items 1-6 focus upon how the rifles are marketed, advertised, and recommended for use. Item 7 addresses the legal restrictions pertaining to the use of the weapons for sporting purposes.

The working group reviewed the advertising and marketing literature concerning each of the weapons (Item 1) and reviewed evaluations of the firearms by technical writers (Item 2). In addition, the working group solicited information from the importers of the weapons and other knowledgeable sources (Items 3-6).

Questionnaires were drafted and sent out to licensed hunting guides, State game and fish commissions, local hunting associations, competitive shooting groups, and hunting/shooting magazine editors to determine the extent to which the weapons are used for sporting purposes or recommended for such use. The working group believed that the actual uses of the weapons for sporting purposes would be a factor to be considered in determining whether this type of rifle meets the sporting purposes test.

The review of advertising and marketing literature indicates that these rifles are not generally marketed for hunting or competitive shooting. The review of the technical evaluations revealed that these rifles are not regarded as suitable for these sporting activities.22

To the extent that the technical evaluations made recommendations with respect to the use of the rifles suspended from importation, the majority recommended them for law enforcement or military use or for activities such as collecting, plinking, home and self-defense, and combat target shooting. Only 5 of over 50 evaluations reviewed contained recommendations for the use of these firearms for hunting purposes.

The importers were asked to submit information concerning the sporting uses of the semiautomatic rifles they import. Thirty-nine importers were asked to submit this information and 19 responded. In general, their comments were conclusory and stated that their weapons could be used for sporting purposes. A small number of importers, e.g., Gun South, Inc., and Heckler & Koch, Inc., provided more specific data showing the sporting uses made of their firearms by their customers.

Of 3 hunting associations to whom questionnaires were sent, 2 responded. They stated that they place no restrictions on the use of semiautomatic rifles by their members, on the minimum caliber of ammunition used to hunt large game, or on the number of rounds allowed in semiautomatic rifle magazines. However, over 1,800 hunting guides were sent questionnaires and, of these, 706 responded. Over 73 percent of those responding indicated that their patrons used either bolt or lever action rifles for hunting. Only 10 of the 706 guides indicated that their patrons had used any of the rifles whose importation had been temporarily suspended.

Of the 20 hunting/shooting editors to whom questionnaires were sent, 14 responded. Nine of the fourteen editors recommended semiautomatic rifles for use in hunting large game, including 5 who recommended use of any of the rifles subject to the temporary suspension. Eleven of the fourteen editors recommended semiautomatic rifles for target competitions, including 7 who recommended semiautomatic assault rifles for such use.

The recommendations of editors were contradictory. One editor pointed out that what made the assault rifle successful as a military weapon made the semiautomatic version totally unfit for any other use. On the other hand, another editor stated that semiautomatic rifles had certain advantages over conventional sporting rifles especially for the physically disabled and left-handed shooters. While this may be true, there appears to be no advantage to using a semiautomatic assault rifle as opposed to a semiautomatic sporting rifle.

A total of 54 competitive shooting groups were sent a questionnaire and 53 groups responded (some of the responses were from unsolicited groups). Fifty of these groups indicated that they sponsor high power rifle competition events. While none of the groups prohibited the use of the semiautomatic assault rifles in their competitions, none stated that any of the rifles covered by the temporary suspension were used in a specific event.

Finally, the information gathered under Item 7 reveals that most of these weapons could legally be used in most States for most hunting purposes.

The working group reviewed all of the information gathered under Items 1-6 and determined that while these weapons may legally be used for sporting purposes in most States, the evidence was compelling that, as a type of firearm, the semiautomatic assault rifle is not generally recognized as particularly suitable for sporting purposes. The working group found persuasive the technical and expert evaluations of these firearms which generally did not recommend them as particularly suitable for sporting purposes. The group was also impressed by the comments of the hunting guides which showed that these rifles were not widely used for hunting purposes. The comments of the hunting guides are consistent with the opinion of the technical experts who generally do not recommend the rifles for hunting purposes.

The opinions of the editors were fairly divided with respect to the sporting uses of these rifles. The importers generally recommended their own weapons for such uses. The competitive shooting groups indicated that the rifles could be used in certain shooting events. Thus, while there was some evidence that these rifles could be used for hunting and target shooting, there was no evidence of any widespread use for such purposes. The mere fact that they are not generally prohibited from use for sporting purposes does not mean that the rifles meet the test for importation.

CONCLUSIONS

The working group has dealt with a complex issue, the resolution of which has required the group to take into account interpretations of law, technical assessments of firearms and their physical characteristics, marketing data, the assessment of data compiled from responses to questionnaires and, finally, Bureau expertise with respect to firearms. We fully recognize that particular findings as well as the results will be controversial.

From the cross section of representation within ATF, we have brought to bear our technical, legal, and administrative expertise to resolve the issues in what we believe to be a fair manner, taking into consideration all points of view. While some of the issues were difficult to resolve, in the end we believe that the ultimate conclusion is clear and compelling. These semiautomatic assault rifles were designed and intended to be particularly suitable for combat rather than sporting applications. While these weapons can be used, and indeed may be used by some, for hunting and target shooting, we believe it is clear that they are not generally recognized as particularly suitable for these purposes.

The purpose of section 925(d)(3) was to make a limited exception to the general prohibition on the importation of firearms, to preserve the sportsman's right to sporting firearms. This decision will in no way preclude the importation of true sporting firearms. It will only prevent the importation of military-style firearms which, although popular among some gun owners for collection, self-defense, combat competitions, or plinking, simply cannot be fairly characterized as sporting rifles.

Therefore, it is the finding of the working group that the semiautomatic assault rifle is not a type of firearm generally recognized as particularly suitable for or readily adaptable to sporting purposes and that importation of these rifles should not be authorized under 18 U.S.C. § 925(d)(3).

Based on our evaluation, we recommend that the firearms listed on Attachment 7 not be authorized for importation. For the reasons discussed in this report, we recommend that the firearms listed on Attachment 8 be authorized for importation. These are the .22 rimfire caliber rifles and the Valmet Hunter which we do not believe are properly included in the category of semiautomatic assault rifles. Attachment 9 is a compilation of the responses from the questionnaires. Attachment 10 combines the criteria for identifying semiautomatic assault rifles and the items considered in assessing suitability. Attachments 11 and 12 contain the data compiled for each of the criteria listed in Attachment 10. Finally, Attachment 13 contains the source materials used in locating persons and organizations who were sent questionnaires.

NOTES

1. Paul Wahl, ed., Gun Trader's Guide, 13th Edition, (South Hackensack, NJ. 1987), 155-162.

2. Although a firearm might be recognized as "suitable" for use in traditional sports, it would not meet the statutory criteria unless it were recognized as particularly suitable for such use. Indeed, Senator Dodd made clear that the intent of the legislation was to" [regulate] the importation of firearms by excluding surplus military handguns; and rifles and shotguns that are not truly suitable for sporting purposes." 114 Cong. Rec. 13325 (1968) (Statement of Sen. Dodd) [emphasis added].

   Similarly, it is apparent that the drafters of the legislation did not intend for "sports" to include every conceivable type of activity or competition which might employ a firearm; otherwise a "sporting purpose" could be advanced for every firearm sought to be imported. For example, in response to Sen. Hansen's question concerning the meaning of "sporting purposes" in the bill which became section 925(d), Senators Dodd and Hansen engaged in the following colloquy:

   > Mr. HANSEN. Would the Olympic shooting competition be a "sporting purpose? "
   >
   > Mr. DODD. I would think so.
   >
   > Mr. HANSEN. What about trap and skeet shooting?
   >
   > Mr. DODD. I would think so. I would think trap and skeet shooting would certainly be a sporting activity.
   >
   > Mr. HANSEN. Would the Camp Perry national matches be considered a "sporting purpose?"
   >
   > Mr. DODD. Yes: that would not [sic] fall in that arena. It should be described as a sporting purpose.
   >
   > Mr. HANSEN. I understand the only difference is in the type of firearms used at Camp Perry which includes a wide variety of military types as well as commercial.

> Would all of these firearms be classified as weapons constituting a "sporting purpose?"
>
> Mr. DODD. No. I would not say so. I think when we get into that, we definitely get into military type of weapon for use in matches like these at Camp Perry; but I do not think it is generally described as a sporting weapon. It is a military weapon. I assume they have certain types of competition in which they use these military weapons as they would in an otherwise completely sporting event. I do not think that fact would change the nature of the weapon from a military to a sporting one.
>
> Mr. HANSEN. Is it not true that military weapons are used in Olympic competition also?
>
> Mr. DODD. I do not know. Perhaps the Senator can tell me. I am not well informed on that.
>
> Mr. HANSEN. It is my understanding that they are. Would the Senator be inclined to modify his response if
> I say that is true? (27461)
>
> Mr. DODD. It is not that I doubt the Senator's word. Here again I would have to say that if a military weapon is used in a special sporting event, it does not become a sporting weapon. It is a military weapon used in a special sporting event. I think the Senator would agree with that. I do not know how else we could describe it.
>
> Mr. HANSEN. If I understand the Senator correctly, he said that despite the fact that a military weapon may be used in a sporting event it did not, by that action become a sporting rifle Is that correct?
>
> Mr. DODD. That would seem right to me ..... As I said previously the language says no firearms will be admitted into this country unless they are genuine sporting weapons..... I think the Senator and I know what a genuine sporting gun is.

114 Cong. Rec. 27461-62 (1968).(Emphasis added.)

3. Ken Warner, ed., Gun Digest 1989, (Northbrook, I1. 1988), pp. 293-300; William S. Jarrett, ed., Shooter's Bible, No. 80, (Hackensack, NJ. 1988), pp. 345-363; Edward Clinton Ezell, Small Arms of the World, (Harrisburg, Pa. 1983), p. 844; Pete Dickey, "The Military Look-Alikes," American Rifleman, (April 1980), p. 31. Also, see generally, Ian V. Hogg, ed., Jane's Infantry Weapons, 1987-88, (New York 1987); Jack Lewis, ed., The Gun Digest Book of Assault Weapons, (Northbrook, I1. 1986).

4. Art Blatt, "Tomorrow's State-of-the-Art Sporting Rifle," Guns & Ammo, (July 1981), p. 48; Jarrett, pp. 345-363; Warner, pp. 293-300.

5. Daniel D. Musgrave and Thomas B.Nelson, The World's Assault Rifles, (Virginia, 1967), p. 1.

6. See generally, Angus Laidlaw, ed., Paul Wahl's Big Gun Catalog/1, (Bogota, NJ. 1988); Musgrave and Nelson; Hogg; Jarrett; and Warner.

7. Ibid.

8. Arizona, 5 rounds; Colorado, 6 rounds; Michigan 6 rounds; New Hampshire, 5 rounds; New York, 6 rounds; North Carolina, 6 rounds; North Dakota, 8 rounds; Oregon, 5 rounds; Pennsylvania, semiautomatic rifles prohibited; Vermont, 6 rounds.

9. See generally, Hogg; Musgave and Nelson; Ezell; Warner; Jarrett; Laidlaw; and Lewis.

10. Ibid.

11. Ibid.

12. Ibid.

13. Ibid.

14. Ibid.

15. Ibid.

16. Ezell, p. 844; Dickey, p. 31.

17. Musgrave and Nelson, pp. 11-29; and, see generally, Hogg; and Ezell.

18. Ezell, pp.844-866; and, see generally, Warner; Jarrett; and Laidlaw.

19. See, for example, Walter Rickell, "The Plinker's AK GunsMagazine, (July 1986) p. 21; John Lachuk, "Bantam Battle Rifles," Guns & Ammo, (January 1987), p. 37; John Lachuk, ".22 Erma Carbine," Guns & Ammo, (May 1968), p. 58; JackLewis, "Something New: The AK in Twenty-Two," Gun World, (July 1985), p. 32; Roger Combs, "A Most Unique Carbine," Gun World, (December 1985), p. 28; Garry James, "Mitchell Arms AK-22," Guns & Ammo, (November 1985), p. 72.

20. See note 2, colloquy between Senators Dodd and Hansen.

21. Ibid.

22. See generally, bibliography.

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NOTE: This information was extracted from the document titled, **"Report and Recommendation of the ATF Working Group on the Importability of Certain Semiautomatic Rifles"**, published in a memorandum to the Director, Stephen E. Higgins from the Associate Director, Daniel R. Black and approved on July 6, 1989.

Exhibit R

Department of the Treasury Study on the Sporting Suitability of Modified Semiautomatic Assault Rifles

April 1998

TABLE OF CONTENTS

EXECUTIVE SUMMARY

On November 14, 1997, the President and the Secretary of the Treasury ordered a review of the importation of certain modified versions of semiautomatic assault rifles into the United States.[1] The decision to conduct this review stemmed in part from concerns expressed by members of Congress and others that the rifles being imported were essentially the same as semiautomatic assault rifles previously determined to be nonimportable in a 1989 decision by the Bureau of Alcohol, Tobacco and Firearms (ATF). The decision also stemmed from the fact that nearly 10 years had passed since the last comprehensive review of the importation of rifles, and many new rifles had been developed during this time.

Under 18 U.S.C. section 925(d)(3), the Secretary shall approve applications for importation only when the firearms are generally recognized as particularly suitable for or readily adaptable to sporting purposes (the "sporting purposes test"). In 1989, ATF denied applications to import a series of semiautomatic versions of automatic-fire military assault rifles. When ATF examined these semiautomatic assault rifles, it found that the rifles, while no longer machineguns, still had a military configuration that was designed for killing and disabling the enemy and that distinguished the rifles from traditional sporting rifles. This distinctively military configuration served as the basis for ATF's finding that the rifles were not considered sporting rifles under the statute.

The military configuration identified by ATF incorporated eight physical features: ability to accept a detachable magazine, folding/telescoping stocks, separate pistol grips, ability to accept a bayonet, flash suppressors, bipods, grenade launchers, and night sights. In 1989, ATF took the position that any of these military configuration features, other than the ability to accept a detachable magazine, would make a semiautomatic rifle not importable.

Subsequent to the 1989 decision, certain semiautomatic assault rifles that failed the 1989 sporting purposes test were modified to remove all of the military configuration features other than the ability to accept a detachable magazine. Significantly, most of these modified rifles not only still had the ability to accept a detachable magazine but, more specifically, still had the ability to accept a detachable large capacity magazine that

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[1] The President and the Secretary directed that all pending and future applications for importation of these rifles not be acted upon until completion of the review. They also ordered that outstanding permits for importation of the rifles be suspended for the duration of the review period. The existence of applications to import 1 million new rifles and outstanding permits for nearly 600,000 other rifles threatened to defeat the purpose of the expedited review unless the Department of the Treasury deferred action on additional applications and temporarily suspended the outstanding permits. (See exhibit 1 for a copy of the November 14, 1997, memorandum directing this review.)

The rifles that are the subject of this review are referred to in this report as "study rifles."

was originally designed and produced for the military assault rifles from which they were derived. These magazines are referred to in this report as "large capacity military magazines." Study rifles with the ability to accept such magazines are referred to in this report as "large capacity military magazine rifles," or "LCMM rifles." It appears that only one study rifle, the VEPR caliber .308 (an AK47 variant), is not an LCMM rifle. Based on the standard developed in 1989, these modified rifles were found to meet the sporting purposes test. Accordingly, the study rifles were approved for import into the United States.

These modified rifles are the subject of the present review. Like the rifles banned in 1989, the study rifles are semiautomatic rifles based on AK47, FN-FAL, HK91 and 93, Uzi, and SIG SG550 military assault rifles. While there are at least 59 specific model designations of the study rifles, they all fall within the basic designs listed above. There are at least 39 models based on the AK47 design, 8 on the FN-FAL design, 7 on the HK91 and 93 designs, 3 on the Uzi design, and 2 on the SIG SG550 design (see exhibit 2 for a list of the models). Illustrations of some of the study rifles are included in exhibit 3 of this report.

This review takes another look at the entire matter to determine whether the modified rifles approved for importation since 1989 are generally recognized as particularly suitable for or readily adaptable to sporting purposes.[2] We have explored the statutory history of the sporting purposes test and prior administrative and judicial interpretations; reexamined the basic tenets of the 1989 decision; analyzed the physical features of the study rifles, as well as information from a wide variety of sources relating to the rifles' use and suitability for sporting purposes; and assessed changes in law that might have bearing on the treatment of the rifles.

This review has led us to conclude that the basic finding of the 1989 decision remains valid and that military-style semiautomatic rifles are not importable under the sporting purposes standard. Accordingly, we believe that the Department of the Treasury correctly has been denying the importation of rifles that had any of the distinctly military configuration features identified in 1989, other than the ability to accept a detachable magazine. Our review, however, did result in a finding that the ability to accept a detachable large capacity magazine originally designed and produced for a military assault weapon should be added to the list of disqualifying military configuration features identified in 1989.

Several important changes have occurred since 1989 that have led us to reevaluate the importance of this feature in the sporting purposes test. Most significantly, by passing the 1994 bans on semiautomatic assault weapons and large capacity ammunition feeding

[2] The study was carried out by a working group composed of ATF and Treasury representatives. The working group's activities and findings were overseen by a steering committee composed of ATF and Treasury officials.

devices, Congress sent a strong signal that firearms with the ability to expel large amounts of ammunition quickly are not sporting; rather, firearms with this ability have military purposes and are a crime problem. Specifically, Congress found that these magazines served "combat-functional ends" and were attractive to criminals because they "make it possible to fire a large number of rounds without reloading, then to reload quickly when those rounds are spent."[3] Moreover, we did not find any evidence that the ability to accept a detachable large capacity military magazine serves any sporting purpose. Accordingly, we found that the ability to accept such a magazine is a critical factor in the sporting purposes test, which must be given the same weight as the other military configuration features identified in 1989.

In addition, the information we collected on the use and suitability of LCMM rifles for hunting and organized competitive target shooting demonstrated that the rifles are not especially suitable for sporting purposes. Although our review of this information indicated that, with certain exceptions, the LCMM rifles sometimes are used for hunting, their actual use in hunting is limited. There are even some general restrictions and prohibitions on the use of semiautomatic rifles for hunting game. Similarly, although the LCMM rifles usually may be used, with certain exceptions, and sometimes are used for organized competitive target shooting, their suitability for this activity is limited. In fact, there are some restrictions and prohibitions on their use.

Furthermore, the information we gathered demonstrated that the LCMM rifles are attractive to certain criminals. We identified specific examples of the LCMM rifles' being used in violent crime and gun trafficking. In addition, we found some disturbing trends involving the LCMM rifles, including a rapid and continuing increase in crime gun trace requests after 1991 and a rapid "time to crime." Their ability to accept large capacity military magazines likely plays a role in their appeal to these criminals.

After weighing all the information collected, we found that the LCMM rifles are not generally recognized as particularly suitable for or readily adaptable to sporting purposes and are therefore not importable. However, this decision will in no way preclude the importation of true sporting firearms.

[3] H. Rep. No. 103-489, at 18-19.

BACKGROUND

Importation of Firearms Under the Gun Control Act

The Gun Control Act of 1968 (GCA)[4] generally prohibits the importation of firearms into the United States.[5] However, the GCA creates four narrow categories of firearms that the Secretary of the Treasury shall authorize for importation. The category that is relevant to this study is found at 18 U.S.C. section 925(d)(3).

> The Secretary shall authorize a firearm . . . to be imported or brought into the United States . . . if the firearm . . .
>
> > (3) is of a type that does not fall within the definition of a firearm as defined in section 5845(a) of the Internal Revenue Code of 1954 and **is generally recognized as particularly suitable for or readily adaptable to sporting purposes**, excluding surplus military firearms, except in any case where the Secretary has not authorized the importation of the firearm pursuant to this paragraph, it shall be unlawful to import any frame, receiver, or barrel of such firearm which would be prohibited if assembled. (Emphasis added)

This provision originally was enacted, in a slightly different form, by Title IV of the Omnibus Crime Control and Safe Streets Act of 1968[6] and also was contained in Title I of the GCA, which amended Title IV later that year.

The GCA was enacted in large part "to assist law enforcement authorities in the States and their subdivisions in combating the increasing prevalence of crime in the United States." However, the Senate Report to the act also made clear that Congress did not intend the GCA to place any undue or unnecessary restrictions or burdens on responsible, law-abiding citizens with respect to acquiring, possessing, transporting, or using firearms for lawful activities.[7]

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[4] Pub. L. No. 90-618.

[5] 18 U.S.C. section 922(l).

[6] Pub. L. No. 90-351.

[7] S. Rep. No. 1501, 90th Cong. 2d Sess. 22 (1968).

Consistent with this general approach, legislative history indicates that Congress intended the importation standard provided in section 925(d)(3) to exclude military-type weapons from importation to prevent such weapons from being used in crime, while allowing the importation of high-quality sporting rifles. According to the Senate Report, section 925(d)(3) was intended to "curb the flow of surplus military weapons and other firearms being brought into the United States which are not particularly suitable for target shooting or hunting."[8] The report goes on to explain that "[t]he importation of certain foreign-made and military surplus nonsporting firearms has an important bearing on the problem which this title is designed to alleviate [crime]. Thus, the import provisions of this title seem entirely justified."[9] Indeed, during debate on the bill, Senator Dodd, the sponsor of the legislation, stated that "Title IV prohibits importation of arms which the Secretary determines are not suitable for . . . sport . . . . The entire intent of the importation section is to get those kinds of weapons that are used by criminals and have no sporting purpose."[10]

The Senate Report, however, also makes it clear that the importation standards "are designed and intended to provide for the importation of quality made, sporting firearms, including . . . rifles such as those manufactured and imported by Browning and other such manufacturers and importers of firearms."[11] (The rifles being imported by Browning at that time were semiautomatic and manually operated traditional sporting rifles of high quality.) Similarly, the report states that the importation prohibition "would not interfere with the bringing in of currently produced firearms, such as rifles . . . of recognized quality which are used for hunting and for recreational purposes."[12] The reference to recreational purposes is not inconsistent with the expressed purpose of restricting importation to firearms particularly suitable for target shooting or hunting, because firearms particularly suitable for these purposes also can be used for other purposes such as recreational shooting.

During debate on the bill, there was discussion about the meaning of the term "sporting purposes." Senator Dodd stated:

> [h]ere again I would have to say that if a military weapon is used in a

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8 S. Rep. No. 1501, 90th Cong. 2d Sess. 22 (1968).

9 S. Rep. No. 1501, 90th Cong. 2d Sess. 24 (1968).

10 114 Cong. Rec. S 5556, 5582, 5585 (1968).

11 S. Rep. No. 1501, 90th Cong. 2d. Sess. 38 (1968).

12 S. Rep. No. 1501, 90th Cong. 2d. Sess. 22 (1968).

> special sporting event, it does not become a sporting weapon. It is a military weapon used in a special sporting event . . . . As I said previously the language says no firearms will be admitted into this country unless they are genuine sporting weapons.[13]

Legislative history also shows that the determination of a weapon's suitability for sporting purposes is the direct responsibility of the Secretary of the Treasury. The Secretary was given this discretion largely because Congress recognized that section 925(d)(3) was a difficult provision to implement. Immediately after discussing the large role cheap imported .22 caliber revolvers were playing in crime, the Senate Report stated:

> [t]he difficulty of defining weapons characteristics to meet this target without discriminating against sporting quality firearms, was a major reason why the Secretary of the Treasury has been given fairly broad discretion in defining and administering the import prohibition.[14]

Indeed, Congress granted this discretion to the Secretary even though some expressed concern with its breadth:

> [t]he proposed import restrictions of Title IV would give the Secretary of the Treasury unusually broad discretion to decide whether a particular type of firearm is generally recognized as particularly suitable for, or readily adaptable to, sporting purposes. If this authority means anything, it permits Federal officials to differ with the judgment of sportsmen expressed through consumer preference in the marketplace . . . . [15]

Section 925(d)(3) provides that the Secretary shall authorize the importation of a firearm if it is of a "type" that is generally recognized as particularly suitable for or readily adaptable to sporting purposes. The legislative history also makes it clear that the Secretary shall scrutinize types of firearms in exercising his authority under section 925(d). Specifically, the Senate Report to the GCA states that section 925(d) "gives the

Secretary authority to permit the importation of ammunition and certain types of firearms."[16]

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[13] 114 Cong. Rec. 27461-462 (1968).

[14] S. Rep. No. 1501, 90th Cong. 2d Sess. 38 (1968).

[15] S. Rep. No. 1097, 90th Cong. 2d. Sess. 2155 (1968) (views of Senators Dirksen, Hruska, Thurmond, and Burdick). In Gun South, Inc. v. Brady, F.2d 858, 863 (11th Cir. 1989), the court, based on legislative history, found that the GCA gives the Secretary "unusually broad discretion in applying section 925(d)(3)."

[16] S. Rep. No. 1501, 90th Cong. 2d. Sess. 38 (1968).

The Senate Report to the GCA also recommended that the Secretary establish a council that would provide him with guidance and assistance in determining which firearms meet the criteria for importation into the United States.[17] Accordingly, following the enactment of the GCA, the Secretary established the Firearms Evaluation Panel (FEP) (also known as the Firearms Advisory Panel) to provide guidelines for implementation of the "sporting purposes" test. This panel was composed of representatives from the military, the law enforcement community, and the firearms industry. At the initial meeting of the FEP, it was understood that the panel's role would be advisory only.[18] The panel focused its attention on handguns and recommended the adoption of factoring criteria to evaluate the various types of handguns. These factoring criteria are based upon such considerations as overall length of the firearm, caliber, safety features, and frame construction. ATF thereafter developed an evaluation sheet (ATF Form 4590) that was put into use for evaluating handguns pursuant to section 925(d)(3). (See exhibit 4.)

The FEP did not propose criteria for evaluating rifles and shotguns under section 925(d)(3). Other than surplus military firearms, which Congress addressed separately, the rifles and shotguns being imported prior to 1968 were generally conventional rifles and shotguns specifically intended for sporting purposes. Therefore, in 1968, there was no cause to develop criteria for evaluating the sporting purposes of rifles and shotguns.

1984 Application of the Sporting Purposes Test

The first time that ATF undertook a meaningful analysis of rifles or shotguns under the sporting purposes test was in 1984. At that time, ATF was faced with a new breed of imported shotgun, and it became clear that the historical assumption that all shotguns were sporting was no longer viable. Specifically, ATF was asked to determine whether the Striker-12 shotgun was suitable for sporting purposes. This shotgun is a military/law enforcement weapon initially designed and manufactured in South Africa for riot control. When the importer was asked to submit evidence of the weapon's sporting purposes, it provided information that the weapon was suitable for police/combat-style competitions. ATF determined that this type of competition did not constitute a sporting purpose

under the statute, and that the shotgun was not suitable for the traditional shotgun sports of hunting, and trap and skeet shooting.

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[17] S. Rep. No. 1501, 90th Cong. 2d Sess. 38 (1968).

[18] Gilbert Equipment Co. v. Higgins, 709 F. Supp. 1071, 1083, n. 7 (S.D. Ala. 1989), aff'd without op., 894 F.2d 412 (11th Cir. 1990).

1986 Firearms Owners Protection Act

On May 19, 1986, Congress passed the Firearms Owners Protection Act,[19] which amended section 925(d)(3) to provide that the Secretary "shall" (instead of "may") authorize the importation of a firearm that is of a type that is generally recognized as particularly suitable for or readily adaptable to sporting purposes. The Senate Report to the law stated "it is anticipated that in the vast majority of cases, [the substitution of 'shall' for 'may' in the authorization section] will not result in any change in current practices."[20] As the courts have found, "[r]egardless of the changes made [by the 1986 law], the firearm must meet the sporting purposes test and it remains the Secretary's obligation to determine whether specific firearms satisfy this test."[21]

1986 Application of the Sporting Purposes Test

In 1986, ATF again had to determine whether a shotgun met the sporting purposes test, when the Gilbert Equipment Company requested that the USAS-12 shotgun be classified as a sporting firearm under section 925(d)(3). Again, ATF refused to recognize police/combat-style competitions as a sporting purpose. After examining and testing the weapon, ATF determined its weight, size, bulk, designed magazine capacity, configuration, and other factors prevented it from being classified as particularly suitable for or readily adaptable to the traditional shotgun sports of hunting, and trap and skeet shooting. Accordingly, its importation was denied.

When this decision was challenged in Federal court, ATF argued, in part, that large magazine capacity and rapid reloading ability are military features. The court accepted this argument, finding "the overall appearance and design of the weapon (especially the detachable box magazine . . .) is that of a combat weapon and not a sporting weapon."[22] In reaching this decision, the court was not persuaded by the importer's argument that box magazines can be lengthened or shortened depending on desired shell capacity.[23] The court also agreed with ATF's conclusion that police/combat-style competitions were not considered sporting purposes.

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[19] Pub. L. No. 99-308.

[20] S. Rep. No. 98-583, 98th Cong. 1st Sess. 27 (1984).

[21] Gilbert Equipment Co., 709 F. Supp. at 1083.

[22] Id. at 1089.

[23] Id. at 1087, n. 20 and 1089.

1989 Report on the Importability of Semiautomatic Assault Rifles

In 1989, after five children were killed in a California schoolyard by a gunman with a semiautomatic copy of an AK47, ATF decided to reexamine whether certain semiautomatic assault-type rifles met the sporting purposes test. This decision was reached after consultation with the Director of the Office of National Drug Control Policy. In March and April 1989, ATF announced that it was suspending the importation of certain "assault-type rifles." For the purposes of this suspension, assault-type rifles were those rifles that generally met the following criteria: (1) military appearance; (2) large magazine capacity; and (3) semiautomatic version of a machinegun. An ATF working group was established to reevaluate the importability of these assault-type rifles. On July 6, 1989, the group issued its Report and Recommendation of the ATF Working Group on the Importability of Certain Semiautomatic Rifles (hereinafter 1989 report).

In the 1989 report, the working group first discussed whether the assault-type rifles under review fell within a "type" of firearm for the purposes of section 925(d)(3). The working group concluded that most of the assault-type rifles under review represented "a distinctive type of rifle [which it called the "semiautomatic assault rifle"] distinguished by certain general characteristics which are common to the modern military assault rifle."[24] The working group explained that the modern military assault rifle is a weapon designed for killing or disabling the enemy and has characteristics designed to accomplish this purpose. Moreover, it found that these characteristics distinguish modern military assault rifles from traditional sporting rifles.

The characteristics of the modern military assault rifle that the working group identified were as follows: (1) military configuration (which included: ability to accept a detachable magazine, folding/telescoping stocks, separate pistol grips, ability to accept a bayonet, flash suppressors, bipods, grenade launchers, and night sights) (see exhibit 5 for a thorough discussion of each of these features); (2) ability to fire automatically (i.e., as a machinegun); and (3) chambered to accept a centerfire cartridge case having a length of 2.25 inches or less.[25] In regards to the ability to accept a detachable magazine, the working group explained that:

> [v]irtually all modern military firearms are designed to accept large, detachable magazines. This provides the soldier with a fairly large ammunition supply and the ability to rapidly reload. Thus, large capacity magazines are indicative of military firearms. While detachable

[24] 1989 report at 6.

[25] 1989 report at 6.

> magazines are not limited to military firearms, most traditional semiautomatic sporting firearms, designed to accommodate a detachable magazine, have a relatively small magazine capacity.[26]

The working group emphasized that these characteristics had to be looked at as a whole to determine whether the overall configuration of each of the assault-type rifles under review placed the rifle fairly within the semiautomatic assault rifle type. The semiautomatic assault rifles shared all the above military assault rifle characteristics other than being machineguns.[27]

The working group also addressed the scope of the term "sporting purposes." It concluded that the term should be given a narrow interpretation that focuses on the traditional sports of hunting and organized competitive target shooting. The working group made this determination by looking to the statute, its legislative history, applicable case law, the work of the FEP, and prior interpretations by ATF. In addition, the working group found that the reference to sporting purposes was intended to stand in contrast to military and law enforcement applications. Consequently, it determined that police/combat-type competitions should not be treated as sporting activities.[28]

The working group then evaluated whether the semiautomatic assault rifle type of firearm is generally recognized as particularly suitable for or readily adaptable to traditional sporting applications. This examination took into account technical and marketing data, expert opinions, the recommended uses of the firearms, and information on the actual uses for which the weapons are employed in this country. The working group, however, did not consider criminal use as a factor in its analysis of the importability of this type of firearm.

After analyzing this information, the working group concluded that semiautomatic assault rifles are not a type of firearm generally recognized as particularly suitable for or readily adaptable to sporting purposes. Accordingly, the working group concluded that semi-automatic assault rifles should not be authorized for importation under section 925(d)(3). However, the working group found that some of the assault-type rifles under review (the Valmet Hunter and .22 rimfire caliber rifles), did not fall within the semiautomatic assault rifle type. In the case of the Valmet Hunter, the working group found that although it was based on the operating mechanism of the AK47 assault rifle, it had been substantially

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[26] 1989 report at 6 (footnote omitted).

[27] The semiautomatic assault rifles were semiautomatic versions of machineguns.

[28] 1989 report at 9-11.

changed so that it was similar to a traditional sporting rifle.[29] Specifically, it did not have any of the military configuration features identified by the working group, except for the ability to accept a detachable magazine.

Following the 1989 study, ATF took the position that a semiautomatic rifle with any of the eight military configuration features identified in the 1989 report, other than the ability to accept a detachable magazine, failed the sporting purposes test and, therefore, was not importable.

Gun South, Inc. v. Brady

Concurrent with its work on the 1989 report, ATF was involved in litigation with Gun South, Inc. (GSI). In October 1988 and February 1989, ATF had granted GSI permits to import AUG-SA rifles. As mentioned previously, in March and April of 1989, ATF imposed a temporary suspension on the importation of rifles being reviewed in the 1989 study, which included the AUG-SA rifle. GSI filed suit in Federal court, seeking to prohibit the Government from interfering with the delivery of firearms imported under permits issued prior to the temporary suspension.

The court of appeals found that the Government had the authority to suspend temporarily the importation of GSI's AUG-SA rifles because the GCA "impliedly authorizes" such action.[30] In addition, the court rejected GSI's contention that the suspension was arbitrary and capricious because the AUG-SA rifle had not physically changed, explaining the argument "places too much emphasis on the rifle's structure for determining whether a firearm falls within the sporting purpose exception. While the Bureau must consider the rifle's physical structure, the [GCA] requires the Bureau to equally consider the rifle's use."[31] In addition, the court found that ATF adequately had considered sufficient evidence before imposing the temporary suspension, citing evidence ATF had considered

demonstrating that semiautomatic assault-type rifles were being used with increasing frequency in crime.[32]

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[29] This finding reflects the fact that the operating mechanism of the AK47 assault rifle is similar to the operating mechanism used in many traditional sporting rifles.

[30] Gun South, Inc. v. Brady, 877 F.2d 858 (11th Cir. 1989). The court of appeals issued its ruling just days before the 1989 report was issued. However, the report was complete before the ruling was issued.

[31] Id.

[32] Id.

Although GSI sued ATF on the temporary suspension of its import permits, once the 1989 report was issued, no one pursued a lawsuit challenging ATF's determination that the semiautomatic assault rifles banned from importation did not meet the sporting purposes test.[33]

Violent Crime Control and Law Enforcement Act of 1994

On September 13, 1994, Congress passed the Violent Crime Control and Law Enforcement Act of 1994,[34] which made it unlawful, with certain exceptions, to manufacture, transfer, or possess semiautomatic assault weapons as defined by the statute.[35] The statute defined semiautomatic assault weapons to include 19 named models of firearms (or copies or duplicates of the firearms in any caliber);[36] semiauto-matic rifles that have the ability to accept detachable magazines and have at least two of five features specified in the law; semiautomatic pistols that have the ability to accept detachable magazines and have at least two of five features specified in the law; and semiautomatic shotguns that have at least two of four features specified in the law.[37] However, Congress

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[33] After the 1989 report was issued, Mitchell Arms, Inc. asserted takings claims against the Government based upon the suspension and revocation of four permits allowing for the importation of semiautomatic assault rifles and ATF's temporary moratorium on import permits for other rifles. The court found for the Government, holding the injury complained of was not redressable as a taking because Mitchell Arms did not hold a property interest within the meaning of the Just Compensation Clause of the Fifth Amendment. Mitchell Arms v. United States, 26 Cl. Ct. 1 (1992), aff'd, 7 F.3d 212 (Fed. Cir. 1993), cert. denied, 511 U.S. 1106 (1994).

[34] Pub. L. No. 103-22. Title XI, Subtitle A of this act may be cited as the "Public Safety and Recreational Firearms Use Protection Act."

[35] 18 U.S.C. section 922(v).

[36] Chapter 18 U.S.C. section 921(a)(30)(A) states that the term "semiautomatic assault weapon" means "any of the firearms, or copies or duplicates of the firearms in any caliber, known as -," followed by a list of named firearms. Even though section 921(a)(3) defines "firearm" as used in chapter 18 to mean, in part, "the frame or receiver of any such weapon," the use of "firearm" in section 921(a)(30)(A) has not been interpreted to mean a frame or receiver of any of the named weapons, except when the frame or receiver actually is incorporated in one of the named weapons.

Any other interpretation would be contrary to Congress' intent in enacting the assault weapon ban. In the House Report to the assault weapon ban, Congress emphasized that the ban was to be interpreted narrowly. For example, the report explained that the present bill was more tightly focused than earlier drafts which gave ATF authority to ban any weapon which "embodies the same configuration" as the named list of guns in section 921(a)(30)(A); instead, the present bill "contains a set of specific characteristics that must be present in order to ban any additional semiautomatic assault weapons [beyond the listed weapons]." H. Rep. 103-489 at 21.

[37] 18 U.S.C. section 921(a)(30).

exempted from the assault weapon ban any semiautomatic rifle that cannot accept a detachable magazine that holds more than five rounds of ammunition and any semiautomatic shotgun that cannot hold more than five rounds of ammunition in a fixed or detachable magazine.[38]

Although the 1994 law was not directly addressing the sporting purposes test in section 925(d)(3), section 925(d)(3) had a strong influence on the law's content. The technical work of ATF's 1989 report was, to a large extent, incorporated into the 1994 law. The House Report to the 1994 law explained that although the legal question of whether semiautomatic assault weapons met section 925(d)(3)'s sporting purposes test "is not directly posed by [the 1994 law], the working group's research and analysis on assault weapons is relevant on the questions of the purposes underlying the design of assault weapons, the characteristics that distinguish them from sporting guns, and the reasons underlying each of the distinguishing features."[39] As in the 1989 study, Congress focused on the external features of firearms, rather than on their semiautomatic operating mechanism.

The 1994 law also made it unlawful to possess and transfer large capacity ammunition feeding devices manufactured after September 13, 1994.[40] A large capacity ammunition feeding device was generally defined as a magazine, belt, drum, feed strip, or similar device that has the capacity of, or that can be readily restored or converted to accept, more than 10 rounds of ammunition.[41]

Congress passed these provisions of the 1994 law in response to the use of semiautomatic assault weapons and large capacity ammunition feeding devices in crime. Congress had been presented with much evidence demonstrating that these weapons were "the weapons of choice among drug dealers, criminal gangs, hate groups, and mentally deranged persons bent on mass murder."[42] The House Report to the 1994 law recounts numerous crimes that had occurred involving semiautomatic assault weapons and large capacity magazines that were originally designed and produced for military assault rifles.[43]

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[38] 18 U.S.C. sections 922(v)(3)(C)&(D).

[39] H. Rep. No. 103-489, at 17, n. 19.

[40] 18 U.S.C. section 922(w).

[41] 18 U.S.C. section 921(a)(31).

[42] H. Rep. No. 103-489, at 13.

[43] H. Rep. No. 103-489, at 14-15.

In enacting the semiautomatic assault weapon and large capacity ammunition feeding device bans, Congress emphasized that it was not preventing the possession of sporting firearms. The House Report, for example, stated that the bill differed from earlier bills in that "it is designed to be more tightly focused and more carefully crafted to clearly exempt legitimate sporting guns."[44] In addition, Congress specifically exempted 661 long guns from the assault weapon ban which are "most commonly used in hunting and recreational sports."[45]

Both the 1994 law and its legislative history demonstrate that Congress recognized that ammunition capacity is a factor in determining whether a firearm is a sporting firearm. For example, large capacity ammunition feeding devices were banned, while rifles and shotguns with small ammunition capacities were exempted from the assault weapon ban. Moreover, the House Report specifically states that the ability to accept a large capacity magazine was a military configuration feature which was not "merely cosmetic," but "serve[d] specific, combat-functional ends."[46] The House Report also explains that, while "[m]ost of the weapons covered by the [ban] come equipped with magazines that hold 30 rounds [and can be replaced with magazines that hold 50 or even 100 rounds], . . . [i]n contrast, hunting rifles and shotguns typically have much smaller magazine capabilities--from 3-5."[47]

Finally, it must be emphasized that the semiautomatic assault weapon ban of section 922(v) is distinct from the sporting purposes test governing imports of section 925(d)(3). Clearly, any weapon banned under section 922(v) cannot be imported into the United States because its possession in the United States would be illegal. However, it is possible that a weapon not defined as a semiautomatic assault weapon under section 922(v) still would not be importable under section 925(d)(3). In order to be importable, the firearm must be of a type generally recognized as particularly suitable for or readily adaptable to sporting purposes regardless of its categorization under section 922(v). The

Secretary's discretion under section 925(d)(3) remains intact for all weapons not banned by the 1994 statute.

The Present Review

Prior to the November 14, 1997, decision to conduct this review, certain members of

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[44] H. Rep. No. 103-489, at 21.

[45] H. Rep. No. 103-489, at 20. None of these 661 guns are study rifles.

[46] H. Rep. No. 103-489, at 18.

[47] H. Rep. No. 103-489, at 19 (footnote omitted).

Congress strongly urged that it was necessary to review the manner in which the Treasury Department is applying the sporting purposes test to the study rifles, in order to ensure that the present practice is consistent with section 925(d)(3) and current patterns of gun use. The fact that it had been nearly 10 years since the last comprehensive review of the importation of rifles (with many new rifles being developed during this time) also contributed to the decision to conduct this review.

DEFINING THE TYPE OF WEAPON UNDER REVIEW

Section 925 (d) (3) provides that the Secretary shall authorize the importation of a firearm if it is of a "type" that meets the sporting purposes test. Given this statutory mandate, we had to determine whether the study rifles suspended from importation fell within one type of firearm. Our review of the study rifles demonstrated that all were derived from semiautomatic assault rifles that failed to meet the sporting purposes test in 1989 but were later found to be importable when certain military features were removed.

Within this group, we determined that virtually all of the study rifles shared another important feature: The ability to accept a detachable large capacity magazine (e.g., more than 10 rounds) that was originally designed and produced for one of the following military assault rifles: AK47, FN-FAL, HK91 or 93, SIG SG550, or Uzi. (This is the only military configuration feature cited in the 1989 study that remains with any of the study rifles).

We determined that all of the study rifles that shared both of these characteristics fell within a type of firearm which, for the purposes of this report, we call "large capacity military magazine rifles" or "LCMM rifles." It appears that only one study rifle, the VEPR caliber .308--which is based on the AK47 design--does not fall within this type because it does not have the ability to accept a large capacity military magazine.

SCOPE OF "SPORTING PURPOSES"

As in the 1989 study, we had to determine the scope of "sporting purposes" as used in section 925(d)(3). Looking to the statute, its legislative history, the work of the Firearms Evaluation Panel (see exhibit 6), and prior ATF interpretations, we determined sporting purposes should be given a narrow reading, incorporating only the traditional sports of hunting and organized competitive target shooting (rather than a broader interpretation that could include virtually any lawful activity or competition.)

In terms of the statute itself, the structure of the importation provisions suggests a somewhat narrow interpretation. Firearms are prohibited from importation (section 922(l)), with four specific exceptions (section 925(d)). A broad interpretation permitting a firearm to be imported because someone may wish to use it in some lawful shooting activity would render the general prohibition of section 922(l) meaningless.

Similarly, as discussed in the "Background" section, the legislative history of the GCA indicates that the term sporting purposes narrowly refers to the traditional sports of hunting and organized competitive target shooting. There is nothing in the history to indicate that it was intended to recognize every conceivable type of activity or competition that might employ a firearm.

In addition, the FEP specifically addressed the informal shooting activity of "plinking" (shooting at randomly selected targets such as bottles and cans) and determined that it was not a legitimate sporting purpose under the statute. The panel found that, "while many persons participate in this type of activity and much ammunition was expended in such endeavors, it was primarily a pastime and could not be considered a sport for the purposes of importation. . . ." (See exhibit 6.)

Finally, the 1989 report determined that the term sporting purposes should be given a narrow reading incorporating the traditional rifle sports of hunting and organized competitive target shooting. In addition, the report determined that the statute's reference to sporting purposes was intended to stand in contrast with military and law enforcement applications. This is consistent with ATF's interpretation in the context of the Striker-12 shotgun and the USAS-12 shotgun. It is also supported by the court's decision in Gilbert Equipment Co. v. Higgins.

We received some comments urging us to find "practical shooting" is a sport for the purposes of section 925(d)(3).[48] Further, we received information showing that practical shooting is gaining in popularity in the United States and is governed by an organization that has sponsored national events since 1989. It also has an international organization.

While some may consider practical shooting a sport, by its very nature it is closer to police/combat-style competition and is not comparable to the more traditional types of sports, such as hunting and organized competitive target shooting. Therefore, we are not convinced that practical shooting does, in fact, constitute a sporting purpose under section 925(d)(3).[49] However, even if we were to assume for the sake of argument that practical shooting is a sport for the purposes of the statute, we still would have to decide whether a firearm that could be used in practical shooting meets the sporting purposes test. In other words, it still would need to be determined whether the firearm is of a type that is generally recognized as particularly suitable for or readily adaptable to practical shooting and other sporting purposes.[50] Moreover, the legislative history makes clear that the use of a military weapon in a practical shooting competition would not make that weapon

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[48] Practical shooting involves moving, identifying, and engaging multiple targets and delivering a num ber of shots rapidly. In doing this, practical shooting participants test their defensive skills as they encounter props, including walls and barricades, with full or partial targets, "no-shoots," steel reaction targets, movers, and others to challenge them.

[49] As noted earlier, ATF has taken the position that police/combat-style competitions do not constitute a "sporting purpose." This position was upheld in Gilbert Equipment Co., 709 F. Supp. at 1077.

[50] Our findings on the use and suitability of the LCMM rifles in practical shooting competitions are contained in the "Suitability for Sporting Purposes" section of this report.

sporting: "if a military weapon is used in a special sporting event, it does not become a sporting weapon. It is a military weapon used in a special sporting event."[51] While none of the LCMM rifles are military weapons, they still retain the military feature of the ability to accept a large capacity military magazine.

[51] 114 Cong. Rec. 27461-462 (1968) (Sen. Dodd).

METHOD OF STUDY

As explained in the "Executive Summary" section of this report, the purpose of this study is to review whether modified semiautomatic assault rifles are properly importable under 18 U.S.C. section 925(d)(3). More specifically, we reexamined the conclusions of the 1989 report as applied today to determine whether we are correct to allow importation of the study rifles that have been modified by having certain military features removed. To determine whether such rifles are generally recognized as particularly suitable for or readily adaptable to sporting purposes, the Secretary must consider both the physical features of the rifles and the actual uses of the rifles.[52] Because it appears that all of the study rifles that have been imported to date have the ability to accept a large capacity military magazine,[53] all of the information collected on the study rifles' physical features and actual uses applies only to the LCMM rifles.

Physical features:

The discussion of the LCMM rifles' physical features are contained in the "Suitability for Sporting Purposes" section of this report.

Use:

We collected relevant information on the use of the LCMM rifles. Although the 1989 study did not consider the criminal use of firearms in its importability analysis, legislative history demonstrates and the courts have found that criminal use is a factor that can be considered in determining whether a firearm meets the requirements of section 925(d)(3).[54] Accordingly, we decided to consider the criminal use of the LCMM rifles in the present analysis.

The term "generally recognized" in section 925(d)(3) indicates that the Secretary should base his evaluation of whether a firearm is of a type that is particularly suitable for or readily adaptable to sporting purposes, in part, on a "community standard" of the firearm's use.[55] The community standard "may change over time even though the firearm remains the same. Thus, a changing pattern of use may significantly affect whether a firearm is generally recognized as particularly suitable for or readily adaptable to a sporting purpose."[56] Therefore, to assist the Secretary in determining whether the LCMM rifles presently are of a type generally recognized as particularly suitable for or readily adaptable to sporting purposes, we gathered information from the relevant "community." The relevant community was defined as persons and groups who are

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[52] Gun South, Inc., 877 F.2d at 866.

[53] The VEPR caliber .308 discussed on page 16 has not yet been imported.

[54] 114 Cong. Rec. S 5556, 5582, 5585 (1968)("[t]he entire intent of the importation section [of the sporting purposes test] is to get those kinds of weapons that are used by criminals and have no sporting purposes") (Sen. Dodd); Gun South, Inc., 877 F.2d at 866.

[55] Gun South, Inc., 877 F.2d at 866.

[56] Id.

knowledgeable about the uses of these firearms or have relevant information about whether these firearms are particularly suitable for sporting purposes. We identified more than 2,000 persons or groups we believed would be able to provide relevant, factual information on these issues. The individuals and groups were selected to obtain a broad range of perspectives on the issues. We conducted surveys to obtain specific information from hunting guides, editors of hunting and shooting magazines, organized competitive shooting groups, State game commissions, and law enforcement agencies and organizations. Additionally, we asked industry members, trade associations, and various interest and information groups to provide relevant information.[57] A detailed presentation of the surveys and responses is included as an appendix to this report.

We also reviewed numerous advertisements and publications, both those submitted by the editors of hunting and shooting magazines and those collected internally, in our search for material discussing the uses of the LCMM rifles. Further, we collected importation data, tracing data, and case studies.[58]

Our findings on use are contained in the "Suitability for Sporting Purposes" section of this report.

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[57] **Hunting guides**: Guides were asked about specific types of firearms used by their clients. The guides were an easily definable group, versus the entire universe of hunters. We obtained the names of the hunting guides surveyed from the States.

Editors of hunting and shooting magazines: Editors were surveyed to determine whether they recommended the LCMM rifles for hunting or organized competitive target shooting and whether they had written any articles on the subject. The list of editors we surveyed was obtained from a directory of firearms-related organizations.

Organized competitive shooting groups: Organized groups were asked whether they sponsored competitive events with high-power semiautomatic rifles and whether the LCMM rifles were allowed in those competitions. We felt it was significant to query those who are involved with organized events rather than unofficial activities with no specific rules or guidelines. As with the editors above, the list of groups was obtained from a directory of firearms-related organizations.

State game commissions: State officials were surveyed to determine whether the use of the LCMM rifles was prohibited or restricted for hunting in each State.

Law enforcement agencies and organizations: Specific national organizations and a sampling of 26 police departments across the country were contacted about their knowledge of the LCMM rifles' use in crime. The national organizations were surveyed with the intent that they would gather input from the wide range of law enforcement agencies that they represent or that they would have access to national studies on the subject.

Industry members and trade associations: These groups were included because of their knowledge on the issue.

Interest and information groups: These organizations were included because of their wide range of perspectives on the issue.

[58] To assist us with our review of the crime-related information we collected, we obtained the services of Garen J. Wintemute, MD, M.P.H. Director of the Violence Prevention Research Program, University of California, Davis, and Anthony A. Braga, Ph.D., J.F.K. School of Government, Harvard University.

SUITABILITY FOR SPORTING PURPOSES

The next step in our review was to evaluate whether the LCMM rifles, as a type, are generally recognized as particularly suitable for or readily adaptable to hunting and organized competitive target shooting.[59] The standard applied in making this determination is high. It requires more than a showing that the LCMM rifles may be used or even are sometimes used for hunting and organized competitive target shooting; if this were the standard, the statute would be meaningless. Rather, the standard requires a showing that the LCMM rifles are especially suitable for use in hunting and organized competitive target shooting.

As discussed in the "Method of Study" section, we considered both the physical features of the LCMM rifles and the actual uses of the LCMM rifles in making this determination.

Physical Features

The ability to accept a detachable large capacity magazine that was originally designed and produced for one of the following military assault rifles: AK47, FN-FAL, HK91 or 93, SIG SG550, or Uzi.

Although the LCMM rifles have been stripped of many of their military features, they all still have the ability to accept a detachable large capacity magazine that was originally designed and produced for one of the following military assault rifles: AK47, FN-FAL, HK91 and 93, SIG SG550, or Uzi; in other words, they still have a feature that was designed for killing or disabling an enemy. As the 1989 report explains:

> Virtually all modern military firearms are designed to accept large, detachable magazines. This provides the soldier with a fairly large ammunition supply and the ability to rapidly reload. Thus, large capacity magazines are indicative of military firearms. While detachable magazines are not limited to military firearms, most traditional

[59] One commenter suggests that the Secretary has been improperly applying the "readily adaptable to sporting purposes" provision of the statute. Historically, the Secretary has considered the "particularly suitable for or readily adaptable to" provisions as one standard. The broader interpretation urged by the commenter would make the standard virtually unenforceable. If the Secretary allowed the importation of a firearm which is readily adaptable to sporting purposes, without requiring it actually to be adapted prior to importation, the Secretary would have no control over whether the adaptation actually would occur following the importation.

> semiautomatic sporting firearms, designed to accommodate a detachable magazine, have a relatively small magazine capacity.[60]

Thus, the 1989 report found the ability to accept a detachable large capacity magazine originally designed and produced for a military assault rifle was a military, not a sporting, feature. Nevertheless, in 1989 it was decided that the ability to accept such a large capacity magazine, in the absence of other military configuration features, would not be viewed as disqualifying for the purposes of the sporting purposes test. However, several important developments, which are discussed below, have led us to reevaluate the weight that should be given to the ability to accept a detachable large capacity military magazine in the sporting purposes test.

Most significantly, we must reevaluate the significance of this military feature because of a major amendment that was made to the GCA since the 1989 report was issued. In 1994, as discussed in the "Background" section of this report, Congress passed a ban on large capacity ammunition feeding devices and semiautomatic assault weapons.[61] In enacting these bans, Congress made it clear that it was not preventing the possession of sporting firearms.[62] Although the 1994 law was not directly addressing the sporting purposes test, section 925(d)(3) had a strong influence on the law's content. As discussed previously, the technical work of ATF's 1989 report was, to a large extent, incorporated into the 1994 law.

Both the 1994 law and its legislative history demonstrate that Congress found that ammunition capacity is a factor in whether a firearm is a sporting firearm. For example, large capacity ammunition feeding devices were banned, while rifles and shotguns with small ammunition capacities were exempted from the assault weapon ban. In other words, Congress found magazine capacity to be such an important factor that a semiautomatic rifle that cannot accept a detachable magazine that holds more than five rounds of ammunition will not be banned, even if it contains all five of the assault

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[60] 1989 report at 6 (footnote omitted). This was not the first time that ATF considered magazine capacity to be a relevant factor in deciding whether a firearm met the sporting purposes test. See Gilbert Equipment Co., 709 F. Supp. at 1089 ("the overall appearance and design of the weapon (especially the detachable box magazine . . .) is that of a combat weapon and not a sporting weapon."

[61] The ban on large capacity ammunition feeding devices does not include any such device manufactured on or before September 13, 1994. Accordingly, there are vast numbers of large capacity magazines originally designed and produced for military assault weapons that are legal to transfer and possess ("grandfathered" large capacity military magazines). Presently these grandfathered large capacity military magazines fit the LCMM rifles.

[62] See, for example, H. Rep. No. 103-489, at 21.

weapon features listed in the law. Moreover, unlike the assault weapon ban in which a detachable magazine and at least two physical features are required to ban a rifle, a large capacity magazine in and of itself is banned.

In addition, the House Report specifically states that the ability to accept a large capacity magazine is a military configuration characteristic that is not "merely cosmetic," but "serve[s] specific, combat-functional ends."[63] The House Report also explains that large capacity magazines

> make it possible to fire a large number of rounds without re-loading, then to reload quickly when those rounds are spent. Most of the weapons covered by the proposed legislation come equipped with magazines that hold 30 rounds. Even these magazines, however, can be replaced with magazines that hold 50 or even 100 rounds. Furthermore, expended magazines can be quickly replaced, so that a single person with a single assault weapon can easily fire literally hundreds of rounds within minutes. . . . In contrast, hunting rifles and shotguns typically have much smaller magazine capabilities--from 3-5.[64]

Congress specifically exempted 661 long guns from the assault weapon ban that are "most commonly used in hunting and recreational sports."[65] The vast majority of these long guns do not use large capacity magazines. Although a small number of the exempted long guns have the ability to accept large capacity magazines, only four of these exempted long guns were designed to accept large capacity military magazines.[66]

The 1994 law also demonstrates Congress' concern about the role large capacity magazines and firearms with the ability to accept these large capacity magazines play in

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[63] H. Rep. No. 103-489, at 18.

[64] H. Rep. No. 103-489, at 19 (footnote omitted). The fact that 12 States place a limit on the magazine capacity allowed for hunting, usually 5 or 6 rounds, is consistent with this analysis. (See exhibit 7).

[65] H. Rep. 103-489, at 20.

[66] These four firearms are the Iver Johnson M-1 carbine, the Iver Johnson 50th Anniversary M-1 carbine, the Ruger Mini-14 autoloading rifle (without folding stock), and the Ruger Mini Thirty rifle. All of these weapons are manufactured in the United States and are not the subject of this study. In this regard, it should also be noted that Congress can distinguish between domestic firearms and foreign firearms and impose different requirements on the importation of firearms. For example, Congress may ban the importation of certain firearms although similar firearms may be produced domestically. See, for example, B-West Imports v. United States, 75 F.3d 633 (Fed. Cir. 1996).

crime. The House Report for the bill makes reference to numerous crimes involving these magazines and weapons, including the following:[67]

> The 1989 Stockton, California, schoolyard shooting in which a gunman with a semiautomatic copy of an AK47 and 75-round magazines fired 106 rounds in less than 2 minutes. Five children were killed and twenty-nine adults and children were injured.
>
> The 1993 shooting in a San Francisco, California, office building in which a gunman using 2 TEC DC9 assault pistols with 50-round magazines killed 8 people and wounded 6 others.
>
> A 1993 shooting on the Long Island Railroad that killed 6 people and wounded 19 others. The gunman had a Ruger semiautomatic pistol, which he reloaded several times with 15-round magazines, firing between 30 to 50 rounds before he was overpowered.

The House Report also includes testimony from a representative of a national police officers' organization, which reflects the congressional concern with criminals' access to firearms that can quickly expel large amounts of ammunition:

> In the past, we used to face criminals armed with a cheap Saturday Night Special that could fire off six rounds before [re]loading. Now it is not at all unusual for a cop to look down the barrel of a TEC-9 with a 32 round clip. The ready availability of and easy access to assault weapons by criminals has increased so dramatically that police forces across the country are being required to upgrade their service weapons merely as a matter of self-defense and preservation. The six-shot .38 caliber service revolver, standard law enforcement issue for years, is just no match against a criminal armed with a semiautomatic assault weapon.[68]

Accordingly, by passing the 1994 law, Congress signaled that firearms with the ability to accept detachable large capacity magazines are not particularly suitable for sporting purposes. Although in 1989 we found the ability to accept a detachable large capacity military magazine was a military configuration feature, we must give it more weight, given this clear signal from Congress.

The passage of the 1994 ban on large capacity magazines has had another effect. Under the 1994 ban, it generally is unlawful to transfer or possess a large capacity magazine

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[67] H. Rep. No. 103-489, at 15 (two of these examples involve handguns).

[68] H. Rep. 103-489, at 13-14 (footnote omitted).

manufactured after September 13, 1994. Therefore, if we require the LCMM rifles to be modified so that they do not accept a large capacity military magazine in order to be importable, a person will not be able to acquire a newly manufactured large capacity magazine to fit the modified rifle. Thus, the modified rifle neither will be able to accept a grandfathered large capacity military magazine, nor can a new large capacity magazine be manufactured to fit it. Accordingly, today, making the ability to accept a large capacity military magazine disqualifying for importation will prevent the importation of firearms which have the ability to expel large amounts of ammunition quickly without reloading.

This was not the case in 1989 or prior to the 1994 ban.

It is important to note that even though Congress reduced the supply of large capacity military magazines by passing the 1994 ban, there are still vast numbers of grandfathered large capacity military magazines available that can be legally possessed and transferred. These magazines currently fit in the LCMM rifles. Therefore, the 1994 law did not eliminate the need to take further measures to prevent firearms imported into the United States from having the ability to accept large capacity military magazines, a nonsporting factor.

Another impetus for reevaluating the existing standard is the development of modified weapons. The 1989 report caused 43 different models of semiautomatic assault rifles to be banned from being imported into the United States. The effect of that determination was that nearly all semiautomatic rifles with the ability to accept detachable large capacity military magazines were denied importation. Accordingly, at the time, there was no need for the ability to accept such a magazine to be a determining factor in the sporting purposes test. This is no longer the case. As discussed earlier, manufacturers have modified the semiautomatic assault rifles disallowed from importation in 1989 by removing all of their military configuration features, except for the ability to accept a detachable magazine. As a result, semiautomatic rifles with the ability to accept detachable large capacity military magazines (and therefore quickly expel large amounts of ammunition) legally have been entering the United States in significant numbers. Accordingly, the development of these modified weapons necessitates reevaluating our existing standards.

Thus, in order to address Congress' concern with firearms that have the ability to expel large amounts of ammunition quickly, particularly in light of the resumption of these weapons coming into the United States, the ability to accept a detachable large capacity military magazine must be given greater weight in the sporting purposes analysis of the LCMM rifles than it presently receives.[69]

[69] A firearm that can be easily modified to accept a detachable large capacity military magazine with only minor adjustments to the firearm or the magazine is considered to be a firearm with the ability to accept these magazines. The ROMAK4 is an example of such a firearm: With minor modifications to either the

Derived from semiautomatic assault rifles that failed to meet the sporting purposes test in 1989 but were later found importable when certain military features were removed.

All rifles that failed to meet the sporting purposes test in 1989 were found to represent a distinctive type of rifle distinguished by certain general characteristics that are common to the modern military assault rifle. Although the LCMM rifles are based on rifle designs excluded from importation under the 1989 standard, they all were approved for import when certain military features were removed. However, the LCMM rifles all still maintain some characteristics common to the modern military assault rifle. Because the outward appearance of most of the LCMM rifles continues to resemble the military assault rifles from which they are derived, we have examined the issue of outward appearance carefully. Some might prefer the rugged, utilitarian look of these rifles to more traditional sporting guns. Others might recoil from using these rifles for sport because of their nontraditional appearance. In the end, we concluded that appearance alone does not affect the LCMM rifles' suitability for sporting purposes. Available information leads us to believe that the determining factor for their use in crime is the ability to accept a detachable large capacity military magazine.

Use

In the 1989 study, ATF found that all rifles fairly typed as semiautomatic assault rifles should be treated the same. Accordingly, the report stated "[t]he fact that there may be some evidence that a particular rifle of this type is used or recommended for sporting purposes should not control its importability. Rather, all findings as to suitability of these rifles as a whole should govern each rifle within this type."[70] We adopt the same approach for the present study.

Use for hunting:

The information we collected on the actual use of the LCMM rifles for hunting medium or larger game suggests that, with certain exceptions, the LCMM rifles sometimes are used for hunting; however, their actual use in hunting is limited.[71] In fact, there are some

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firearm or a large capacity magazine that was originally designed and produced for a semiautomatic assault rifle based on the AK47 design, the ROMAK4 has the ability to accept the magazine.

[70] 1989 report at 11.

[71] We targeted the surveys toward the hunting of medium and larger game (e.g., turkey and deer) because the LCMM rifles chamber centerfire cartridges and therefore likely would be most suitable for hunting this type of game. We also learned that the LCMM rifles were used to shoot certain varmints (e.g., coyotes and groundhogs), which are generally considered to be pests, not game. Many commented that the LCMM

general restrictions and prohibitions on the use of any semiautomatic rifle for hunting game. Almost half of the States place restrictions on the use of semiautomatic rifles in hunting, mostly involving magazine capacity (5-6 rounds) and what can be hunted with the rifles (see exhibit 7).

Of the 198 hunting guides who responded to our survey, only 26 stated that they had clients who used the LCMM rifles on hunting trips during the past 2 hunting seasons and only 10 indicated that they recommend the LCMM rifles for hunting. In contrast, the vast majority of the guides (152) indicated that none of their clients used the LCMM rifles on hunting trips during the past 2 hunting seasons. In addition, the hunting guides indicated that the most common semiautomatic rifles used by their clients were those made by Browning and Remington.[72] We found significant the comments of the hunting guides indicating that the LCMM rifles were not widely used for hunting.

Of the 13 editors of hunting and shooting magazines who responded to our survey, only 2 stated that their publications recommend specific types of centerfire semiautomatic rifles for use in hunting medium or larger game. These two respondents stated that they recommend all rifles that are safe and of appropriate caliber for hunting, including the LCMM rifles. However, they did not recommend the LCMM rifles based on the Uzi design for hunting big game; these rifles use a 9mm cartridge, which is not an appropriate caliber for this type of game, according to the editors. It is important to note that the LCMM rifles use different cartridges. The LCMM rifles based on the FN-FAL, SIG SG550, and HK91 and 93 designs are chambered for either the .308 Winchester cartridge or the .223 Remington cartridge, depending on the specific model; the LCMM rifles based on the Uzi design are chambered for the 9mm Parabellum cartridge; and the majority of the LCMM rifles based on the AK47 design are chambered for the 7.62 x 39mm cartridge (some are chambered for the .223 Remington cartridge).

Of the five interest and information groups that responded to our survey, three supported the use of the LCMM rifles for hunting. However, one of these groups stated that the

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rifles were particularly useful on farms and ranches because of their ruggedness, utilitarian design, and reliability.

[72] According to a 1996 study conducted for the Fish and Wildlife Service, only 2 percent of big game hunters surveyed used licensed hunting guides. Therefore, it should be noted that the information provided by the guides we surveyed may not be representative of all hunters. However, we believe that the hunting guides' information is reliable and instructive because of their high degree of experience with and knowledge of hunting.

ammunition used by the LCMM rifle models based on the Uzi design were inadequate for shooting at long distances (i.e., more than 100 yards).

Out of the 70 published articles reviewed from various shooting magazines, only 5 contained relevant information. One of these five articles stated that, in the appropriate calibers, the LCMM rifles could make "excellent" hunting rifles. Two of the articles stated that the 7.62 x 39mm cartridge (used in LCMM rifles based on the AK47 design) could be an effective hunting cartridge. One of the articles that recommended the rifles also recommended modifications needed to improve their performance in hunting. None of the articles suggested that LCMM rifles based on the Uzi design were good hunting rifles. Thus, although the LCMM rifles could be used in hunting, the articles provided limited recommendations for their use as hunting weapons.

In their usage guides, ammunition manufacturers recommend the .308 and the 7.62 x 39mm cartridges (used in LCMM rifles based on the FN-FAL and HK 91 designs, and the AK47 design respectively) for medium game hunting. However, the usage guides do not identify the 9mm cartridge (used in the Uzi design rifles) as being suitable for hunting.

A majority of the importers who provided information said that the LCMM rifles they import are used for hunting deer and similar animals. However, they provided little evidence that the rifles were especially suitable for hunting these animals. Two of the importers who responded also provided input from citizens in the form of letters supporting this position. The letters show a wide variety of uses for the LCMM rifles, including deer hunting, plinking, target shooting, home defense, and competitive shooting.

Our review of all of this information indicates that while these rifles are used for hunting medium and larger game, as well as for shooting varmints, the evidence was not persuasive that there was widespread use for hunting. We did not find any evidence that the ability to accept a large capacity military magazine serves any hunting purpose. Traditional hunting rifles have much smaller magazine capabilities. Furthermore, the mere fact that the LCMM rifles are used for hunting does not mean that they are particularly suitable for hunting or meet the test for importation.

Use for organized competitive target shooting:

Of the 31 competitive shooting groups we surveyed that stated they have events using high-power semiautomatic rifles, 18 groups stated that they permit the use of the LCMM rifles for all competitions. However, 13 respondents stated that they restrict or prohibit the LCMM rifles for some competitions, and one group stated that it prohibits the LCMM

rifles for all competitions. These restrictions and prohibitions generally were enacted for the following reasons:

1. High-power rifle competitions generally require accuracy at ranges beyond the capabilities of the 9mm cartridge, which is used by the LCMM rifles based on the Uzi design.

2. The models based on the AK47 design are limited to competitions of 200 yards or less because the 7.62 x 39mm cartridge, which is used by these models, generally has an effective range only between 300 and 500 yards.

3. Certain matches require U.S. military service rifles, and none of the LCMM rifles fall into this category.

The LCMM rifles are permitted in all United States Practical Shooting Association (USPSA) rifle competitions. The USPSA Practical Shooting Handbook, Glossary of Terms, states that "[y]ou can use any safe firearm meeting the minimum caliber (9mm/.38) and power factor (125PF) requirements." The USPSA has stated that "rifles with designs based on the AR15, AK47, FN-FAL, HK91, HK93, and others are allowed and must be used to be competitive." Moreover, we received some information indicating that the LCMM rifles actually are used in practical shooting competitions.[73] However, we did not receive any information demonstrating that an LCMM rifle's ability to accept large capacity military magazines was necessary for its use in practical shooting competitions.

A couple of the interest groups recommended the LCMM rifles for organized competitive target shooting.

None of the 70 published articles read mentioned the use of the LCMM rifles in organized competitive target shooting.

All of the major ammunition manufacturers produce .308 Winchester ammunition (which is used in the LCMM rifle models based on the HK 91 and FN-FAL designs) and .223 Remington ammunition (which is used in the HK 93, the SIG SG550, and some of the study rifle models based on the AK47 design) specifically for competitive shooting for rifles. The major manufacturers and advertisers of 9mm ammunition (which is used in the LCMM rifles based on the Uzi design) identify it as being suitable for pistol target shooting and self-defense.

[73] Merely because a rifle is used in a sporting competition, the rifle does not become a sporting rifle. 114 Cong. Rec. 27461-462 (1968).

A majority of the importers who provided information stated that the LCMM rifles they import are permitted in and suitable for organized competitive target shooting. Two of the importers who responded also provided input from citizens in the form of letters and petitions supporting this position. However, the importers provided little evidence that the rifles were especially suitable for organized competitive target shooting.

The information collected on the actual use of the LCMM rifles for organized competitive target shooting suggests that, with certain exceptions, the LCMM rifles usually may be used and sometimes are used for organized competitive target shooting; however, their suitability for this activity is limited. In fact, there are some restrictions and prohibitions on their use. The use of the rifles in competitive target shooting appears more widespread than for hunting and their use for practical shooting was the most significant. Although we are not convinced that practical shooting does in fact constitute a sporting purpose under section 925(d), we note that there was no information demonstrating that rifles with the ability to accept detachable large capacity military magazines were necessary for use in practical shooting. Once again, the presence of this military feature on LCMM rifles suggests that they are not generally recognized as particularly suitable for or readily adaptable to sporting purposes.

Use in crime:

To fully understand how the LCMM rifles are used, we also examined information available to us on their use in crime. Some disturbing trends can be identified, and it is clear the LCMM rifles are attractive to criminals.

The use of LCMM rifles in violent crime and firearms trafficking is reflected in the cases cited below. It should be noted that the vast majority of LCMM rifles imported during the period 1991-1997 were AK47 variants, which explains their prevalence in the cited cases.

North Philadelphia, Pennsylvania

From April 1995 to November 1996, a convicted felon used a straw purchaser to acquire at least 55 rifles, including a number of MAK90s. The rifles were then trafficked by the prohibited subject to individuals in areas known for their high crime rates. In one case, the rifles were sold from the parking lot of a local elementary school.
Oakland, California

On July 8, 1995, a 32-year-old Oakland police officer assisted a fellow officer with a vehicle stop in a residential area. As the first officer searched the rear compartment of the stopped vehicle, a subject from a nearby residence used a Norinco model NMH 90 to shoot the 32-year old officer in the back. The officer later died from the wound.

El Paso, Texas

On April 15, 1996, after receiving information from the National Tracing Center, ATF initiated an undercover investigation of a suspected firearms trafficker who had purchased 326 MAK90 semiautomatic rifles during a 6-month period. The individual was found to be responsible for illegally diverting more than 1,000 firearms over the past several years. One of the MAK90 rifles that the subject had purchased was recovered from the scene of a 1996 shootout in Guadalajara, Mexico, between suspected drug traffickers and Mexican authorities. Another MAK90 was recovered in 1997 from the residence of a former Mexican drug kingpin following his arrest for drug-related activities.

Charlotte, North Carolina

On May 24, 1996, four armed subjects—one with a MAK90 rifle—carried out a home invasion robbery during which they killed the resident with a 9mm pistol. All four suspects were arrested.

Dallas, Texas

In September 1997, an investigation was initiated on individuals distributing crack cocaine from a federally subsidized housing community. During repeated undercover purchases of the narcotics, law enforcement officials noticed that the suspects had firearms in their possession. A search warrant resulted in the seizure of crack cocaine, a shotgun, and a North China Industries model 320 rifle.

Chesterfield, Virginia

In November 1997, a MAK90 rifle was used to kill two individuals and wound three others at a party in Chesterfield, Virginia.

Orange, California

In December 1997, a man armed with an AKS 762 rifle and two other guns drove to where he was previously employed and opened fire on former coworkers, killing four and injuring three, including a police officer.

Baltimore, Maryland

In December 1997, a search warrant was served on a homicide suspect who was armed at the time with three pistols and a MAK90 rifle.

We also studied import and trace information to learn whether the LCMM rifles are used in crime.

Between 1991 and 1997, there were 425,114 LCMM rifles imported into the United States. This represents 7.6 percent of the approximately 5 million rifles imported during this period. The breakdown of the specific variants of LCMM rifles imported follows:

AK-47 variants:	377,934
FN-FAL variants:	37,534
HK variants:	6,495
Uzi variants:	3,141
SIG SG550 variants:	10

During this same time period, ATF traced 632,802 firearms.[74] This included 81,842 rifles of which approximately 3,176 were LCMM rifles.[75] While this number is relatively low compared to the number of total traces, it must be viewed in light of the small number of LCMM rifles imported during this time period and the total number of rifles, both imported domestic, that were available in the United States. A more significant trend is reflected in figure 1.

[74] ATF traces crime guns recovered and submitted by law enforcement officials. A crime gun is defined, for purposes of firearms tracing, as any firearm that is illegally possessed, used in a crime, or suspected by law enforcement of being used in a crime. Trace information is used to establish links between criminals and firearms, to investigate illegal firearm trafficking, and to identify patterns of crime gun traces by jurisdiction. A substantial number of firearms used in crime are not recovered by law enforcement agencies and therefore not traced. In addition, not all recovered crime guns are traced. Therefore, trace requests substantially underestimate the number of firearms involved in crimes, and trace numbers contain unknown statistical biases. These problems are being reduced as more law enforcement agencies institute policies of comprehensive crime gun tracing.

[75] The vast majority of LCMM rifles traced during this time period were AK47 variants. Specifically, AK47 variants comprised 95.6 percent of the LCMM rifles traced. This must be viewed within the context that 88 percent of the LCMM rifles imported during this period were AK47 variants.

Firearms Traces 1991-1997

Year	Total Firearms Traced	Total Rifles Traced	Total Assault[76] Rifles Traced	Total LCMM Rifles Traced
1991	42,442	6,196	656	7
1992	45,134	6,659	663	39
1993	54,945	7,690	852	182
1994	83,137	9,201	735	596
1995	76,847	9,988	717	528
1996	136,062	17,475	1,075	800
1997	194,235	24,633	1,518	1,024
Cumulative Total	632,802	81,842	6,216	3,176

Figure 1

The figures in this table show that between 1991 and 1994, trace requests involving LCMM rifles increased rapidly, from 7 to 596. During the same period, trace requests for assault rifles increased at a slower rate, from 656 to 735. The years 1991 to 1994 are significant because they cover a period between when the ban on the importation of semiautomatic assault rifles was imposed and before the September 13, 1994, ban on semiautomatic assault weapons was enacted. Thus, during the years leading up to the 1994 ban, traces of LCMM rifles were increasing much more rapidly than the traces of the rifles that had been the focus of the 1989 ban, as well as the rifles that were the focus of the 1994 congressional action.

We also compared patterns of importation with trace requests to assess the association of LCMM rifles with criminal involvement. The comparison shows that importation of LCMM rifles in the early 1990s was followed immediately by a rapid rise in the number of trace requests involving LCMM rifles. This is shown in figures 2 and 3.

[76] For purposes of this table, assault rifles include (1) semiautomatic assault rifles banned from importation in 1989 but still available domestically because they had been imported into the United States prior to the ban, (2) domestically produced rifles that would not have qualified for importation after 1989, and (3) semiautomatic assault rifles that were banned in 1994.

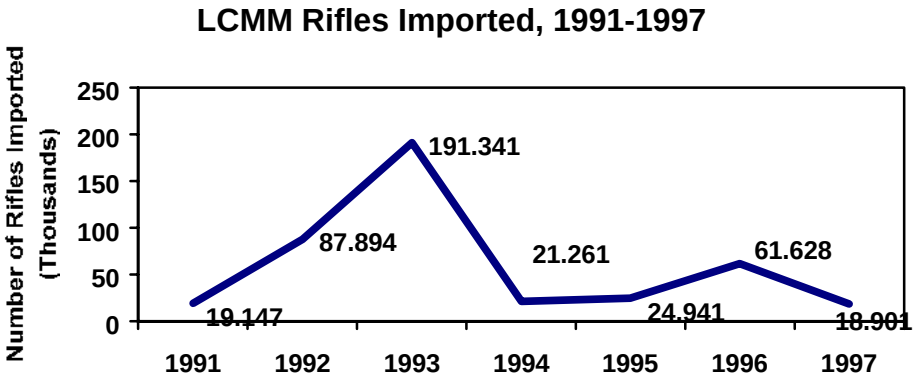

Figure 2

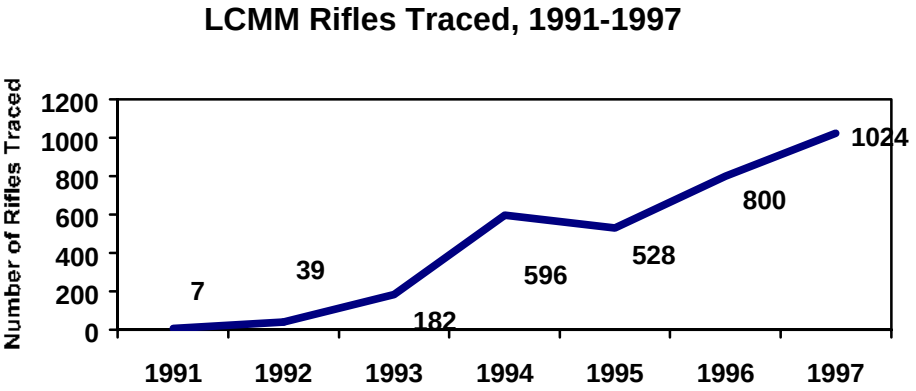

Figure 3

Two aspects of the relationship between importation and trace request patterns are significant. First, the rapid rise in traces following importation indicates that, at least in some cases, very little time elapsed between a particular LCMM rifle's importation and its recovery by law enforcement. This time lapse is known as "time to crime." A short time to crime can be an indicator of illegal trafficking. Therefore, trace patterns suggest what the case examples show: LCMM rifles have been associated with illegal trafficking. Second, while LCMM rifles have not been imported in large numbers since 1994,[77] the number of trace requests for LCMM rifles continues to rise. This reflects a sustained and

[77] One reason is that there has been an embargo on the importation of firearms from China since May 1994.

continuing pattern of criminal association for LCMM rifles despite the fact that there were fewer new LCMM rifles available.[78] Moreover, it is reasonable to conclude that if the importation of LCMM rifles resumes, the new rifles would contribute to the continuing rise in trace requests for them.[79]

All of the LCMM rifles have the ability to accept a detachable large capacity military magazine. Thus, they all have the ability to expend large amounts of ammunition quickly. In passing the 1994 ban on semiautomatic assault rifles and large capacity ammunition feeding devices, Congress found that weapons with this ability are attractive to criminals.[80] Thus, we can infer that the LCMM rifles may be attractive to criminals because in some ways they remain akin to military assault rifles, particularly in their ability to accept a detachable large capacity military magazine.

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[78] The increase in trace requests also reflects the fact that law enforcement officials were making trace requests for all types of firearms much more frequently beginning in 1996. There were 76,847 trace requests in 1995, 136,062 trace requests in 1996, and 194,235 trace requests in 1997. Traces for assault rifles were increasing by approximately the same percentage as traces for LCMM rifles during these years.

[79] In addition to looking at case studies and tracing and import information, we attempted to get information on the use of the LCMM rifles in crime by surveying national law enforcement agencies and organizations, as well as metropolitan police departments. Twenty-three national law enforcement agencies and organizations were surveyed and five responded. Three of the respondents stated they had no information. The other two provided information that was either outdated or not specific enough to identify the LCMM rifles.

The 26 metropolitan police departments surveyed provided the following information:

17 departments had no information to provide.
5 departments stated that the LCMM rifles were viewed as crime guns.
1 department stated that the LCMM rifles were nonsporting.
2 departments stated that the LCMM rifles were used to hunt coyotes in their areas.
1 department stated that the LCMM rifles were used for silhouette target shooting.

[80] H. Rep. No. 103-489, at 13, 18, 19.

DETERMINATION

In 1989, ATF determined that the type of rifle defined as a semiautomatic assault rifle was not generally recognized as particularly suitable for or readily adaptable to sporting purposes. Accordingly, ATF found that semiautomatic assault rifles were not importable into the United States. This finding was based, in large part, on ATF's determination that semiautomatic assault rifles contain certain general characteristics that are common to the modern military assault rifle. These characteristics were designed for killing and disabling the enemy and distinguish the rifles from traditional sporting rifles. One of these characteristics is a military configuration, which incorporates eight physical features: Ability to accept a detachable magazine, folding/telescoping stocks, separate pistol grips, ability to accept a bayonet, flash suppressors, bipods, grenade launchers, and night sights. In 1989, ATF decided that any of these military configuration features, other than the ability to accept a detachable magazine, would make a semiautomatic assault rifle not importable.

Certain semiautomatic assault rifles that failed the 1989 sporting purposes test were modified to remove all of the military configuration features, except for the ability to accept a detachable magazine. Significantly, most of these modified rifles not only still have the ability to accept a detachable magazine but, more specifically, still have the ability to accept a large capacity military magazine. It appears that only one of the current study rifles, the VEPR caliber .308 (an AK47 variant), does not have the ability to accept a large capacity military magazine and, therefore, is not an LCMM rifle. Based on the standard developed in 1989, these modified rifles were found not to fall within the semiautomatic assault rifle type and were found to meet the sporting purposes test. Accordingly, these rifles were approved for import into the United States.

Members of Congress and others have expressed concerns that these modified semiautomatic assault rifles are essentially the same as the semiautomatic assault rifles determined to be not importable in 1989. In response to such concerns, the present study reviewed the current application of the sporting purposes test to the study rifles to determine whether the statute is being applied correctly and to ensure that the current use of the study rifles is consistent with the statute's criteria for importability.

Our review took another look at the entire matter. We reexamined the basic tenets of the 1989 study, conducted a new analysis of the physical features of the rifles, surveyed a wide variety of sources to acquire updated information relating to use and suitability, and assessed changes in law that might have bearing on the treatment of the study rifles.

This review has led us to conclude that the basic finding of the 1989 decision remains valid and that military-style semiautomatic rifles are not importable under the sporting purposes standard. Accordingly, we believe that the Department of the Treasury correctly has been denying the importation of rifles that had any of the distinctly military

configuration features identified in 1989, other than the ability to accept a detachable magazine. Our review, however, did result in a finding that the ability to accept a detachable large capacity magazine originally designed and produced for a military assault weapon should be added to the list of disqualifying military configuration features identified in 1989.

Several important changes have occurred since 1989 that have led us to reevaluate the importance of this feature in the sporting purposes test. Most significantly, by passing the 1994 bans on semiautomatic assault weapons and large capacity ammunition feeding devices, Congress sent a strong signal that firearms with the ability to expel large amounts of ammunition quickly are not sporting; rather, firearms with this ability have military purposes and are a crime problem. The House Report to the 1994 law emphasizes that the ability to accept a large capacity magazine "serve[s] specific, combat-functional ends."[81] Moreover, this ability plays a role in increasing a firearm's "capability for lethality," creating "more wounds, more serious, in more victims."[82] Furthermore, the House Report noted semiautomatic assault weapons with this ability are the "weapons of choice among drug dealers, criminal gangs, hate groups, and mentally deranged persons bent on mass murder."[83]

Moreover, we did not find any evidence that the ability to accept a detachable large capacity military magazine serves any sporting purpose. The House Report to the 1994 law notes that, while most of the weapons covered by the assault weapon ban come equipped with detachable large capacity magazines, hunting rifles and shotguns typically have much smaller magazine capabilities, from 3 to 5 rounds.[84] Similarly, we found that a number of States limit magazine capacity for hunting to 5 to 6 rounds. We simply found no information showing that the ability to accept a detachable large capacity military magazine has any purpose in hunting or organized competitive target shooting.

Accordingly, we find that the ability to accept a detachable large capacity military magazine is a critical factor in the sporting purposes test that must be given the same weight as the other military configuration features identified in 1989.

The information we collected on the use and suitability of the LCMM rifles for hunting and organized competitive target shooting demonstrated that the rifles are not especially suitable for sporting purposes. Although our study found that the LCMM rifles, as a type, may sometimes be used for hunting, we found no evidence that they are commonly used for hunting. In fact, some of the rifles are unsuitable for certain types of hunting.

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[81] H. Rep. No. 103-489, at 18.

[82] H. Rep. No. 103-489, at 19.

[83] H. Rep. No. 103-489, at 13.

[84] H. Rep. No. 103-489, at 19 (footnote omitted).

The information we collected also demonstrated that although the LCMM rifles, as a type, may be used for organized competitive target shooting, their suitability for these competitions is limited. There are even some restrictions or prohibitions on their use for certain types of competitions. In addition, we believe that all rifles which are fairly typed as LCMM rifles should be treated the same. Therefore, the fact that there may be some evidence that a particular rifle of this type is used or recommended for sporting purposes should not control its importability. Rather, all findings as to suitability of LCMM rifles as a whole should govern each rifle within this type. The findings as a whole simply did not satisfy the standard set forth in section 925(d)(3).

Finally, the information we gathered demonstrates that the LCMM rifles are attractive to certain criminals. We find that the LCMM rifles' ability to accept a detachable large capacity military magazine likely plays a role in their appeal to these criminals. In enacting the 1994 bans on semiautomatic assault weapons and large capacity ammunition feeding devices, Congress recognized the appeal large magazine capacity has to the criminal element.

Weighing all this information, the LCMM rifles, as a type, are not generally recognized as particularly suitable for or readily adaptable to sporting purposes. As ATF found in conducting its 1989 study, although some of the issues we confronted were difficult to resolve, in the end we believe the ultimate conclusion is clear and compelling. The ability of all of the LCMM rifles to accept a detachable large capacity military magazine gives them the capability to expel large amounts of ammunition quickly; this serves a function in combat and crime, but serves no sporting purpose. Given the high standard set forth in section 925(d)(3) and the Secretary's discretion in applying the sporting purposes test, this conclusion was clear.

This decision will in no way preclude the importation of true sporting firearms. It will prevent only the importation of firearms that cannot fairly be characterized as sporting rifles.

Individual importers with existing permits for, and applications to import involving, the LCMM rifles will be notified of this determination in writing. Each of these importers will be given an opportunity to respond and present additional information and arguments. Final action will be taken on permits and applications only after an affected importer has an opportunity to makes its case.

Exhibit 1

THE WHITE HOUSE

WASHINGTON

November 14, 1997

MEMORANDUM FOR THE SECRETARY OF THE TREASURY

SUBJECT: Importation of Modified Semiautomatic Assault-Type Rifles

The Gun Control Act of 1968 restricts the importation of firearms unless they are determined to be particularly suitable for or readily adaptable to sporting purposes. In 1989, the Department of the Treasury (the Department) conducted a review of existing criteria for applying the statutory test based on changing patterns of gun use. As a result of that review, 43 assault-type rifles were specifically banned from importation. However, manufacturers have modified many of those weapons banned in 1989 to remove certain military features without changing their essential operational mechanism. Examples of such weapons are the Galil and the Uzi.

In recent weeks Members of Congress have strongly urged that it is again necessary to review the manner in which the Department is applying the sporting purposes test, in order to ensure that the agency's practice is consistent with the statute and current patterns of gun use. A letter signed by 30 Senators strongly urged that modified assault-type weapons are not properly importable under the statute and that I should use my authority to suspend temporarily their importation while the Department conducts an intensive, expedited review. A recent letter from Senator Dianne Feinstein emphasized again that weapons of this type are designed not for sporting purposes but for the commission of crime. In addition, 34 Members of the House of Representatives signed a letter to Israeli Prime Minister Binyamin Netanyahu requesting that he intervene to stop all sales of Galils and Uzis into the United States. These concerns have caused the Government of Israel to announce a temporary moratorium on the exportation of Galils and Uzis so that the United States can review the importability of these weapons under the Gun Control Act.

Exhibit 1

The number of weapons at issue underscores the potential threat to the public health and safety that necessitates immediate action. Firearms importers have obtained permits to import nearly 600,000 modified assault-type rifles. In addition, there are pending before the Department applications to import more than 1 million additional such weapons. The number of rifles covered by outstanding permits is comparable to that which existed in 1989 when the Bush Administration temporarily suspended import permits for assault-type rifles. The number of weapons for which permits for importation are being sought through pending applications is approximately 10 times greater than in 1989. The number of such firearms for which import applications have been filed has skyrocketed from 10,000 on October 9, 1997, to more than 1 million today.

My Administration is committed to enforcing the statutory restrictions on importation of firearms that do not meet the sporting purposes test. It is necessary that we ensure that the statute is being correctly applied and that the current use of these modified weapons is consistent with the statute's criteria for importability. This review should be conducted at once on an expedited basis. The review is directed to weapons such as the Uzi and Galil that failed to meet the sporting purposes test in 1989, but were later found importable when certain military features were removed. The results of this review should be applied to all pending and future applications.

The existence of outstanding permits for nearly 600,000 modified assault-type rifles threatens to defeat the purpose of the expedited review unless, as in 1989, the Department temporarily suspends such permits. Importers typically obtain authorization to import firearms in far greater numbers than are actually imported into the United States. However, gun importers could effectively negate the impact of any Department determination by simply importing weapons to the maximum amount allowed by their permits. The public health and safety require that the only firearms allowed into the United States are those that meet the criteria of the statute.

Accordingly, as we discussed, you will:

1) Conduct an immediate expedited review not to exceed 120 days in length to determine whether modified semiautomatic assault-type rifles are properly importable under the statutory sporting purposes test. The results of this review will govern action on pending and future applications for import permits, which shall not be acted upon until the completion of this review.

Exhibit 1

2) Suspend outstanding permits for importation of modified semiautomatic assault-type rifles for the duration of the 120-day review period. The temporary suspension does not constitute a permanent revocation of any license. Permits will be revoked only if and to the extent that you determine that a particular weapon does not satisfy the statutory test for importation, and only after an affected importer has an opportunity to make its case to the Department.

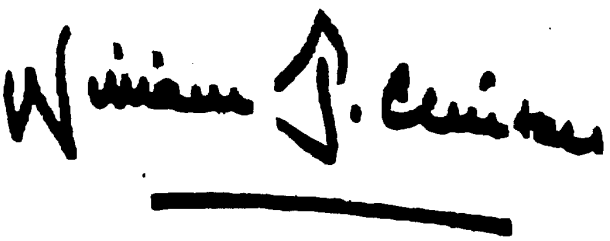

Exhibit 2

STUDY RIFLE MODELS

AK47 Variants:

MAK90*	SA2000	Saiga rifle	
314*	ARM	Galil Sporter	
56V*	MISR	Haddar	
89*	MISTR	Haddar II	
EXP56A*	SA85M	WUM 1	
SLG74	Mini PSL	WUM 2	
NHM90*	ROMAK 1	SLR95	
NHM90-2*	ROMAK 2	SLR96	
NHM91*	ROMAK 4	SLR97	
SA85M	Hunter rifle	SLG94	
SA93	386S	SLG95	
A93	PS/K	SLG96	
AKS 762	VEPR caliber 7.62 x 39mm		
VEPR caliber .308			

FN-FAL Variants:

L1A1 Sporter
FAL Sporter
FZSA
SAR4800
X FAL
C3
C3A
LAR Sporter

HK Variants:

BT96
Centurian 2000
SR9
PSG1
MSG90
G3SA
SAR8

Uzi Variants:

Officers 9*
320 carbine*
Uzi Sporter

SIG SG550 Variants:

SG550-1
SG550-2

- These models were manufactured in China and have not been imported since the 1994 embargo on the importation of firearms from China.

Exhibit 3

STUDY RIFLES

The study rifles are semiautomatic firearms based on the AK47, FN-FAL, HK 91 and 93, Uzi, and SIG SG550 designs. Each of the study rifles is derived from a semiautomatic assault rifle. The following are some examples of specific study rifle models grouped by design type. In each instance, a semiautomatic assault rifle is shown above the study rifles for comparison.

AK47 Variants

AK47 semiautomatic assault rifle

==========

MISR

ARM

MAK90

WUM 1

Exhibit 3

FN-FAL Variants

FN-FAL semiautomatic assault rifle

==========

L1A1 Sporter

SAR 4800

HK 91 and 93 Variants

HK91 semiautomatic assault rifle

==========

SR9

SAR 8

Exhibit 3

Uzi Variants

Uzi semiautomatic assault rifle

==========

320 carbine

SIG SG550 Variants

The following illustration depicts the configuration of a semiautomatic assault rifle based on the SIG SG550 design. No illustrations of modified semiautomatic versions are available.

SIG SG550 semiautomatic assault rifle

Exhibit 4

DEPARTMENT OF THE TREASURY
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS

FACTORING CRITERIA FOR WEAPONS

NOTE: The Bureau of Alcohol, Tobacco and Firearms reserves the right to preclude importation of any revolver or pistol which achieves an apparent qualifying score but does not adhere to the provisions of section 925(d)(3) of Amended Chapter 44, Title 18, U.S.C.

PISTOL

MODEL:

PREREQUISITES

1. The pistol must have a positive manually operated safety device.
2. The combined length and height must not be less than 10" with the height (right angle measurement to barrel without magazine or extension) being at least 4" and the length being at least 6"

INDIVIDUAL CHARACTERISTICS	POINT VALUE	POINT SUB-TOTAL
OVERALL LENGTH		
FOR EACH 1/4" OVER 6"	1	
FRAME CONSTRUCTION		
INVESTMENT CAST OR FORGED STEEL	15	
INVESTMENT CAST OR FORGED HTS ALLOY	20	
WEAPON WEIGHT W/MAGAZINE *(Unloaded)*		
PER OUNCE	1	
CALIBER		
.22 SHORT AND .25 AUTO	0	
.22 LR AND 7.65mm TO .380 AUTO	3	
9mm PARABELLUM AND OVER	10	
SAFETY FEATURES		
LOCKED BREECH MECHANISM	5	
LOADED CHAMBER INDICATOR	5	
GRIP SAFETY	3	
MAGAZINE SAFETY	5	
FIRING PIN BLOCK OR LOCK	10	
MISCELLANEOUS EQUIPMENT		
EXTERNAL HAMMER	2	
DOUBLE ACTION	10	
DRIFT ADJUSTABLE TARGET SIGHT	5	
CLICK ADJUSTABLE TARGET SIGHT	10	
TARGET GRIPS	5	
TARGET TRIGGER	2	
SCORE ACHIEVED *(Qualifying score is 75 points)*		

REVOLVER

MODEL:

PREREQUISITES

1. Must pass safety test.
2. Must have overall frame (with conventional grips) length (not diagonal) of 4½" minimum.
3. Must have a barrel length of at least 3".

INDIVIDUAL CHARACTERISTICS	POINT VALUE	POINT SUB-TOTAL
BARREL LENGTH *(Muzzle to Cylinder Face)*		
LESS THAN 4"	0	
FOR EACH 1/4" OVER 4"	1/2	
FRAME CONSTRUCTION		
INVESTMENT CAST OR FORGED STEEL	15	
INVESTMENT CAST OR FORGED HTS ALLOY	20	
WEAPON WEIGHT *(Unloaded)*		
PER OUNCE	1	
CALIBER		
.22 SHORT TO .25 ACP	0	
.22 LR AND .30 TO .38 S&W	3	
.38 SPECIAL	4	
.357 MAG AND OVER	5	
MISCELLANEOUS EQUIPMENT		
ADJUSTABLE TARGET SIGHTS *(Drift or Click)*	5	
TARGET GRIPS	5	
TARGET HAMMER AND TARGET TRIGGER	5	

SAFETY TEST

A Double Action Revolver must have a safety feature which automatically (or in a Single Action Revolver by manual operation) causes the hammer to retract to a point where the firing pin does not rest upon the primer of the cartridge. The safety device must withstand the impact of a weight equal to the weight of the revolver dropping from a distance of 36" in a line parallel to the barrel upon the rear of the hammer spur, a total of 5 times.

SCORE ACHIEVED *(Qualifying score is 45 points)*

Exhibit 5

MILITARY CONFIGURATION

1. Ability to accept a detachable magazine. Virtually all modern military firearms are designed to accept large, detachable magazines. This provides the soldier with a fairly large ammunition supply and the ability to rapidly reload. Thus, large capacity magazines are indicative of military firearms. While detachable magazines are not limited to military firearms, most traditional semiautomatic sporting firearms, designed to accommodate a detachable magazine, have a relatively small magazine capacity. Additionally, some States have a limit on the magazine capacity allowed for hunting, usually five or six rounds.

2. Folding/telescoping stock. Many military firearms incorporate folding or telescoping stocks. The main advantage of this item is portability, especially for airborne troops. These stocks allow the firearm to be fired from the folded position, yet it cannot be fired nearly as accurately as with an open stock. With respect to possible sporting uses of this feature, the folding stock makes it easier to carry the firearm when hiking or backpacking. However, its predominant advantage is for military purposes, and it is normally not found on the traditional sporting rifle.

3. Pistol grips. The vast majority of military firearms employ a well-defined separate pistol grip that protrudes conspicuously beneath the action of the weapon. In most cases, the "straight line design" of the military weapon dictates a grip of this type so that the shooter can hold and fire the weapon. Further, a pistol grip can be an aid in one-handed firing of the weapon in a combat situation. Further, such grips were designed to assist in controlling machineguns during automatic fire. On the other hand, the vast majority of sporting firearms employ a more traditional pistol grip built into the wrist of the stock of the firearm since one-handed shooting is not usually employed in hunting or organized competitive target competitions.

4. Ability to accept a bayonet. A bayonet has distinct military purposes. First, it has a psychological effect on the enemy. Second, it enables soldiers to fight in close quarters with a knife attached to their rifles. No traditional sporting use could be identified for a bayonet.

5. Flash suppressor. A flash suppressor generally serves one or two functions. First, in military firearms it disperses the muzzle flash when the firearm is fired to help conceal the shooter's position, especially at night. A second purpose of some flash suppressors is to assist in controlling the "muzzle climb" of the rifle, particularly when fired as a fully automatic weapon. From the standpoint of a traditional sporting firearm, there is no particular benefit in suppressing muzzle flash. Flash suppressors that also serve to dampen muzzle climb have a limited benefit in sporting uses by allowing the shooter to reacquire

the target for a second shot. However, the barrel of a sporting rifle can be modified by "magna-porting" to achieve the same result. There are also muzzle attachments for sporting firearms to assist in the reduction of muzzle climb. In the case of military-style weapons that have flash suppressors incorporated in their design, the mere removal of the flash suppressor may have an adverse impact on the accuracy of the firearm.

6. Bipods. The majority of military firearms have bipods as an integral part of the firearm or contain specific mounting points to which bipods may be attached. The military utility of the bipod is primarily to provide stability and support for the weapon when fired from the prone position, especially when fired as a fully automatic weapon. Bipods are available accessory items for sporting rifles and are used primarily in long-range shooting to enhance stability. However, traditional sporting rifles generally do not come equipped with bipods, nor are they specifically designed to accommodate them. Instead, bipods for sporting firearms are generally designed to attach to a detachable “slingswivel mount” or simply clamp onto the firearm.

7. Grenade launcher. Grenade launchers are incorporated in the majority of military firearms as a device to facilitate the launching of explosive grenades. Such launchers are generally of two types. The first type is a flash suppressor designed to function as a grenade launcher. The second type attaches to the barrel of the rifle by either screws or clamps. No traditional sporting application could be identified for a grenade launcher.

8. Night sights. Many military firearms are equipped with luminous sights to facilitate sight alignment and target acquisition in poor light or darkness. Their uses are generally for military and law enforcement purposes and are not usually found on sporting firearms since it is generally not legal to hunt at night.

Exhibit 6

[This document has been retyped for clarity.]

MEMORANDUM TO FILE

FIREARMS ADVISORY PANEL

The initial meeting of the Firearms Advisory Panel was held in Room 3313, Internal Revenue Building, on December 10, 1968, with all panel members present. Internal Revenue Service personnel in attendance at the meeting were the Director, Alcohol and Tobacco Tax Division, Harold Serr; Chief, Enforcement Branch, Thomas Casey; Chief, Operations Coordination Section, Cecil M. Wolfe, and Firearms Enforcement Officer, Paul Westenberger. Deputy Assistant Commissioner Compliance, Leon Green, visited the meeting several times during the day.

The Director convened the meeting at 10:00 a.m. by welcoming the members and outlining the need for such an advisory body. He then introduced the Commissioner of Internal Revenue, Mr. Sheldon Cohen, to each panel member.

Mr. Cohen spoke to the panel for approximately fifteen minutes. He thanked the members for their willingness to serve on the panel, explained the role of the panel and some of the background which led to the enactment of the Gun Control Act of 1968. Commissioner Cohen explained to the panel members the conflict of interest provisions of regulations pertaining to persons employed by the Federal Government and requested that if any member had any personal interest in any matter that came under discussion or consideration, he should make such interest known and request to be excused during consideration of the matter.

Mr. Seer then explained to the panel the areas in which the Division would seek the advice of the panel and emphasized that the role of the panel would be advisory only, and that it was the responsibility of the Service to make final decisions. He then turned the meeting over to the moderator, Mr. Wolfe.

Mr. Wolfe explained the responsibility of the Service under the import provisions of the Gun Control Act and under the Mutual Security Act. The import provisions were read and discussed.

The panel was asked to assist in defining Asporting purposes≅ as used in the Act. It was generally agreed that firearms designed and intended for hunting and all types of organized competitive target shooting would fall within the sporting purpose category. A discussion was held on the so-called sport of Aplinking≅. It was the consensus that, while many persons

participated in the type of activity and much ammunition was expended in such endeavors, it was primarily a pastime and could not be considered a sport for the purposes of importation since any firearm that could expel a projectile could be used for this purpose without having any characteristics generally associated with target guns.

The point system that had been developed by the Division and another point system formula suggested and furnished by the Southern Gun Distributors through Attorney Michael Desalle, was explained and demonstrated to the panel by Paul Westenberger. Each panel member was given copies of the formulas and requested to study them and endeavor to develop a formula he believed would be equitable and could be applied to all firearms sought to be imported.

A model BM59 Beretta, 7.62 mm, NATO Caliber Sporter Version Rifle was presented to the panel and their advice sought as to their suitability for sporting purposes. It was the consensus that these rifles do have a particular use in target shooting and hunting. Accordingly, it was recommended that importation of this rifle together with the SIG-AMT 7.62mm NATO Caliber Sporting Rifle and the Cetme 7.62mm NATO Caliber Sporting Rifle be authorized for importation. Importation, however, should include the restriction that these weapons must not possess combination flash suppressors/grenade adaptors with outside diameters greater than 20mm (.22 mm is the universal grade adaptor size).

The subject of ammunition was next discussed. Panel members agreed that incendiary and tracer small arms ammunition have no use for sporting purposes. Accordingly, the Internal Revenue Service will not authorize these types of small arms ammunition importation. All other conventional small arms ammunition for pistols, revolvers, rifles and shotguns will be authorized.

The meeting was adjourned at 4:00 p.m.

C.M. Wolfe

Exhibit 7

STATE FISH AND GAME COMMISSION REVIEW

STATE RESTRICTION	RIFLE RESTRICTION	MAGAZINE RESTRICTION
Alabama	Not for turkey	
Alaska		
Arizona		Not more than five rounds
Arkansas	Not for turkey	
California		
Colorado		Not more than six rounds
Connecticut*	No rifles on public land	
Delaware	No rifles	
Florida		Not more than five rounds
Georgia	Not for turkey	
Hawaii		
Idaho	Not for turkey	
Illinois	Not for deer or turkey	
Indiana*	Not for deer or turkey	
Iowa	Not for deer or turkey	
Kansas	No restrictions on coyote or fox	
Kentucky		
Louisiana	Not for turkey	
Maine*	Not for turkey	
Maryland*		

Exhibit 7

STATE RESTRICTION	RIFLE RESTRICTION	MAGAZINE RESTRICTION
Massachusetts	Not for deer or turkey	
Michigan	Not for turkey	Not more than six rounds
Minnesota		
Mississippi	Not for turkey	
Missouri	Not for turkey	Chamber and magazine not more than 11 rounds
Montana		
Nebraska		Not more than six rounds
Nevada	Not for turkey	
New Hampshire*	Not for turkey	Not more than five rounds
New Jersey	No rifles	
New Mexico	Not for turkey	
New York*		Not more than six rounds
North Carolina	Not for turkey	
North Dakota	Not for turkey	
Ohio	Not for deer or turkey	
Oklahoma		Not more than seven rounds for .22 caliber
Oregon*		Not more than five rounds
Pennsylvania*	No semiautomatics	

Exhibit 7

STATE RESTRICTION	RIFLE RESTRICTION	MAGAZINE RESTRICTION
Rhode Island	Prohibited except for woodchuck in summer	
South Carolina	Not for turkey	
South Dakota		Not more than five rounds
Tennessee	Not for turkey	
Texas		
Utah	Not for turkey	
Vermont		Not more than six rounds
Virginia*		
Washington	Not for turkey	
West Virginia		
Wisconsin		
Wyoming		

* Limited restrictions (e.g., specified areas, county restrictions, populated areas, time of day).

DEPARTMENT OF THE TREASURY
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS
WASHINGTON, D.C. 20226

DIRECTOR

O:F:S:DMS
3310

Dear Sir or Madam:

On November 14, 1997, the President and the Secretary of the Treasury decided to conduct a review to determine whether modified semiautomatic assault rifles are properly importable under Federal law. Under 18 U.S.C. section 925(d)(3), firearms may be imported into the United States only if they are determined to be of a type generally recognized as particularly suitable for or readily adaptable to sporting purposes. The firearms in question are semiautomatic rifles based on the AK47, FN-FAL, HK91, HK93, SIG SG550-1, and Uzi designs.

As part of the review, the Bureau of Alcohol, Tobacco and Firearms (ATF) is interested in receiving information that shows whether any or all of the above types of semiautomatic rifles are particularly suitable for or readily adaptable to hunting or organized competitive target shooting. We are asking that you voluntarily complete the enclosed survey to assist us in gathering this information. We anticipate that the survey will take approximately 15 minutes to complete.

Responses must be received no later than January 9, 1998; those received after that date cannot be included in the review. Responses should be forwarded to the Bureau of Alcohol, Tobacco and Firearms, Department HG, P.O. Box 50860, Washington, DC 20091. We appreciate any information you care to provide.

Sincerely yours,

John W. Magaw

John W. Magaw
Director

Enclosure

OMB No. 1512-0542

ATF SURVEY OF HUNTING GUIDES FOR RIFLE USAGE

*Please report only on those clients who **hunted medium game (for example, turkey) or larger game (for example, deer) with a rifle.***

For the purposes of this survey, please count only individual clients and NOT the number of trips taken by a client. For example, if you took the same client on more than one trip, count the client only once.

1. What is the approximate number of your clients who have ever used **manually operated rifles** during the past two hunting seasons of 1995 and 1996?

_____number of clients.

2. What is the approximate number of your clients who have ever used **semiautomatic rifles** during the past two hunting seasons of 1995 and 1996?

_____number of clients.

3. What is the approximate number of your clients who have ever used semiautomatic rifles whose design is based on the **AK 47, FN-FAL, HK91, HK93, SIG 550-1, or Uzi** during the past two hunting seasons of 1995 and 1996?

_____number of clients.

4. From your knowledge, for your clients who use **semiautomatic rifles**, please list the three most commonly used rifles.

Make	Model	Caliber

5. Do you **recommend** the use of any specific rifles by your clients?

_____Yes *(Continue to #6)* _____No (*You are finished with the survey. Thank you.*)

An agency may not conduct or sponsor, and a person is not required to respond to, the collection of information unless it displays a currently valid OMB control number.

OMB No. 1512-0542

ATF SURVEY OF HUNTING GUIDES FOR RIFLE USAGE

6. If your answer to item 5 is "Yes", please identify the specific rifles you **recommend.**

Make	Model	Caliber

7. Do you **recommend** the use of any semiautomatic rifles whose design is based on the **AK 47, FN-FAL, HK91, HK93, SIG 550-1, or Uzi**?

_____Yes *(Continue to #8)* _____No (*You are finished with the survey. Thank you.*)

8. If your answer to item 7 is "Yes", please identify the specific rifles whose design is based on the **AK 47, FN-FAL, HK91, HK93, SIG 550-1, or Uzi** that you recommend.

Make	Model	Caliber

An agency may not conduct or sponsor, and a person is not required to respond to, the collection of information unless it displays a currently valid OMB control number.

Hunting Guides

		Number of clients Using			Recommend	
case		Manual	Semiauto	AK47 et.al.	Any	AK47 et.al.
A	1	28	0	0	No	
A	2	100	10	0	Yes	No
A	3	18	0	0	No	
A	4	120	40	0	Yes	No
A	5	12	0	0	Yes	No
A	6	80	40	0	No	
A	7	275	25	0	No	
A	8					
A	9	0	0	0		
A	10	0				
A	11	2	5	0	Yes	Yes
A	12	12	0	0	Yes	No
A	13	10	6	0	No	No
A	14	5	7	0	No	
A	15	0	0	0		
A	16	20	0	0	No	No
A	17					
A	18	0	0	0	No	
A	19	17	6	0	No	
A	20	30	8	0	No	
A	21	117	7	0	Yes	No
A	22	160	0	0	Yes	No
A	23	23	1	0	Yes	No
A	24	100	5	0	Yes	No
A	25	210	10	0	Yes	No
A	26	12	4	1	Yes	Yes
A	27	24	3	0	Yes	No
A	28	20	15	0	Yes	No
A	29	4	0	0	No	No
A	30	4	0	0	Yes	No
A	31	100	5	0	No	No
A	32	1	0	0	No	No
A	33			0	No	No
A	34	142	1	0	No	
A	35	78	2	0	Yes	No
A	36	600	200		No	
A	37	20	13	1	No	
A	38	45	15	0	No	
A	39	100	10	0	No	
A	40	80	6	2	Yes	No
A	41	250	25	0	Yes	No
A	42	4	0	0	No	
A	43	14	2	0	No	No
A	44	171	15	0	Yes	No
A	45	54	6	0	Yes	No
A	46	10	6	0	No	
A	47	0	0	0	No	No
A	48	24	0	0	No	
A	49	180	2	0	Yes	No
A	50					
A	51					

Hunting Guides

		Number of clients Using			Recommend	
case		Manual	Semiauto	AK47 et.al.	Any	AK47 et.al.
A	52	24	16	0	No	
A	53	600	100	12	No	
A	54	18	6	0	No	
A	55	0	0	0	No	
A	56	0	0	0	No	
A	57	40	4	0	No	
A	58					
A	59	40	10	0	No	No
A	60	60	2	0	No	No
A	61	63	4	0	Yes	No
A	62	40	4	0	No	
A	63	8	0	0	Yes	No
A	64	27	1	0	Yes	No
A	65	50	9	0	Yes	No
A	66	35	2	0	No	
A	67	6	0	0	Yes	No
A	68	6	3		No	
A	69	50	20	0	No	
A	70		0	0	Yes	No
A	71	27	1	0	Yes	
A	72	85	0	0	Yes	No
A	73	56	24	0	Yes	No
A	74	25	25	0	Yes	No
A	75	100	20	0	No	
A	76	50	15	3	No	
A	77	15	4	0	No	
A	78	12	0	0	Yes	No
A	79	75	0	0	No	
A	80					
A	81	0	0	0	No	
A	82	0	0	0	No	
A	83	12	4	0	No	No
A	84	40	0	0	Yes	No
A	85	24	0	0	No	
A	86	17	0	0	No	No
A	87	16	3	0	Yes	No
A	88	45	10	0	No	
A	89	11	7	7	Yes	Yes
A	90	35	1	0	Yes	No
A	91	25	2	0	Yes	No
A	92	0	0	0		
A	93	75	40	0	Yes	No
A	94	60	2	0	Yes	No
A	95	26	0	0	No	
A	96	20	0		No	No
A	97	65	11	0	Yes	No
A	98	40	5	0	Yes	No
A	99	26	5	0	No	
A	100	13	2	0	No	
A	101					
A	102	45	6	0	No	No

Hunting Guides

		Number of clients Using			Recommend	
case		Manual	Semiauto	AK47 et.al.	Any	AK47 et.al.
A	103	120	4	0	No	
A	104				Yes	
A	105	150	50	0	No	No
A	106	80	20	0	Yes	No
A	107	40	0	0	No	No
A	108	10	0	0	No	
A	109	160	40	0	Yes	No
A	110	10	10	0	No	No
A	111	6	0	0	No	
A	112					
A	113	150	150	100	Yes	Yes
A	114	50	25	0	No	No
A	115	19	0	0	Yes	No
A	116	80	3	0	No	
A	117	40	10	0	Yes	No
A	118					
A	119	50	0	0	Yes	No
A	120	0	0	0	No	
A	121	0	0	0		
A	122	120	15	0	Yes	No
A	123	10	0	0	Yes	No
A	124	22	0	0	Yes	No
A	125	40	40	20	No	
A	126	50	10	0	Yes	No
A	127	60	20	0	Yes	No
A	128	14	0	0	No	No
A	129	13	16	4	No	
A	130	80	4	0	Yes	No
A	131	12	2	0	Yes	No
A	132		4	0	Yes	No
A	133	50	26	7	No	No
A	134	12	0	0	No	
A	135	2	10	3	No	
A	136	2	1	1	Yes	No
A	137	28	0	0	Yes	No
A	138	45	10		No	
A	139	46	59	0	Yes	No
A	140			0	Yes	No
A	141	40	10	0	No	No
A	142	70	20	0	Yes	No
A	143	50	3	0	No	No
A	144	60	6	0	Yes	No
A	145	140	0	0	Yes	No
A	146	20	4	1	Yes	No
A	147	10	1	0	Yes	No
A	148	0	0	0	No	No
A	149	37	0	0	Yes	No
A	150			0	Yes	No
A	151	6	10	0	No	No
A	152	110	5	0	No	
A	153	15	17		Yes	No

Hunting Guides

		Number of clients Using			Recommend	
case		Manual	Semiauto	AK47 et.al.	Any	AK47 et.al.
A	154	18	4	0	No	
A	155	25	3	0	Yes	No
A	156	60	6	3	No	
A	157	20	0	0	No	
A	158	88	46	0	No	No
A	159	68	19	3	Yes	Yes
A	160	25	5	0	No	
A	161	15	0	0	No	
A	162	75	10	0	No	
B	1				No	
C	1	25	0	0	Yes	No
C	2	55	10	6	Yes	Yes
C	3	60	30	0	No	
C	4	80	20	0	No	
C	5	10	0	0	No	No
C	6	25	6	0	No	
C	7	66	10	1	No	
C	8	24	0	0	Yes	No
C	9	10	15	15	No	
C	10	35	15	9	Yes	Yes
C	11			0	No	
C	12					No
C	13	25	10	0	No	
C	14	60	20	0	Yes	No
C	15	20	0	0	Yes	No
C	16	14	0	0	No	
C	17		0	0	Yes	No
C	18	18	25	5	Yes	Yes
C	19	125	50	5	Yes	No
C	20	20	5	2	No	
C	21		0	0	Yes	No
C	22	30	0	0	No	No
C	23	150	20	0	Yes	No
C	24	60	0	0	No	
C	25	16	7	6	Yes	Yes
C	26	300	650	400	No	
C	27	20	15	8	Yes	Yes
C	28	3	5	2	No	
C	29	45	6	0	Yes	No
C	30				No	
C	31	30	0	0	Yes	No
C	32			0	Yes	No
C	33	35	4	0	Yes	No
C	34	25	5	0	Yes	No
C	35				Yes	No

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Q4. Three most commonly used rifles					
case		Make	Other Make	Model	Caliber
A	1				
A	2				
A	3				
A	4	Browning		BAR	300
A	5				
A	6	Remington		742	30.06
A	7	Browning		BAR	30.06, .270, 7MM, 300 Mag
A	8				
A	9				
A	10				
A	11	Remington		740-7400	20, 30
A	12				
A	13	Remington		700	7 mm mag
A	14	Remington		7400	270
A	15				
A	16				
A	17				
A	18				
A	19	Browning			30.06
A	20	Remington		742	30.06
A	21				
A	22				
A	23	Browning		?	300 mag
A	24	Remington			30.06
A	25	Remington			30.06
A	26	Browning		BAR	30.06
A	27	Remington			30.06
A	28		?	?	06
A	29				
A	30				
A	31	Browning		automatics	
A	32				
A	33				
A	34	Remington			.3006
A	35	Browning			7 mm
A	36	Browning			30.06
A	37	Browning		BAR	30.06
A	38	Browning		br	7 mm, 300win, 30.06
A	39	Remington		7600	.270 win, .30-06, .280 rem
A	40	Browning		Bar mark II	300 win mag
A	41	Remington			
A	42				
A	43	Remington		7600	243 - 7 mm mag
A	44				30.06, 300 winmag, .338, 270
A	45	Browning		BAR Automatic	30.06

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Q4. Three most commonly used rifles					
A	46	Browning		BAR	7 mm, 30.06
A	47				
A	48				
A	49				
A	50				
A	51				
A	52	Browning		BAR	7 mm mag/30.06
A	53	Browning		BAR	30.06, 300 wm
A	54	Browning		BAR	30.06
A	55				
A	56				
A	57	Browning		semi-auto	300 mag
A	58				
A	59				
A	60				
A	61	Browning			30.06
A	62	Browning			7 mm
A	63	Browning		BAR	.270 - 300 win mag
A	64	Browning		BAR	30.06
A	65	Browning		semi-auto	.308
A	66	Browning			
A	67				
A	68	Remington		7400	30.06
A	69	Browning			
A	70				
A	71	Browning		Not sure	
A	72				
A	73	Browning		BARR	30.06
A	74	Browning		BAR	300
A	75	Remington		7400 old 752	270 and 30.06
A	76	Browning		BAR	308, 30.06, 300win, 338 win
A	77	Remington			308
A	78	Browning			300, 270, 30.06
A	79				
A	80				
A	81				
A	82				
A	83				30 caliber or bigger for elk
A	84				
A	85				
A	86				
A	87	Browning			30.06 and 7 mm
A	88	Browning		BAR	7 mm, .300, .270
A	89	Other	Russian	SKS	7.62
A	90	Browning			1 or 2 in over 50 years
A	91	Browning			300 win mag

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Q4. Three most commonly used rifles					
A	92				
A	93				
A	94	Browning		BAR	
A	95				
A	96				
A	97	Browning		BAR	300-06-270
A	98	Browning			300, 30.06
A	99	Other	Savage		7 mm
A	100	Browning		?	7 mm mag
A	101				
A	102	Browning	Only 1 I recall	BAR	30.06
A	103				
A	104				
A	105				
A	106	Browning		BAR	300 win mag
A	107				
A	108				
A	109	Browning			30.06
A	110	Remington		700	30.06, 270, 7 mm
A	111				
A	112				
A	113	Other	Weatherby		300 mag
A	114	Browning			7 m mag
A	115				
A	116				
A	117	Browning			
A	118				
A	119				
A	120				
A	121				
A	122	Browning		U/K	.338 mag
A	123				
A	124				
A	125				
A	126	Remington		742	243, 30.06
A	127	Winchester		?	30.06
A	128	Winchester			270, 306
A	129	Browning		BAR	7 mm and 243
A	130	Browning			30.06
A	131	Browning		BAR	.7 mm mag
A	132	Remington			30.06
A	133			AK 47	223
A	134				
A	135	Remington			270
A	136	Browning		BAR	
A	137				

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Q4. Three most commonly used rifles					
A	138	Winchester			30.06
A	139	Browning		BAR	270, 7 mm
A	140	Browning			7 mm
A	141				
A	142	Browning			7 mm mag
A	143				
A	144	Browning			30.06
A	145				
A	146	Browning		BDL	7mg
A	147	Browning		BAR	308
A	148				
A	149				
A	150	Remington			
A	151	Browning		BAR	308
A	152	Remington			various 270 - 338
A	153	Browning			30
A	154	Browning		BAR	7 mm mag
A	155				30.06
A	156	Other	BAR		
A	157				
A	158	Remington		280	280
A	159	Browning			7 mm mag
A	160	Remington		Semiauto	30.06
A	161				
A	162	Browning			30.06
B	1				.308, 30-06, .270
C	1				
C	2	Other	AK-47	Antelope Hunter	30
C	3	Browning		Auto	30.06
C	4	Browning		Bar	7mm
C	5				
C	6				
C	7	Browning			30.06
C	8				
C	9	Other	FN-FAL		308
C	10	Remington		742	30.06
C	11	Browning			306
C	12				
C	13	Remington			.06 - 7mm
C	14	Browning		BAR	7mm
C	15				
C	16				
C	17				
C	18	Ruger		Ranch Rifle	223
C	19	Other	AK47		
C	20	Browning		BAR	300 win mag

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Q4. Three most commonly used rifles					
C	21	Other	Bolt-action or pump		
C	22				
C	23	Browning			30.06
C	24				
C	25	Other	AK47		7.62-39
C	26	Other	HK	93	.308
C	27	Browning		BAR	7mm
C	28	Other	Norinco	SKS Type 56	7.62X39
C	29	Browning		BAR	30.06 -.300
C	30				
C	31				
C	32	Browning			3.06 - 7mm
C	33	Remington			30.06
C	34	Remington		741	.270 - 30.06
C	35	Remington			.270
A	1				
A	2				
A	3				
A	4	Remington		7400	30.06
A	5				
A	6	Browning			30.06
A	7	Remington		700	30.03, 270, 7 mm
A	8				
A	9				
A	10				
A	11	Winchester		100	30
A	12				
A	13	Winchester		70	300 mag
A	14	Remington		7400	30.06
A	15				
A	16				
A	17				
A	18				
A	19	Remington		7400	30.06
A	20	Browning			7 mm mag
A	21				
A	22				
A	23				
A	24	Browning			30.06
A	25	Browning			30.03 to 300 mag
A	26	Remington		Fieldmaster	30.06
A	27				
A	28				
A	29				
A	30				
A	31	Remington		automatics	

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Q4. Three most commonly used rifles					
A	32				
A	33				
A	34				
A	35				
A	36	Remington			270 - 30.06
A	37	Remington		7400	30.06
A	38				
A	39	Browning		BAR	.270 win, 7 mm mag
A	40	Remington		7400	30.06
A	41	Browning			
A	42				
A	43	Browning		BAR	243 - 7 mm mag
A	44				
A	45				
A	46	Remington		1100	12 gauge
A	47				
A	48				
A	49				
A	50				
A	51				
A	52	Remington		7400	30.06
A	53	Remington		7400/742	30.06
A	54				
A	55				
A	56				
A	57	Remington		semi-auto	30.06
A	58				
A	59				
A	60				
A	61	Other	Savage		7 mm mag
A	62	Remington			30.06
A	63	Remington		742	.270 - 30.06
A	64				
A	65	Winchester		semi-auto	.308
A	66	Remington			
A	67				
A	68	Remington		7400	.308
A	69	Remington			
A	70				
A	71	Remington		742	30.06
A	72				
A	73	Remington			30.06
A	74	Remington		?600	30.06
A	75	Browning		BAR	270/338 and 30.06
A	76	Other	AK-47		30
A	77	Remington			30.06

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Q4. Three most commonly used rifles					
A	78	Remington		?	300, 270, 30.06
A	79				
A	80				
A	81				
A	82				
A	83				
A	84				
A	85				
A	86				
A	87	Remington			30.06
A	88	Remington		742, 7400	30.06. .270
A	89	Other	Heckler-Koch	HK91	308
A	90	Remington			
A	91	Remington			30.06
A	92				
A	93				
A	94				
A	95				
A	96				
A	97				
A	98	Remington		760	.300, 30.06, 270
A	99	Browning			7 mm
A	100	Remington		742	30.06
A	101				
A	102				
A	103				
A	104				
A	105				
A	106				
A	107				
A	108				
A	109	Winchester			308
A	110				
A	111				
A	112				
A	113	Remington		700	7 mm mag
A	114	Remington		742 Wingmaster	30.06
A	115				
A	116				
A	117	Remington			
A	118				
A	119				
A	120				
A	121				
A	122				
A	123				

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Q4. Three most commonly used rifles					
A	124				
A	125				
A	126	Ruger		22	
A	127	Marlin		?	.308
A	128	Remington			7 m
A	129				
A	130				
A	131	Browning		BAR	30.06
A	132				
A	133	Ruger		Mini 14	223
A	134				
A	135	Remington			243
A	136	Other	HK 91		
A	137				
A	138	Browning			308
A	139	Remington		742	30.06 - 6 mm
A	140	Remington			30.06
A	141				
A	142	Browning			300 win mag
A	143				
A	144	Browning			7 mm mag
A	145				
A	146	Browning		BDL	300
A	147				
A	148				
A	149				
A	150	Winchester			
A	151	Remington		742	30.06
A	152	Ruger			various 270 - 338
A	153	Winchester			30
A	154	Browning		BAR	30.06
A	155				
A	156	Other	AK-47		
A	157				
A	158	Winchester			338
A	159	Remington			30.06
A	160				
A	161				
A	162	Remington		742	30.06, 270
B	1				
C	1				
C	2				
C	3	Winchester		Auto	30.06
C	4	Browning		Bar	338
C	5				
C	6				

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Q4. Three most commonly used rifles					
C	7	Remington			30.06
C	8				
C	9	Other	Uzi		9mm
C	10	Other	AK-47	Hunter	7.62x39
C	11	Other	Weatherby		300
C	12				
C	13	Winchester			.06 - 7mm
C	14	Browning			300
C	15				
C	16				
C	17				
C	18	Other	AK-47		
C	19	SigArms		550-1	
C	20	Ruger		Mini 14	.223
C	21				
C	22				
C	23	Remington		742	30.06
C	24				
C	25	Other	MAK-90		7.62-39
C	26	Other	HK	91	0.223
C	27	Remington		7400 Series	30.06
C	28	Remington		7600	30.06
C	29	Remington		742	.308 - 3.06
C	30				
C	31				
C	32	Remington			30.06 - 7mm
C	33	Browning			300 win
C	34	Browning			.270 - 30.06
C	35	Browning			300
A	1				
A	2				
A	3				
A	4	Ruger		Mini 14	223
A	5				
A	6	Other	Savage		270
A	7				
A	8				
A	9				
A	10				
A	11				
A	12				
A	13	Browning		A-bolt	270
A	14				
A	15				
A	16				
A	17				

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Q4. Three most commonly used rifles					
A	18				
A	19				
A	20				
A	21				
A	22				
A	23				
A	24				
A	25				
A	26	Other	China	SKS	7.62x37
A	27				
A	28				
A	29				
A	30				
A	31				
A	32				
A	33				
A	34				
A	35				
A	36	Winchester			270 - 30.06
A	37				
A	38				
A	39				
A	40	Ruger			44 mag
A	41				
A	42				
A	43	Ruger			223 - 30.06
A	44				
A	45				
A	46				
A	47				
A	48				
A	49				
A	50				
A	51				
A	52				
A	53	Ruger		Mini-14	.223
A	54				
A	55				
A	56				
A	57	Ruger		semi-auto	35 cal
A	58				
A	59				
A	60				
A	61				
A	62	Ruger		Mini 14	223
A	63				

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Q4. Three most commonly used rifles					
A	64				
A	65				
A	66				
A	67				
A	68				
A	69				
A	70				
A	71				
A	72				
A	73				
A	74	Browning		BAR	30.06
A	75				
A	76	Remington			30.06, 270
A	77	Browning			300
A	78				
A	79				
A	80				
A	81				
A	82				
A	83				
A	84				
A	85				
A	86				
A	87				
A	88				
A	89	Other	Springfield Armory	FNG	308
A	90				
A	91				
A	92				
A	93				
A	94				
A	95				
A	96				
A	97				
A	98				
A	99				
A	100				
A	101				
A	102				
A	103				
A	104				
A	105				
A	106				
A	107				
A	108				
A	109				

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Q4. Three most commonly used rifles					
A	110				
A	111				
A	112				
A	113	Other	All		30.06
A	114	Remington		721	270
A	115				
A	116				
A	117				
A	118				
A	119				
A	120				
A	121				
A	122				
A	123				
A	124				
A	125				
A	126	Browning	Remington	Shotguns	12 gauge
A	127	Remington			.308 or 30.06
A	128	Other	Savage		308
A	129				
A	130				
A	131				
A	132				
A	133	Browning		BAR	7 mm
A	134				
A	135	Browning		742	30.06
A	136	Other	AK 47		
A	137				
A	138				
A	139	Other	Weatherby		300 m
A	140				
A	141				
A	142				
A	143				
A	144				
A	145				
A	146	Ruger		#1	7 mag
A	147				
A	148				
A	149				
A	150	Browning			
A	151				
A	152	Browning			various 270 - 338
A	153				
A	154	Browning		BAR	8 mm mag
A	155				

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Q4. Three most commonly used rifles					
A	156	Other	Uzi		
A	157				
A	158	Browning			300
A	159				
A	160				
A	161				
A	162				
B	1				
C	1				
C	2				
C	3	Browning		Auto	270
C	4	Browning		Bar	300
C	5				
C	6				
C	7				
C	8				
C	9	Other	HK91		
C	10	Browning		BAR	30.06
C	11				
C	12				
C	13	Browning			300
C	14				
C	15				
C	16				
C	17				
C	18				
C	19				
C	20	Other	AK47		7.62 x 39
C	21				
C	22				
C	23	Remington		742	308, 270
C	24				
C	25		M1-A1		.223
C	26				
C	27	Winchester	Various	M1 Garand	30.06
C	28				
C	29			M1A1	30.06
C	30				
C	31				
C	32				
C	33				
C	34				
C	35				

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Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	1				
A	2	Ruger			30.06
A	3				
A	4	Other	Weatherby	Mark V	300
A	5				30.06
A	6				
A	7				
A	8				
A	9				
A	10				
A	11				
A	12				
A	13				
A	14				
A	15				
A	16				
A	17				
A	18				
A	19				
A	20				
A	21	Winchester			30.06, .270
A	22	Remington		700	7 mm or larger
A	23	Winchester		70	25 to 30
A	24	Remington		710	30.06
A	25		Any make	Bolt action	Does not recommend
A	26	Winchester		70	30.06 or larger
A	27	Other	Weatherby		300
A	28	Other	bolt action		270 and up
A	29				
A	30		hunter's choice		.270
A	31				
A	32				
A	33				
A	34				
A	35	Winchester		70	300 win mag
A	36				
A	37				
A	38				
A	39				
A	40	Remington			30.06 - 300 win mag
A	41				
A	42				
A	43				
A	44				30.06, 300winmag, 338, 270
A	45	Browning		Bolt Action	25.06 - 328

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Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	46				
A	47				
A	48				
A	49	Other	Weatherby		300 mag
A	50				
A	51				
A	52				
A	53				
A	54				
A	55				
A	56				
A	57				
A	58				
A	59				
A	60				
A	61	Remington		Bolt Action	300 mag
A	62				
A	63	Other	bolt action repeating rifles		30.06 to .338 winmag
A	64	Winchester		70	338
A	65	Remington		bolt action	308,25-06,243,7 mm mag,30.06,22-250,300 mag all
A	66				
A	67	Ruger		#1	7 mm, 30.06, 7 mm mag
A	68				
A	69				
A	70	Other		Bolt Action	30.06
A	71				300 mag
A	72	Other	Any make	Any model	7 mm, 270, 30.06, 25.06
A	73				
A	74	Browning		BAR	300 win mag
A	75				
A	76				
A	77				
A	78	Browning		Bolt action	
A	79				
A	80				
A	81				
A	82				
A	83				
A	84				
A	85				
A	86				
A	87	Remington		700	30.06, 7 mm, 270
A	88				
A	89	Other	Russian	SKS	7.62
A	90	Other	Weatherby		7 mm mag

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Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	91	Remington		700	7 mag
A	92				
A	93	Winchester		70	300 mag
A	94	Other	Any bolt action		270 or larger
A	95				
A	96				
A	97	Other	Any bolt action		30 or larger, on semiauto same
A	98				
A	99				
A	100				
A	101				
A	102				
A	103				
A	104				
A	105				
A	106	Other	Weatherby		300 magnum
A	107				
A	108				
A	109	Remington		70	7 mm
A	110				
A	111				
A	112				
A	113				
A	114				
A	115				
A	116				
A	117				magnum
A	118				
A	119	Remington		700	7 mm
A	120				
A	121				
A	122				
A	123				
A	124				
A	125				
A	126				300 mag, 338 mag, 30.06
A	127				
A	128				
A	129				
A	130	Remington		700	7 mm magnum
A	131				
A	132	Other	Weatherby		300 mag
A	133				
A	134				
A	135				

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Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	136				
A	137	Remington		700	7 mm
A	138				
A	139	Browning		BAR	7 m or 270
A	140				
A	141				
A	142				30.06
A	143				
A	144	Browning			from 7 mm mag to 338 mag for deer and elk
A	145	Winchester			30.06
A	146	Browning		BDL	7 mag
A	147	Remington		700 BDL	7 mm
A	148				
A	149				
A	150	Browning		Bolt action	
A	151				
A	152				
A	153	Remington		700	30
A	154				
A	155	Other	Weatherby		300
A	156				
A	157				
A	158				
A	159	Browning	Ruger		243, 30.06, 7 mm mag, 340 weather, .338
A	160				
A	161				
A	162				
B	1				7.62 x 39
C	1	Other	Manually operated		
C	2	Ruger		77	300
C	3				
C	4				
C	5				
C	6				
C	7				
C	8	Remington		700	270
C	9				
C	10	Other	HK	91	.308
C	11				
C	12				
C	13				
C	14	Other	Bolt-action w/ belted mag		Calibers, make and model mean nothing
C	15	Other	Bolt-action		30.06-7mm
C	16				
C	17	Other	Bolt-action		

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Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
C	18	Ruger		Ranch Rifle	223
C	19				.243 and larger
C	20				
C	21				
C	22				
C	23	Other	Bolt-action		7mm mag
C	24				
C	25	Other	Savage		7mm mag
C	26				
C	27	Winchester		70	30.06
C	28				
C	29	Winchester		70	30.06 - .338
C	30				
C	31	Winchester		Manual, bolt	300
C	32	Remington		All	270 - 7mm
C	33	Winchester		70	30.06 - .300 win
C	34	Other	Bolt-action		270 or larger for elk and deer
C	35	Other	Bolt-action or semiautos		.270 or larger
A	1				
A	2	Remington			7 mm
A	3				
A	4	Winchester		70	300
A	5				
A	6				
A	7				
A	8				
A	9				
A	10				
A	11				
A	12				
A	13				
A	14				
A	15				
A	16				
A	17				
A	18				
A	19				
A	20				
A	21	Remington		70	30.06
A	22	Winchester		70	7 mm or larger
A	23	Remington		700	25 to 30
A	24	Remington			300 Mag
A	25				
A	26	Browning		A bolt	30.06 or larger
A	27				300 win mag, 30.06 or 270

Hunting Guides

Q 6. Rifles recommended for clients				
case	Make	Other Make	Model	Caliber
A 28				
A 29				
A 30		hunter's choice		.308
A 31				
A 32				
A 33				
A 34				
A 35	Remington		700 BDL	7 mm
A 36				
A 37				
A 38				
A 39				
A 40	Winchester			30.06 - 300 win mag
A 41				
A 42				
A 43				
A 44				
A 45	Remington		Bolt Action	25.06 - 328
A 46				
A 47				
A 48				
A 49				
A 50				
A 51				
A 52				
A 53				
A 54				
A 55				
A 56				
A 57				
A 58				
A 59				
A 60				
A 61	Other	Savage	Bolt Action	7 mm mag
A 62				
A 63				
A 64	Remington		700	300 win mag
A 65	Other	Weatherby		
A 66				
A 67	Remington		Bolt Action	7 mm, 30.06, 7 mm mag
A 68				
A 69				
A 70			Pump	30.06
A 71				7 mm mag
A 72				

Hunting Guides

Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	73				
A	74	Winchester		7C	300 win mag
A	75				
A	76				
A	77				
A	78	Remington		Bolt Action	
A	79				
A	80				
A	81				
A	82				
A	83				
A	84				
A	85				
A	86				
A	87	Browning			308, 7 mm, 30.06
A	88				
A	89	Other	Heckler-Koch	HK-91	308
A	90				
A	91	Winchester		70	300 mag
A	92				
A	93	Browning		Mark II	300 mag, 280-270-25.06
A	94				
A	95				
A	96				
A	97	Other	Semi-auto		30 cal or larger
A	98				
A	99				
A	100				
A	101				
A	102				
A	103				
A	104				
A	105				
A	106	Remington		700	300 win mag
A	107				
A	108				
A	109	Winchester			300 mag, 30.06
A	110				
A	111				
A	112				
A	113				
A	114				
A	115				
A	116				
A	117				

Hunting Guides

Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	118				
A	119	Other	Weatherby		300
A	120				
A	121				
A	122				
A	123				
A	124				
A	125				
A	126				
A	127				
A	128				
A	129				
A	130				
A	131				
A	132	Other	Weatherby		700 mag
A	133				
A	134				
A	135				
A	136				
A	137	Other	Weatherby		300
A	138				
A	139	Remington		742	30.06 or 6 mm
A	140				
A	141				
A	142				7 mm recommended for deer and elk
A	143				
A	144	Other	Weatherby		from 7 mm mag to 338 for deer
A	145	Other	Weatherby		300
A	146	Browning		BDC	300
A	147				
A	148				
A	149				
A	150	Winchester		Bolt Action	
A	151				
A	152				
A	153	Remington		700	7 mm
A	154				
A	155	Other	Weatherby		7 mm
A	156				
A	157				
A	158				
A	159	Winchester	Remington		340 Weather - .338 mag
A	160				
A	161				
A	162				

Hunting Guides

Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
B	1				
C	1				
C	2	Browning			300
C	3				
C	4				
C	5				
C	6				
C	7				
C	8	Remington		700	280
C	9				
C	10	Winchester		70	.270
C	11				
C	12				
C	13				
C	14				
C	15				
C	16				
C	17	Other	Pump		
C	18	Other	AK-47		
C	19				6mm
C	20				
C	21				
C	22				
C	23	Other	Bolt-action		.30
C	24				
C	25	Other	Bolt-action		30.06
C	26				
C	27	Ruger		77	.300 win mag
C	28				
C	29	Remington		700	30.06-.338
C	30				
C	31	Remington		Manual bolt	300
C	32	Browning		All	.270 - 7mm
C	33	Ruger		77	30.06 - .300 win
C	34				
C	35				
A	1				
A	2	Winchester			375
A	3				
A	4	Winchester		70	270
A	5				
A	6				
A	7				
A	8				
A	9				

Hunting Guides

Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	10				
A	11				
A	12				
A	13				
A	14				
A	15				
A	16				
A	17				
A	18				
A	19				
A	20				
A	21	Remington		70	.270
A	22				
A	23	Other	Any bolt action	1-5 shotmag	25 to 30
A	24	Other	Weatherby		300 mag
A	25				
A	26				
A	27				
A	28				
A	29				
A	30				
A	31				
A	32				
A	33				
A	34				
A	35				
A	36				
A	37				
A	38				
A	39				
A	40	Ruger			30.06 - 300 win mag
A	41				
A	42				
A	43				
A	44				
A	45	Winchester		Bolt Action	25.06 - 328
A	46				
A	47				
A	48				
A	49				
A	50				
A	51				
A	52				
A	53				
A	54				

Hunting Guides

Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	55				
A	56				
A	57				
A	58				
A	59				
A	60				
A	61	Other	Weatherby	Bolt Action	338 mag
A	62				
A	63				
A	64	Other	Weatherby Mark V		300 Wea Mag
A	65	Winchester	Browning		
A	66				
A	67	Winchester	Bolt Action		
A	68				
A	69				
A	70			Bolt Action	7 mm
A	71				
A	72				
A	73				
A	74	Browning		A Bolt	300 win mag
A	75				
A	76				
A	77				
A	78				
A	79				
A	80				
A	81				
A	82				
A	83				
A	84				
A	85				
A	86				
A	87	Other	Weatherby		300, 7 mm, 338
A	88				
A	89	Other	Springfield Armory	FNG	308
A	90				
A	91	Ruger		77	300 mag
A	92				
A	93	Ruger		M77	270, 26-06, 300 mag
A	94				
A	95				
A	96				
A	97				
A	98				
A	99				

Hunting Guides

Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	100				
A	101				
A	102				
A	103				
A	104				
A	105				
A	106	Browning		1895	45-70 govt
A	107				
A	108				
A	109				
A	110				
A	111				
A	112				
A	113				
A	114				
A	115				
A	116				
A	117				
A	118				
A	119	Other	Savage		270 or 30.06
A	120				
A	121				
A	122				
A	123				
A	124				
A	125				
A	126				
A	127				
A	128				
A	129				
A	130				
A	131				
A	132				
A	133				
A	134				
A	135				
A	136				
A	137				
A	138				
A	139				
A	140				
A	141				
A	142				300 winmag recommended
A	143				
A	144	Remington	Weatherby		from 270 to 338 for deer and elk

Hunting Guides

Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
A	145	Remington			270
A	146	Ruger		#1	7 mag
A	147				
A	148				
A	149				
A	150				All bolt action with a round nose point
A	151				
A	152				
A	153				
A	154				
A	155				
A	156				
A	157				
A	158				
A	159				300mag,416Rigby,375mag,270 mag,500 nitroxpress
A	160				
A	161				
A	162				
B	1				
C	1				
C	2	Other	Sako		300
C	3				
C	4				
C	5				
C	6				
C	7				
C	8				
C	9				
C	10	Winchester		100	.308
C	11				
C	12				
C	13				
C	14				
C	15				
C	16				
C	17	Other	Weatherby		243 to 300
C	18				
C	19				
C	20				
C	21				
C	22				
C	23				
C	24				
C	25				
C	26				

Hunting Guides

Q 6. Rifles recommended for clients					
case		Make	Other Make	Model	Caliber
C	27	Springfield		M Garard	30.06 - 308
C	28				
C	29	Browning		A bolt	30.06 - .338
C	30				
C	31				
C	32	Ruger		All	.270 - 7 mm
C	33	Browning		A bolt	30.06 - 300 win
C	34				
C	35				

Hunting Guides

Q 8. Recommended rifles based on AK47 et.al.					
case		Make	Other Make	Model	Caliber
A	26	AK47			7.62x37
A	89	Other	Russian	SKS	7.62
A	113	FN-FAL			
A	159	AK47			
C	2	AK47		Antelope and Varmints and Target Shooters	30
C	10	AK47			7.62x39
C	18	AK47			
C	25	AK47			7.62
C	27	FN-FAL			308
A	26		SKS		7.62x37
A	89	HK91			308
A	113		HK 99		
C	2	AK47		Antelope and Varmints and Target Shooters	243
C	10	HK91			308
C	25		MAK 90		7.62
C	27		Century	L1A1	308
A	89	Other	Springfield Armory	FNG	308
A	113	HK93			
C	10	HK93			223
C	25		M-15		223
C	27	HK91	And clones		308

Additional Comments by Hunting Guides

Additional comments:

(8) The respondent answered questions 1, 2, 3, and 5 with "None of your business." He then stated in question 4: "It's none of your business what kind, make, model or how many guns law abiding citizens of the U.S. own, prefer to shoot."

(9) The respondent wrote that he was no longer in business but that he had owned a waterfowl operation and upland bird operation (shotguns only). He added that assault rifles were not true sporting rifles and that they should be limited to use by the military and law enforcement agencies. However, he felt that true sporting weapons that can be modified into some "quasi-assault weapons" should not be restricted. He stated that he supported the effort to get military weapons off the streets but did not want the rights of true sportsmen to be affected.

(10) Although licensed, the respondent did not guide anyone during the past year.

(11) The respondent stated in question 6 that he recommends any legal caliber rifle that client is comfortable with and that is capable of killing the desired game.

(12) For question 6, the respondent replied that he didn't recommend any specific make or model, other than whatever his clients are most comfortable using so long as the weapons are legal for the particular game.

(15) The respondent stated that his organization was solely recreational wildlife watching and photography.

(17) The respondent did not answer the questions but informed us that it is illegal in Hawaii to hunt turkey with a rifle.

(23) The respondent stated that the study rifles were more suitable for militants than sportsmen. He added, "If they want to use these weapons let them go back to the service and use them to defend our country, not against it."

(25) The respondent stated that, in his 35 years of conducting big game hunts, he had never seen any of the study rifles used for hunting. He suggested that the rifles are made to kill people, not big game.

(26) The respondent recommended bolt-action rifles for his clients but stated that he doesn't demand that they use such rifles. The respondent recommended the study rifles in close-range situations in which there are multiple targets that may pose a danger to the hunter (e.g., coyotes, foxes, mountain lions, and bears).

(27) The respondent stated that he recommended the study rifles for hunting but not any specific make.

(32) The respondent said that most of his clients are bow or pistol hunters. He said that there is little if any use for the study rifles in his outfitting service because it focuses on hunts of mountain lions and bighorn sheep. However, he did recommend the study rifles on target ranges and in competitive shooting situations and cited his right to bear arms.

(35) The respondent recommended bolt-action rifles for his clients.

(40) The respondent stated that semiautomatic rifles (such as the AK47) and others are useful for predator hunting.

(41) The respondent said that he recommended only ranges of calibers deemed suitable but not makes and models of specific rifles.

(44) The respondent recommended the following calibers for hunting without any specific makes or models: 30.06, 300 Win mag, 338, and 270.

(47) The respondent stated: "You are asking questions about certain makes of assault rifles, but you are going to end up going after ALL semiautomatic guns. I've spent about 21 years HUNTING with shotguns and I've used semiautomatic models. If you go down the list of times that one new law didn't end up being a whole sloo [sic] of other laws I would be surprised. Maybe some face-to-face with these weapons would be a good thing for politicians. If they see how they are used in 'the Real World' then they may make better amendments."

(49) The respondent specifically recommended the study rifles only for grizzly bears or moose.

(50) The respondent stated that his business involved waterfowl hunting, which uses only shotguns.

(51) The respondent replied: "It is my opinion this is a one sided survey, and does not tell the real meaning and purpose of the survey. And that is to ban all sporting arms in the future. The way this survey is presented is out of line."

(53) The respondent stated: "I recommend to all my hunters that they join the NRA, vote Republican, and buy a good semi-auto for personal defense."

(57) The respondent stated that most of his clients use bolt-action rifles. He suggested that semiautomatics are not as accurate as bolt-action rifles.

(58) The respondent stated that the survey did not pertain to his waterfowl hunting business since only shotguns are used. He added that he did not believe semiautomatics in general present any more threat to the public than other weapons or firearms. However, he suggested that cheaply made assault-type rifles imported from China and other countries are inaccurate and not suitable for hunting.

(59) The respondent stated that he had no knowledge of the semiautomatic rifles beyond 30.06 or similar calibers for hunting. He added that he did not have a use for "automatic" weapons.

(64) The respondent stated: "We need to look at weapons and determine what the designer's intent was for the weapon. We really don't need combat weapons in the hunting environment. I personally would refuse to guide for anyone carrying such a weapon."

(65) The respondent recommended the following calibers for hunting: 7mm, 30.06, .308, .708, 25.06, .243, 22.250, and 300 mag. However, he stated that the study rifles are of no use to the sporting or hunting community whatsoever.

(71) The respondent stated that he mainly hunts elk but did not recommend any additional information about specific firearms except for using 300 mag and 7 mm mag calibers.

(73) The respondent recommended any bolt-action or semiautomatic in the 30 or 7mm calibers. However, he stated that he doesn't allow his clients to use any models based on assault rifles: "They are not needed for hunting. A good hunter does not have these."

(78) The respondent recommended bolt-action rifles for hunting, particularly Browning and Remington.

(80) Although the respondent stated that he does not conduct guides, he did not see a reason to allow any rifles other those manufactured specifically for hunting and sport shooting: "All assault rifles are for fighting war and killing humans."

(82) The respondent stated that he used shotguns only.

(84) The respondent said that he did not allow semiautomatic or automatic rifles in his business. He specifically recommended manually operated rifles.

(90) The respondent stated that all the semiautomatics like AK47s are absolutely worthless and that he found no redeeming hunting value in any AK47 type of rifle. He further explained that the purpose of hunting is to use the minimum number of shells, not the maximum: "I have only known 1 [person] in 50 years to use an AK47. He shot the deer about 30 times. That wasn't hunting, it was murder." He suggested that he would be willing to testify in Congress against such weapons.

(92) The respondent stated that he had been contacted in error, as he was not in the hunting guide business.

(98) The respondent recommended any rifle that a client can shoot the best.

(101) The respondent wrote a letter saying that his business was too new to provide us with useful information about client use; however, he stated that the Chinese AK47 does a proficient job on deer and similar sizes of game and may be the only rifle that some poor people could afford. He said that he is willing to testify to Congress about the outrageous price of certain weapons.

(102) The respondent did not recommend rifles but recommended calibers .270, 30.06, .300, and 7mm.

(103) The respondent stated that he had clients who used semiautomatic rifles, but he didn't know which makes or models.

(104) The respondent recommended any legal weapons capable of killing game, "including the types mentioned under the 2nd amendment."

(105) The respondent stated that the semiautomatic rifles used by his clients were Remingtons.

(112) The respondent stated that he could not provide any useful information because his business was too new.

(113) The respondent recommended whatever is available to knock down an elk. He recommended specific calibers: 30.06, 300, or 338.

(115) The respondent questioned why anyone would use a semiautomatic firearm to hunt game: "Anyone using such horrible arms should be shot with one themselves. Any big game animal does not have a chance with a rifle and now you say people can use semiautomatic rifles."

(116) The respondent had had three clients who used semiautomatics with 30.06 and 270-caliber ammunition; however, he didn't know the makes or models.

(118) The survey questions were not answered, but the respondent wrote: "This is a stupid survey. No one contends they hunt much for big game with an AK47. The debate is over the right to own one, which the 2nd amendment says we can."

(119) The respondent recommended bolt-action rifles for hunting.

(121) The respondent stated that he uses only shotguns in his operation.

(122) The respondent recommended rifles with the calibers of .270 - 30.06 or larger to the .300 mag or .338 mag. However, he said that anything other than a standard semiautomatic sporting rifle is illegal in Colorado, where his business is conducted.

(123) The respondent, who is a bighorn sheep outfitter, stated that the semiautomatic rifles have no place in big game hunting. He recommended basic hunting rifles with calibers of 270 or 30.06.

(124) The respondent, who hunts mainly deer and elk, recommended calibers 270, 30.06, 300 mag, 7mm, 8mm, or 338.

(125) The respondent said that his clients did use semiautomatics, but he didn't have any specific information about which ones.

(126) The respondent stated that the study rifles should remain in one's home or on private property. He would like to have some for personal use but would not recommend them for hunting. He further expressed his displeasure with the Brady bill and stated that criminals need to be held accountable for their actions.

(127) The respondent, who hunts mostly elk and deer, said that the AK47 is not powerful enough to hunt elk; however, it may be ideal for smaller game, like deer or antelope. He recommended any rifles of 30.06 caliber or larger for hunting.

(131) The respondent recommended bolt-action rifles for his clients with calibers .24, .25, 7 mm, or .30. He cited his preference because of fewer moving parts, their ease to fix, and their lack of sensitivity to weather conditions in the field. He added, however, that he had seen the study rifles used with good success.

(132) The respondent stated that the study rifles are not worth anything in cold weather.

(133) The respondent recommended handguns for hunting in calibers 41 or 44 mag.

(136) The respondent did not recommend any rifles by make, but he did recommend a caliber of .308 or larger for elk.

(140) The respondent recommended any good bolt or semiautomatic in 270 caliber and up. He added: "I feel the government is too involved in our lives and seek too much control over the people of our country. I am 65 yrs old and see more of our freedom lost every day. I believe in our country but I have little faith in [organizations] like the A.T.F."

(145) The responded stated: "Don't send these guns out west. Thanks!"

(148) The respondent did not hunt turkey or deer and had no additional information to provide.

(149) The respondent said that he recommends specific rifles to his clients if they ask, usually 270 to 7mm caliber big game rifles.

(150) The respondent recommended Winchester, Remington, or any other autoloading hunting rifle.

(152) The respondent said that he recommended caliber sizes but not specific rifles.

(159) The respondent recommended any gun with which a client can hit a target. He stated that the AK47 could be used for hunting and target shooting.

(174) The respondent recommended bolt-action rifles to his clients.

(175) The respondent said that most of his deer-hunting clients use bolt-action rifles, such as Rugers and Remingtons, in calibers of 30.06, 270, or 243. In his duck guide service, only shotguns are used.

(180) The respondent wrote: "We agree people should not be allowed to have semiautomatics and automatics. This does not mean that you silly bastards in Washington need to push complete or all gun control."

(182) The respondent felt that the survey is biased because it didn't ask about hunting varmints. He stated that many of the study rifles are suitable for such activity.

(184) The respondent did not recommend single shots or automatics and only allows bolt action or pumps for use by his clients.

(188) The respondent wrote that the study guns are good for small game hunting: "I have very good luck with them as they are small, easy to handle, fast-shooting and flat firing guns."

(192) The respondent submitted a letter with the survey: "I do not recommend the use of semiautomatic weapons for hunting in my area. Most of these weapons are prone to be unreliable because the owner does not know how to properly care for them in adverse weather. The FN-FAL, HK91, HK93, and SIG SG550-1 are excellent and expensive weapons very much suited to competition shooting.

"Have you surveyed the criminal element on their choice of weapons? I suspect the criminal use of the six weapons you mentioned do law-abiding citizens compare a very small percentage to the same weapon used. I realize that even one wrongful death is too many but now can you justify the over 300,000 deaths per year from government supported tobacco?

"Gun control does not work - it never has and it never will. What we need are police that capture criminals and a court system with the fortitude to punish them for their crimes."

(198) The respondent stated that this was his first year in and that it was mainly a bow-hunting business.

DEPARTMENT OF THE TREASURY
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS
WASHINGTON, D.C. 20226

DIRECTOR

DEC 10 1997

O:F:S:DMS
3310

Dear Sir or Madam:

On November 14, 1997, the President and the Secretary of the Treasury decided to conduct a review to determine whether modified semiautomatic assault rifles are properly importable under Federal law. Under 18 U.S.C. section 925(d)(3), firearms may be imported into the United States only if they are determined to be of a type generally recognized as particularly suitable for or readily adaptable to sporting purposes. The firearms in question are semiautomatic rifles based on the AK47, FN-FAL, HK91, HK93, SIG SG550-1, and Uzi designs.

As part of the review, the Bureau of Alcohol, Tobacco and Firearms (ATF) is interested in receiving information that shows whether any or all of the above types of semiautomatic rifles are particularly suitable for or readily adaptable to hunting or organized competitive target shooting. We are asking that your organization voluntarily complete the enclosed survey to assist us in gathering this information. We anticipate that the survey will take approximately 15 minutes to complete.

Responses must be received no later than 30 days following the date of this letter; those received after that date cannot be included in the review. Responses should be forwarded to the Bureau of Alcohol, Tobacco and Firearms, Department HSE, P.O. Box 50860, Washington, DC 20091. We appreciate any information you care to provide.

Sincerely yours,

John W. Magaw

John W. Magaw
Director

Enclosure

OMB No. 1512-0542

ATF SURVEY OF HUNTING/SHOOTING EDITORS FOR RIFLE USAGE

1. Does your publication recommend specific types of centerfire semiautomatic rifles for use in **hunting medium game (for example, turkey) or larger game (for example, deer)?**

_____Yes *(Continue)* _____No *(Skip to #3)*

2. If your answer to item 1 is "Yes", please identify the specific centerfire semiautomatic rifles you recommend.

Make Model Caliber

_____

_____

_____

3. Does your publication recommend **against** the use of any semiautomatic rifles whose design is based on the **AK 47, FN-FAL, HK91, HK93, SIG 550-1, or Uzi** for use in **hunting medium game (for example, turkey) or larger game (for example, deer)?**

_____Yes *(Continue)* _____No *(Skip to #5)*

_____Yes, in certain circumstances. Please explain _____

_____*(Continue)*

4. If your answer to item 3 is "Yes" or "Yes, in certain circumstances", please identify the specific rifles that you recommend **against** using for **hunting medium game (for example, turkey) or larger game (for example, deer)?**

Make Model Caliber

_____

_____

_____

5. Does your publication recommend specific types of centerfire semiautomatic rifles for use in **high-power rifle competition**?

_____Yes *(Continue)* _____No *(Skip to #7)*

An agency may not conduct or sponsor, and a person is not required to respond to, the collection of information unless it displays a currently valid OMB control number.

OMB No. 1512-0542

ATF SURVEY OF HUNTING/SHOOTING EDITORS FOR RIFLE USAGE

6. If your answer to item 5 is "Yes", please identify the specific centerfire semiautomatic rifles you recommend.

Make Model Caliber

_____

_____

_____

7. Does your publication recommend **against** the use of any semiautomatic rifles whose design is based on the **AK 47, FN-FAL, HK91, HK93, SIG 550-1, or Uzi** for use in **high-power rifle competition**?

_____Yes *(Continue)* _____No *(Skip to #9)*

_____Yes, in certain circumstances. Please explain _____

_____*(Continue)*

8. If your answer to item 7 is "Yes" or "Yes, in certain circumstances", please identify the specific rifles your publication recommends **against** using for **high-power rifle competition**.

Make Model Caliber

_____

_____

_____

9. Have you or any other author who contributes to your publication written any articles since 1989 concerning the use of semiautomatic rifles and their suitability for use in hunting or organized competitive shooting? *(Exclude Letters to the Editor.)*

_____Yes *(Continue)* _____No (*You are finished with the survey. Thank you.*)

10. If your answer to item 9 is "Yes", please submit a copy of the applicable article(s). Any material you are able to provide will be very beneficial to our study. Please indicate the publication, issue date and page for each article.

An agency may not conduct or sponsor, and a person is not required to respond to, the collection of information unless it displays a currently valid OMB control number.

Editors

Comments:

2. If your answer to item 1 is "Yes," please identify the specific centerfire rifles you recommend:

   (8) Anything except Uzis.

   (9) All study rifles except Uzi.

   (12) See attached articles.

3. Please explain circumstances to question 3: Does your publication recommend against the use of any semiautomatic rifles whose design is based on the AK 47, FN-FAL, HK91, HK93, SIG 550-1, or Uzi for use in hunting medium game (for example, turkey) or larger game (for example, deer)?

   (12) When the caliber is inappropriate or illegal for the specific game species.

4. Other rifle make recommendations in response to question 4: If your answer to item 3 is "Yes" or "Yes, in certain circumstances," please identify the specific rifles that you recommend against using for hunting medium game (for example, turkey) or larger game (for example, deer)?

   (12) See attached articles.

The following two items are for the responses to question 6: If your answer to item 5 is "Yes," please identify the specific centerfire semiautomatic rifles you recommend:

Model

(5) Springfield M1A and Colt AR-15.

Caliber

(5) 7.62m (M1A) and .223 (Colt).

The following items are for questions 9 and 10 on articles written and the submission of these articles with the survey.

Article 1

(8) No articles enclosed.

(9) Semiautomatic Takes Tubb to HP Title.

(10) No articles attached.

Article 2

(9) AR-15 Spaceguns Invading Match.

DEPARTMENT OF THE TREASURY
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS
WASHINGTON, D.C. 20226

DIRECTOR

DEC 10 1997

O:F:S:DMS
3310

Dear Sir or Madam:

On November 14, 1997, the President and the Secretary of the Treasury decided to conduct a review to determine whether modified semiautomatic assault rifles are properly importable under Federal law. Under 18 U.S.C. section 925(d)(3), firearms may be imported into the United States only if they are determined to be of a type generally recognized as particularly suitable for or readily adaptable to sporting purposes. The firearms in question are semiautomatic rifles based on the AK47, FN-FAL, HK91, HK93, SIG SG550-1, and Uzi designs.

As part of the review, the Bureau of Alcohol, Tobacco and Firearms (ATF) is interested in receiving information that shows whether any or all of the above types of semiautomatic rifles are particularly suitable for or readily adaptable to hunting or organized competitive target shooting. We are asking that your organization voluntarily complete the enclosed survey to assist us in gathering this information. We anticipate that the survey will take approximately 15 minutes to complete.

Responses must be received no later than 30 days following the date of this letter; those received after that date cannot be included in the review. Responses should be forwarded to the Bureau of Alcohol, Tobacco and Firearms, Department FG, P.O. Box 50860, Washington, DC 20091. We appreciate any information you care to provide.

Sincerely yours,

John W. Magaw

John W. Magaw
Director

Enclosure

OMB No. 1512-0542

ATF SURVEY OF STATE FISH AND GAME COMMISSIONS FOR RIFLE USAGE

State:_____

1. Do the laws in your state place any prohibitions or restrictions (other than seasonal) on the use of **high-power** rifles for **hunting medium game (for example, turkey) or larger game (for example, deer)?**

_____Yes *(Continue)* _____No *(Skip to #2)*

1a. If "Yes", please cite law(s) and briefly describe the restrictions.

_____

_____

_____

_____

_____

_____

2. Do the laws in your state place any prohibitions or restrictions (other than seasonal) on the use of **semiautomatic** rifles for **hunting medium game (for example, turkey) or larger game (for example, deer)?**

_____Yes *(Continue)* _____No *(Skip to #3)*

2a. If "Yes", please cite law(s) and briefly describe the restrictions.

_____

_____

_____

_____

_____

An agency may not conduct or sponsor, and a person is not required to respond to, the collection of information unless it displays a currently valid OMB control number.

OMB No. 1512-0542

ATF SURVEY OF STATE FISH AND GAME COMMISSIONS FOR RIFLE USAGE

_____*(Continue)*

3. What, if any, is the minimum caliber or cartridge dimensions that may be used for **hunting medium game (for example, turkey) or larger game (for example, deer)?**

Caliber: _____ **OR** Dimensions:_____

_____There is no minimum.

4. Does your commission or state collect any data on the types of rifles used in your state for **hunting medium game (for example, turkey) or larger game (for example, deer)?**

_____Yes *(Continue)* _____No (*You are finished with the survey. Thank you.*)

4a. If "Yes", please provide hard copies of any such available data for the past two hunting seasons of 1995 and 1996. Any data that you provide will be most beneficial to our study.

If you would like us to contact you regarding the data, please provide your name and phone number.

Name:_____Phone:_____

An agency may not conduct or sponsor, and a person is not required to respond to, the collection of information unless it displays a currently valid OMB control number.

Survey Fish and Game Commissions for Rifle Usage

	Restrictions		Minimum Caliber or Cartridge		
STATE	Q1	Q2	Q3	Q4	Q5
	HiPwr	Semiauto	Minimum Caliber	Minimum Cartridge	Collect Data
Alabama	Yes	Yes	Any center fire rifle	None	No
Alaska	Yes	No	No Centerfire for big game		No
Arizona	No	Yes	.22 mag or larger		No
Arkansas	Yes	No	None	None	No
California	No	No	See Question 1a	See Question 1a	No
Colorado	Yes	Yes	0.24		No
Connecticut	Yes	Yes			
Delaware	Yes	Yes			
Florida	Yes	Yes	No rimfire for deer		No
Georgia	Yes	No	.22 Centerfire or larger		No
Hawaii	No	No			
Idaho	Yes	Yes	.22 rimfire		No
Illinois	Yes	Yes	None	None	No
Indiana	Yes	Yes	None		No
Iowa	Yes	Yes	not provided		No
Kansas	Yes	Yes	.23 caliber or larger		No
Kentucky	No	No			
Louisiana	Yes	No	.22 Centerfire		No
Maine	Yes	No	.22 mag or larger		No
Maryland	Yes	Yes			
Massachusetts	Yes	No	None	None	Yes
Michigan	Yes	Yes	.23 or larger		No
Minnesota	Yes	No	0.23	1.285"	No
Mississippi	Yes	No	None	None	No
Missouri	Yes	Yes	None	None	No
Montana	No	No	None		No
Nebraska	No	No			
Nevada	No	No			No
New Hampshire	Yes	Yes		above .22 rimfire	No
New Jersey	Yes	Yes	None	None	No
New Mexico	Yes	No	.24 centerfire or larger		No
New York	Yes	Yes	Must be centerfire		No
North Carolina	Yes	No	None	None	No
North Dakota	Yes	Yes	.22 Centerfire or larger		No
Ohio	Yes	No	None	None	No
Oklahoma	Yes	Yes	.22 magnum		No
Oregon	Yes	Yes	.22 or .24 or larger		No
Pennsylvania	Yes	Yes	None	None	No
Rhode Island	Yes	Yes		.229 maximum	No
South Carolina	Yes	No	Must be larger than .22		No
South Dakota	Yes	No	None	None	No
Tennessee	Yes	Yes	.24 or larger caliber		No
Texas	Yes	No	None	None	No
Utah	Yes	No		None	No
Vermont	Yes	No			No
Virginia	Yes	Yes	.23 caliber for deer		No
Washington	Yes	Yes	.240 or larger for coyote		No
West Virginia	No	No		Any centerfire	No
Wisconsin	Yes	No	.22 caliber or larger		No
Wyoming	Yes	No		23/100 bullet dia.	No

State Fish and Game Commissions

Restrictions for High Powered Rifles

1a. Please cite law(s) and briefly describe the restrictions.

Alabama
(19) No automatic weapons, no silenced weapons.

Alaska
(23) Bison hunters must use a caliber capable of firing a 200-grain bullet having 2,000 pounds of energy at 100 yards.

Arkansas
(11) No rifles for turkey.

California
(22) Centerfire for big game, 10 gauge or smaller for resident small game.

Colorado
(10) Semiautomatic rifle may not hold more than 6 rounds.

Connecticut
(39) Shotgun only on public lands. Can use any type of rifle on private land.

Delaware
(40) No rifles - shotguns/muzzle loaders only.

Florida
(25) Machine guns and silencers not permitted for any hunting.

Georgia
(29) No hi-power rifles allowed for turkey hunting.

Hawaii
(49) Must have discharge of 1200 foot pounds.

Idaho
(30) No hi-power rifles allowed for hunting turkey.

Illinois
(12) Turkey or deer may not be hunted with rifle. Deer may not be hunted with muzzle loading rifle. No restriction on rifles for coyote, fox, and woodchuck, etc.

Indiana
(34) No hi-power rifles allowed for deer or turkey hunting. Limited restrictions for specified areas.

Iowa
(26) Cannot use rifles for turkey or deer, only shotgun or bow and arrow. No difference if public or private lands. For coyote or fox, there is no restriction on rifles, magazine size, or caliber.

Kansas
(33) Must use ammunition specifically designed for hunting.

Louisiana
(6) No rifles for turkey hunting. Rifles for deer hunting must be no smaller than .22 centerfire.

Maine
(32) No hi-power rifles for turkey and water fowl. Some limited restrictions for specific areas.

Maryland
(42) Some restrictions based on county. They are allowed in western and southern Maryland. Shotguns only in and around Baltimore and Washington, D.C.

Massachusetts
(14) Rifles not permitted for hunting deer and turkey.

Michigan
(27) No turkey hunting with hi-power rifle. No night hunting with hi-power rifle. Deer hunting with hi-power rifle allowed only in lower southern peninsula. Limited restrictions for specific areas.

Minnesota
(13) Caliber must be at least .23. Ammunition must have a case length of at least 1.285". .30 caliber M1 carbine cartridge may not be used.

Mississippi
(15) Restricts turkey hunting to shotguns. However quadriplegics may hunt turkey with a rifle.

Missouri
(5) Rifles not permitted for turkey. Self loading firearms for deer may not have a combined magazine + chamber capacity of more than 11 cartridges.

Nebraska
(43) Allowed and frequently used, but magazine capacity maximum is six rounds.

Nevada
(1) Answer to #3 refers to NAS 501.150 and NAS 503.142. Not for turkey.

New Hampshire
(7) Magazine capacity no more than 5 rounds. Prohibits full metal jacket bullets for hunting. Prohibits deer hunting with rifles in certain towns.

New Jersey
(17) No rifles.

New Mexico
(31) No hi-power rifles allowed for hunting turkey.

New York
(24) No semiautomatics with a magazine capacity of greater than 6 rounds; machineguns and silencers not permitted for any hunting. Limited restrictions for specific areas.

North Carolina
(20) Centerfire rifles not permitted for turkey hunting.

North Dakota
(28) No hi-power rifles for turkey hunting.

Ohio
(3) Prohibits high power rifles for turkey, deer and migratory birds. High power rifles can be used on all other legal game animals.

Oklahoma
(8) Centerfire rifles only for large game. Magazines for .22 centerfire rifles may not hold more than 7 rounds.

Oregon
(2) OAR 635-65-700(1) must be .24 caliber or larger center fire rifle, no full automatic; OAR 635-65-700(2) hunters shall only use centerfire rifle .22 caliber; OAR-65-700(5) no military or full jacket bullets in original or altered form. Limited restrictions for specific areas.

Pennsylvania
(16) Rifles not permitted in Philadelphia & Pittsburgh areas.

Rhode Island
(44) .22 center fire during the summer for woodchucks.

South Carolina
(18) No rifle for turkey, rifle for deer must be larger than .22 caliber

South Dakota
(50) Magazine not more than five rounds.

Tennessee
(37) No hi-power rifles allowed for turkey hunting.

Texas
(21) Rimfire ammunition not permitted for hunting deer, antelope, and bighorn sheep; machine guns and silencers not permitted for hunting any game animals.

Utah
(9) No rifles for turkey hunting.

Vermont
(47) Turkey size less than 10 gauge. Deer/moose/beer, no restriction on caliber.

Virginia
(48) 23 caliber or larger for deer and bear. No restrictions for turkey. No magazine restrictions, shotgun limited to 3 shells. Restrictions vary from county to county - approximately 90 different rifle restrictions in the State of Virginia based on the county restrictions. Sawed-off firearms are illegal to own unless with a permit, if barrel less than 16 inches for rifle, and 18 inches for shotgun.

Washington
(46) Hunting turkey limited to shotguns. Small game limited to shotguns.

Wisconsin
(36) No .22 rimfire rifles for deer hunting.

Wyoming
(4) Big game and trophy animals, firearm must have a bore diameter of at least 23/100 of an inch.

Restrictions for Semiautomatic Rifles

2a. Please cite law(s) and briefly describe the restrictions.

Alabama
(19) Turkey may not be hunted with a centerfire rifle or rimfire rifle. Semiautomatic rifles of proper caliber are legal for all types of hunting. No restrictions on magazine capacity, except wildlife management areas where centerfire rifles are restricted to 10 round max.

Arizona
(38) Magazine cannot hold more than 5 rounds.

Colorado
(10) Semiautomatic rifle may not hold more than 6 rounds.

Connecticut
(39) Shotgun only on public lands. Any type of rifle can be used on private land.

Delaware
(40) No rifles - shotguns/muzzle loaders only.

Florida
(25) No semiautomatic centerfire rifles having a magazine capacity greater than 5 rounds.

Idaho
(30) No hi-power rifles (including semiautomatic) allowed for turkey hunting.

Illinois
(12) See #1.

Indiana
(34) No hi-power rifles allowed for turkey hunting.

Iowa
(26) Cannot use rifles for turkey or deer, only shotgun or bow and arrow. No difference in public or private land. For coyote or fox, there is no restriction on rifle, magazine size, or caliber.

Kansas
(33) Must use ammunition specifically designed for hunting.

Maryland
(42) Some restrictions. Based on county. Shotguns only in and around Baltimore and Washington, D.C.

Michigan
(27) Unlawful to hunt with semiautomatic rifles capable of holding more than 6 rounds in magazine and barrel. Rimfire (.22 cal) rifles excluded from restrictions.

Missouri
(5) Combined magazine + chamber capacity may not be more than 11 cartridges.

New Hampshire
(7) Turkey may not be hunted with rifles. Rifles may not have magazine capacity of more than 5 cartridges.

New Jersey
(17) No rifles.

New York
(24) No semiautomatics with a magazine capacity of greater than 6 rounds.

North Dakota
(28) No hi-power rifles (including semiautomatics) may be used for hunting turkey.

Oklahoma
(8) See #1.

Oregon
(2) OAR 635-65-700(1) and (2) limits magazine capacity to no more than 5 cartridges.

Pennsylvania
(16) Semiautomatic rifles are not lawful for hunting in Pennsylvania.

Rhode Island
(44) Cannot use semiautomatic during the winter, only during the summer months for woodchucks (during daylight from April 1 to September 30).

Tennessee
(37) No hi-power rifles, including semiautomatics, allowed for turkey hunting.

Vermont
(47) Semiautomatic 5 rounds or less.

Virginia
(48) Semiautomatics are legal wherever rifles can be used. 23 caliber or larger for deer and bear. No restrictions for turkey. No magazine restrictions, shotgun limited to 3 shells. Restrictions vary from county to county - approximately 90 different rifle restrictions in the State of Virginia based on the county restrictions. Sawed-off firearms are illegal to own unless with a permit, if barrel less than 16 inches for rifle, and 18 inches for shotgun. Striker 12 - drums holds 12 or more rounds and is illegal.

Washington
(46) Cannot use fully automatic for hunting.

West Virginia
(45) Cannot use fully automatic firearms for hunting.

Comments Provided by Law Enforcement Agencies

(1) No research.

(2) No research.

(3) NOBLE and others forwarded information to a U.S. Senator on circumstances concerning police officers killed or injured by these weapons. No data was provided.

(4) No research.

(7) The organization stated: "Most of the data available on guns and crime does not provide the detail needed to identify the types of guns listed. . . . We have conducted several surveys that refer to assault rifles generically, including the Survey of Inmates in State Correctional Facilities 1991, Survey of Inmates in Local Jails 1995, and the Survey of Adults on Probation 1995. The data on assault weapons has not been analyzed in the recently released Survey of Adults on Probation 1995 or in the yet to be released Survey of Inmates in Local Jails 1995.

"Our report Guns Used in Crime includes the results of an analysis of the stolen data from the FBI's National Crime Information Center database. Our analysis was limited to general categories of guns and calibers of handguns. The recent evaluation of the assault weapons ban funded by the National Institute of Justice analyzed a more recent set of the same data with an emphasis on assault weapons. The results of this evaluation were reported in Impact Evaluation of the Public Safety and Recreational Firearms Use Protection Act of 1994."

"BJS [Bureau of Justice Statistics] supports the Firearms Research Information System (FARIS). . . . This database contains firearms-related information from surveys, research, evaluations, and statistical reports. . . . We queried this database for any research on assault weapons. The results of the query include both the reports listed above, as well as several others. Please note that in BJS's report Guns Used in Crime refers to the report Assault Weapons and Homicide in New York City prepared by one of our grantees. While the data are from 1993, the report provides interesting insights into the use of assault weapons and homicide. Another source of data on assault weapons and crime is the FBI's Law Enforcement Officers Killed and Assaulted series, which records the type of gun used in killings of police officers. Several of the reports listed in the FARIS query used these data, including Cop Killers: Assault Weapons Attacks on America's Police, and Cops Under Fire: Law Enforcement Officers Killed with Assault Weapons or Guns with High Capacity Magazines."

(9) Guns in America: National Survey on Private Ownership and Use of Firearms (May 1997) states: The 1994 NSPOF (National Survey of Private Ownership of Firearms) estimates for the total number of privately owned firearms is 192 million: 65 million handguns, 70 million rifles, 49 million shotguns, and 8 million other long guns.

DEPARTMENT OF THE TREASURY
BUREAU OF ALCOHOL, TOBACCO AND FIREARMS
WASHINGTON, D.C. 20226

DIRECTOR

DEC 10 1997

O:F:S:DMS
3310

Dear Sir or Madam:

On November 14, 1997, the President and the Secretary of the Treasury decided to conduct a review to determine whether modified semiautomatic assault rifles are properly importable under Federal law. Under 18 U.S.C. section 925(d)(3), firearms may be imported into the United States only if they are determined to be of a type generally recognized as particularly suitable for or readily adaptable to sporting purposes. The firearms in question are semiautomatic rifles based on the AK47, FN-FAL, HK91, HK93, SIG SG550-1, and Uzi designs.

As part of the review, the Bureau of Alcohol, Tobacco and Firearms (ATF) is interested in receiving information that shows whether any or all of the above types of semiautomatic rifles are particularly suitable for or readily adaptable to hunting or organized competitive target shooting.

Although ATF is not required to seek public comment on this study, the agency would appreciate any factual, relevant information concerning the sporting use suitability of the rifles in question.

Your voluntary response must be received no later than 30 days from the date of this letter; those received after that date cannot be included in the review. Please forward your responses to the Bureau of Alcohol, Tobacco and Firearms, Department TA, P.O. Box 50860, Washington, DC 20091.

Sincerely yours,

John W. Magaw

John W. Magaw
Director

Comments Provided by Industry Members and Trade Associations

(12) The respondent felt that definitions and usage should be subject to rulemaking. The respondent stated that limits on "sporting" use do not take into account firearms technology and its derivative uses among millions of disparate consumers. Millions of gun owners currently engage in informal target competition.

The respondent stated that the firearms are suitable for sporting purposes and that ATF's practice of making "ad hoc" revisions to import criteria disrupts legitimate commerce. The respondent recommends that all changes to criteria should be subject to rulemaking.

(19) The respondent submitted a brochure and a statement supported by seven letters from FFL's who sell the SLR-95 and 97 and ROMAK 1 and 2. The respondent and all the supporting letters attest to the suitability of these guns for hunting because (1) they are excellent for deer or varmint hunting; (2) they are used by many for target shooting; (3) their ammunition is readily available and affordable; and (4) they are excellent for young/new hunters because of low recoil, an inexpensive purchase price, durability, and light weight, as well as being designed only for semiautomatic fire.

(20) One respondent submitted results of its independently conducted survey, which consisted of 30 questions. The results of the survey suggest that 36 percent of those queried actually use AK47-type rifles for hunting or competition, 38 percent use L1A1-type rifles for hunting or competition, and 38 percent use G3-type rifles for hunting or competition. Other uses include home defense, noncompetitive target shooting, and plinking. Of those queried who do not currently own these types of rifles, 35 percent would use AK-type rifles for hunting or competition, 36 percent would use L1A1-type rifles for hunting or competition, and 37 percent would use G3-type rifles for hunting or competition.

(22) The respondent claims that the majority of the study rifles' length and calibers can be used only for sporting purposes. The respondent asserts that the only technical detail remaining after the 1989 decision that is similar to a military rifle is the locking system. After 1989, the imported rifles have no physical features of military assault rifles. All have features which can be found on any semiautomatic sporting/hunting rifle.

However, the respondent writes that the Uzi-type carbines are "not suitable for any kind of sporting events other than law enforcement and military competitions because the caliber and locking system do not allow precise shooting over long distances."

(23) One respondent, who imports the SAR-8 and SAR-4800 that are chambered for .308 Winchester ammunition, states that neither rifle possesses any of the characteristics of either the 1989 determination or the 1994 law. The respondent states that both are permitted in match rifle and other competitions. The respondent states that only two questions should be considered to determine hunting suitability of a rifle: Whether the caliber is adequate to take one or more game species and whether the gun is safe and reliable. The respondent states that there is no factual or legal basis to conclude that the rifles are not "particularly suitable" for sporting purposes.

(24) The respondent writes: "The particular firearms differ from other guns that are universally acceptable only in cosmetic ways. There is no functional difference between semiautomatic firearms based on the external features that have been keyed on in an attempt to implement the import restrictions of the 1994 Crime Bill. As further attempts to differentiate functionally identical firearms by these features for the purposes of culling out those that might be politically suitable for an administrative import ban is wrong."

(25) The respondent writes that the SLG95 was developed exclusively for hunting and competitive shooting. The respondent points out that it is capable of single firing only and cannot be reassembled for use as an automatic weapon. It is made for endurance and accuracy to 300 meters.

(26) The respondent recommends AK47 variants specifically, but believes all study rifles are suitable or adaptable for sporting. The respondent states that a Galil-chambered .308/.223 with a two-position rear sight, adjustable front sight, or scope mount channel, are reliable, durable, accurate, and suitable for hunting and organized competitive shooting. The respondent states that the Uzi, which chambers 9mm and 40 S&W, two-position rear sight, and an adjustable front sight is suitable for organized competitive target shooting.

(27) The respondent states that the SIG-SG550-1, in its original configuration, never possessed assault rifle features. The respondent states that is was built as a semiautomatic, not a fully automatic that was converted or modified to semiautomatic. It does have protruding pistol grip, and its ergonomics are geared toward its original design of goal-precision shooting. The respondent says that the name "Sniper" was a marketing decision, and it is extremely popular in .223 competitions. Its price isolates the gun to the competitor/collector.

(28) Letters from H&K users were submitted in support of their continued importation and use as sporting arms. Specifically, the SR9 and PSG1 were said to be clearly suitable and utilized daily for hunting and target shooting. The respondent states that sport is defined as "an active pastime, diversion, recreation" and that the use of these is all the justification needed to allow their importation. The PSG1 has been imported since 1974, and the SR9 since 1990. The semiautomatic feature dates to turn of the century.

The respondent states that the cost would dissuade criminals from using them. The respondent refers to ATF's reports "Crime Gun Analysis (17 Communities)" and "Trace Reports 1993-1996" to show that the H&K SR9 and PSG1 are not used in crime. In the 4-year period covered by the reports, not one was traced.

(29) The respondent faults the 1989 report both for not sufficiently addressing the issue of ready adaptability, as well as for the limited definition of sporting purposes. The respondent states that sport is defined as "that which diverts, and makes mirth; pastime, diversion." The respondent says that the NRA sponsors many matches, and personally attests to the FN-FAL and HK91 as being perfectly suitable for such matches. The respondent states that the rifles are also used for hunting deer, rabbits, and varmints. Further, the respondent remarks that the use of these rifles in crime is minuscule.

Importer/Individual Letters

On January 15, 1998, the study group received a second submission from Heckler and Koch, dated January 14, 1998. It transmitted 69 letters from individuals who appeared to be answering an advertisement placed in Shotgun News by Heckler and Koch. The study group obtained a copy of the advertisement, which requested that past and current owners of certain H&K rifles provide written accounts of how they use or used these firearms. The advertisement stated that the firearms in question, the SR9 and the PSG1, were used for sporting purposes such as hunting, target shooting, competition, collecting, and informal plinking. The advertisement also referred to the 120-day study and the temporary ban on importation, indicating that certain firearms may be banned in the future.

Synopses of Letters:

1. The writer used his SR9 to hunt deer (photo included).

2. The writer used his SR9 to hunt deer (photo included).

3. The writer used his SR9 for informal target shooting and plinking.

4. The writer used his SR9 for target practice and recreation.

5. The writer (a police officer) used SR9 to hunt. Said that it's too heavy and expensive for criminals.

6. The writer used his SR9 for competition.

7. The writer used H&K rifles such as these around the farm to control wild dog packs.

8. The writer used his SR9 to hunt deer.

9. The writer used his SR9 to hunt, participate in target practice, and compete.

10. The writer used his H&K rifles for informal target shooting.

11. The writer used his SR9 to hunt elk because it's rugged, and to shoot targets.

12. The writer used his SR9 to target practice.

13. The writer used his HK91 to hunt varmints and compete in military rifle matches.

14. The writer does not use the firearms but is familiar with their use for target shooting, hunting, and competition.

15. The writer uses HK firearms for DCM marksmanship competition.

16. The writer used his HK93 for 100-yard club matches and NRA-high power rifle matches.

17. The writer does not own the firearms but enjoys shooting sports and collecting.

18. The writer used his HK91 to hunt deer, boar, and mountain goat and in high-power match competitions.

19. The writer used his SR9 to shoot targets and for competitions.

20. The writer used his HK91 to shoot varmints, hunt small and big game, and shoot long-range silhouettes.

21. The writer used his SR8 to hunt deer, target shoot, and plink.

22. The writer used his HK93 to shoot in club competitions.

23. The writer used his SR9 to shoot targets because the recoil does not impact his arthritis.

24. The writer (a police officer) does not own the firearm but never sees HKs used in crime.

25. The writer used his HKs for target shooting, competition, and collection.

26. The writer does not own the firearms but likes recreational target shooting.

27. Writer does not own the firearms but states, "Don't ban."

28. The writer used his SR9 for hunting deer, varmints, and groundhogs; for target shooting; and for occasional competitions.

29. The writer used his SR9 to hunt deer because it's accurate, rugged, and reliable.

30. The writer used his SR9 to hunt deer and elk.

31. The writer used his SR9 to target shoot.

32. The writer used his SR9 to hunt deer and target shoot.

33. The writer used his HK91 to shoot military rifle 100-yard competitions.

34. The writer used his SR9 for hunting varmints and coyotes, for target shooting, and for competitions.

35. The writer used his SR9 to hunt deer and target shoot.

36. The writer (a former FBI employee) used his SR9 for hunting varmints and for precision and target shooting.

37. The writer used his HK for target shooting and competition.

38. The writer used his SR9 for informal target shooting and plinking and his HK91 for bowling pin matches, high-power rifle competitions, informal target shooting, and plinking.

39. The writer used his SR9 to plink and shoot targets, saying it's too heavy for hunting.

40. The writer has an HK91 as part of his military collection and indicates it may be used for hunting.

41. The writer used his SR9 to target shoot.

42. The writer used his SR9 to hunt deer and target shoot.

43. The writer does not own the firearms but says, "Don't ban."

44. The writer used his SR9 and HK93 for hunting deer, for target shooting, and for home defense.

45. The writer states, "Don't ban."

46. Writer states, "Don't ban."

47. Writer states, "Don't ban."

48. The writer owns an SR9; no use was reported.

49. Writer used his SR9 to compete in club matches and "backyard competitions."

50. The writer used his HK to hunt boar and antelope.

51. The writer states, "Don't ban."

52. The writer (a police officer) does not own the firearms but states that the are not used by criminals.

53. The writer used his HK91 to hunt deer.

54. The writer (a police trainer) says that the PSG1 is used for police sniping and competitive shooting because it's accurate. He says that it's too heavy to hunt with and has attached an article on the PSG1.

55. The writer used her two PSG1s for target shooting and fun.

56. The writer used his SR9 and PSG1 to hunt and target shoot.

57. The writer used his two PSG1s to hunt and target shoot.

58. The writer provides an opinion that the SR9 is used to hunt and target shoot.

59. The writer used his PSG1 for hunting deer and informal target shooting.

60. The writer used his PSG1 to target shoot and plink.

61. The writer states, "Don't ban."

62. The writer used his HK91 to target shoot.

63. The writer used his HK91 to target shoot.

64. The writer (a U.S. deputy marshall) used his SR9 to shoot at the range.

65. The writer used his SR9 to hunt deer and coyotes.

66. The writer used his SR9 to competitively target shoot.

67. The writer used his SR9 to hunt deer and bear.

68. The writer uses military-type rifles like these for predator control on the farm.

69. The writer used his SR9 to target shoot, plink, and compete in DCM matches.

Comments Provided by Interest Groups

(7) Impact Evaluation of the Public Safety and Recreational Firearms Use Protection Act of 1994, Final Report. March 13, 1997.

(8) Identical comments were received from five members of the JPFO. They are against any form of gun control or restriction regardless of the type of firearm. References are made comparing gun control to Nazi Germany.

(9) The respondent contends that police/military-style competitions, "plinking," and informal target shooting should be considered sporting. Note: The narrative was provided in addition to survey that Century Arms put on the Internet.

The respondent questions ATF's definition of "sporting" purposes. The respondent contends that neither the Bill of Rights nor the Second Amendment places restrictions on firearms based on use.

(13) Citing the 1989 report, the respondent states that the drafters of the report determined what should be acceptable sports, thus excluding "plinking."

The respondent states that appearance (e.g., military looking) is not a factor in determining firearms' suitability for sporting purposes. It is their function or action that should determine a gun's suitability. Over 50 percent of those engaged in Practical Rifle Shooting use Kalashnikov variants. Further, citing U.S. vs. Smith (1973), the "readily adaptable" determination would fit all these firearms.

(14) The respondent states that the vast majority of competitive marksmen shoot either domestic or foreign service rifles. Only 2-3 participants at any of 12 matches fire bolt-action match rifles. If service rifles have been modified, they are permitted under NRA rule 3.3.1.

The respondent says that attempts to ban these rifles "is a joke."

(15) The respondent states that these firearms are used by men and women alike throughout Nebraska. All of the named firearms are used a lot all over the State for hunting. The AK47 has the same basic power of a 30/30 Winchester. All of these firearms function the same as a Browning BAR or a Remington 7400. Because of their design features, they provide excellent performance.

(16) The respondent states that the Bill of Rights does not show the second amendment connected to "sporting purposes." The respondent says that all of the firearms in question are "service rifles," all can be used in highpower rifle competition (some better than others), but under no circumstances should "sporting use" be used as a test to determine whether they can be sold to the American public. The respondent states that "sporting use" is a totally bogus question.

(17) The respondent's basic concern is that the scope of our survey is significantly too narrow (i.e., not responsive to the Presidential directive, too narrow to address the problem, and inadequate to the task). The respondent states, "We do not indicate that our determination will impact modifications made to skirt law. We rely on the opinions of the 'gun press.' At a minimum, the Bureau should deny importation of: any semiautomatic capable of accepting with a capacity of more than 10 rounds, and any semiautomatic rifle with a capacity to accept more rounds than permitted by the State with the lowest number of permitted rounds. Deny any semiautomatic that incorporates cosmetically altered 'rule-beating' characteristics. Deny any semiautomatic that can be converted by using parts available domestically to any of the 1994 banned guns/characteristics. Deny any semiautomatic manufactured by any entity controlled by a foreign government. OR manufactured by a foreign entity that also manufactures, assembles or exports assault-type weapons. Deny any semiautomatic that contains a part that is a material component of any assault type weapon made, assembled, or exported by the foreign entity which is the source of the firearm proposed to be imported."

"A material component of any assault type weapon, assembled or exported by the foreign entity, which is, the source of the firearms proposed to be imported. The gun press has fabricated 'sporting' events to justify these weapons. The manner in which we are proceeding is a serious disservice to the American people."

Attachments: That Was Then, This is Now: Assault Weapons; Analysis, New Research, and Legislation; Assault Weapons and Accessories in America; and Cop Killers. All authored by the Violence Policy Center.

(30) The respondent states, "At least for handguns, and among young adult purchasers who have a prior criminal history, the purchase of an assault-type firearm is an independent risk factor for later criminal activity on the part of the purchaser."

NOTE: The above study was for assault-type handguns used in criminal activity versus other handguns. The study involved only young adults, and caution should be used in extending these results to other adults and purchasers of rifles. However, the respondent states, it is plausible that findings for one class of firearms may pertain to another closely related class.

(31) The 1996 National Survey of Fishing, Hunting and Wildlife-Associated Recreation. The publication outlines 1996 expenditures for guide use and percentage of hunters using guides for both big game and small game hunting.

(32) In a memo from the Center to Prevent Handgun Violence the sections are Legal Background, History of Bureau Application of the "Sporting Purposes" Test, The Modified Assault Rifles under Import Suspension Should Be Permanently Barred from Importation, [The Galils and Uzis Should Be Barred from Importation Because They Are Banned by the Federal Assault Weapon Statute, and All the Modified Assault Rifles Should Be Barred from Importation Because They Fail the Sporting Purposes Test]. The conclusion states: "The modified assault rifles currently under suspended permits should be permanently barred from importation because they do not meet the sporting purposes test for importation under the Gun Control Act of 1968 and because certain of the rifles [Galils and Uzis] also are banned by the 1994 Federal assault weapon law."

Comments Provided by Individuals

(10) The respondent does not recommend the Uzi, but he highly recommends the others for small game and varmints. He feels that the calibers of these are not the caliber of choice for medium or large game; however, he believes that the SIG and H&K are the best-built semiautomatics available.

He can not and will not defend the Uzi, referring to it as a "piece of junk."

The respondent feels that because of their expense and their being hard to find, the study rifles (excluding the Uzi) would not be weapons of choice for illegal activities.

(11) The respondent questions ATF's definition of "sporting" and "organized shooting." He feels that ATF's definition is too narrow and based on "political pressure."

The respondent feels that the firearms are especially suitable for competitive shooting and hunting and that the restrictions on caliber and number of cartridges should be left to the individual States. He has shot competitively for 25 years.

(18) The respondent specifically recommends the MAK90 for hunting because its shorter length makes for easier movement through covered areas, it allows for quicker follow-up shots, its open sights allow one to come up upon a target more quickly, and it provides a quicker determination of whether a clear shot exists through the brush than with telescopic sighting.

(21) The respondent states that the second amendment discusses "arms," not "sporting arms." The respondent further states that taxpayer money was spent on this survey and ATF has an agenda. A gun's original intent (military) has nothing to do with how it is used now. "The solution to today's crime is much the same as it always has been, proper enforcement of existing laws, not the imposition of new freedom-restricting laws on honest people."

Information on Articles Reviewed

(1) Describes limited availability of Uzi Model B sporter with thumbhole stock.

(2) Describes rifle and makes political statement concerning 1989 ban.

(3) Describes Chinese copy of Uzi with thumbhole stock.

(4) Quality sporting firearms from Russia.

(5) Short descriptions of rifles and shotguns available. Lead-in paragraph mentions hunting. Does not specifically recommend any of the listed weapons for hunting.

(6) Geared to retail gun dealers, provides list of available products. States L1A1 Sporter is pinpoint accurate and powerful enough for most North American big game hunting.

(7) Discusses the use of the rifle for hunting bear, sheep, and coyotes. Describes accuracy and ruggedness. NOTE: The rifle is a pre-1989 ban assault rifle.

(8) Deals primarily with performance of the cartridge. Makes statement that AK 47-type rifle is adequate for deer hunting at woods ranges.

(9) Discusses gun ownership in the United States. Highlighted text (not by writers) includes the National Survey of Private Ownership of Firearms that was conducted by Chilton Research Services of Drexel Hill, Pennsylvania during November and December 1994: 70 million rifles are privately held, including 28 million semiautomatics.

(10) Discusses pre-1989 ban configuration. Describes use in hunting, and makes the statement that "in the appropriate calibers, the military style autoloaders can indeed make excellent rifles, and that their ugly configuration probably gives them better handling qualities than more conventional sporters as the military discovered a long time ago."

(15) Not article - letter from Editor of Gun World magazine discussing "sport" and various competitions. Note: Attached submitted by Century Arms.

(16) Letter addressed to "To Whom It May Concern" indicating HK91 (not mentioned but illustrated in photos) is suitable for hunting and accurate enough for competition. Note: Submitted by Century Arms.

(17) Describes a competition developed to test a hunter's skill. Does not mention any of the rifles at issue.

(18) Not on point - deals with AR 15.

(19) Describes function, makes political statement.

(20) Discusses function and disassembly of rifle.

(21) Not on point - deals with AR 15 rifle.

(22) Discusses competition started to show sporting use of rifles banned for sale in California. Unknown if weapons in study were banned in California in 1990.

(23) Not on point - deals with national matches.

(24) Not on point - deals with various surplus military rifles.

(25) Deals with 7.62x39mm ammunition as suitable for deer hunting and mentions the use in SKS rifles, which is a military style semiautomatic but not a part of the study.

(26) Not on point - deals with reloading.

(27) Not on point - deals with reloading.

(28) Not on point - deals with AR15 rifles in competition.

(29) Not on point - deals with the SKS rifle.

(30) Not on point - deals with national matches.

(31) Not on point - deals with national matches.

(32) Not on point - deals with national matches.

(33) Not on point - deals with national matches at Camp Perry.

(34) Not on point - deals with national matches at Camp Perry.

(35) Not on point - deals with 1989 national matches at Camp Perry.

(36) Not on point - deals with Browning BAR sporting semiautomatic rifles.

(38) Not on point - deals with AR15, mentions rifle in caliber 7.62 x 39.

(39) Not on point - deals with bullet types.

(40) Not on point - deals with reloading.

(41) Discusses tracking in snow. Rifles mentioned do not include any rifles in study.

(42) Deals with deer hunting in general.

(43) Deals with rifles for varmint hunting. Does not mention rifles in study.

(44) Not on point - deals with hunting pronghorn antelope.

(45) Deals with various deer rifles.

(46) Not on point - deals with two Browning rifles' recoil reducing system.

(47) Not on point - deals with bolt-action rifles.

(48) Not on point - deals with ammunition.

(49) Deals with modifications to AR15 trigger for target shooting.

(50) Not on point - deals with M1 Garand as a target rifle.

(51) Not on point - deals with reloading.

(52) Deals with impact of banning semiautomatic rifles would have on competitors at Camp Perry.

(53) Deals with economic impact in areas near Camp Perry if semiautomatic rifles banned. Reprint from Akron Beacon Journal.

(54) Deals with training new competitive shooters - mentions sporting use of assault rifles, i.e., AR15.

(55) Not on point - article about Nelson Shew.

(56) Not on point - deals with reloading.

(57) Not on point - deals with shooting the AR15.

(58) Not on point - article about AR15 as target rifle.

(59) Not on point - article about well known competitive shooter.

(67) Not on point - deals with reloading.

(68) Discusses semiautomatic versions of M14.

(69) Discusses gas operation.

(70) Discusses right adjustment on M1 and M1A rifles.

(71) Discusses M1A and AR15-type rifles modified to remove them from assault weapon definition, and their use in competition.

(72) Deals with AR15 type rifle.

(73) Not on point - deals with AR15.

(74) Not on point - deals with target rifle based on AR15/M16.

(75) Not on point - deals with SKS rifle.

(76) Not on point - deals with reloading 7.62x39mm cartridge.

(77) Not on point - deals with reloading. Mentions 7.62x39mm.

(78) Not on point - deals with ammunition performance.

(79) Deals with .223 Remington caliber ammunition as a hunting cartridge.

(80) Describes M1A (semiautomatic copy of M14) as a target rifle.

(81) Not on point - deals with bullet design.

(82) Not on point - deals with ammunition performance.

Information on Advertisements Reviewed

(11) Indicates rifles are rugged, reliable and accurate.

(12) Describes rifles, lists price.

(13) Sporting versions of AK 47 and FAL.

(14) Sporting version of AK 47, reliable, accurate.

(61) Catalog of ammunition - lists uses for 7.62x39mm ammunition.

(62) Catalog of ammunition - lists uses for 7.62x39mm ammunition.

(63) Catalog of ammunition - lists uses for 7.62x39mm ammunition.

(64) Catalog of ammunition - lists uses for 9mm ammunition.

(65) Catalog of ammunition - lists uses for 9mm ammunition.

(66) Catalog of ammunition - lists recommended uses for 9mm ammunition.

CERTIFICATION OF SERVICE

I hereby certify that on August 16, 2023, I electronically filed the foregoing Defendants-Appellees' Supplemental Appendix with the Clerk of the Court for the United States Court of Appeals for the Third Circuit by using the appellate CM/ECF system.

Participants in the case who are registered CM/ECF users will be served by the appellate CM/ECF system.

I also certify that four (4) paper copies of the foregoing Defendants-Appellees' Supplemental Appendix shall be filed by Federal Express to the Office of the Clerk, United States Court of Appeals for the Third Circuit, within 5 days of the date of electronic filing of the Supplemental Appendix.

Dated: August 16, 2023

/s/ David E. Ross
Counsel for Defendants-Appellees