### Carlsbad Police 16 Hour Patrol Rifle Operator Course

**Carlsbad Police Department** 



#### Lethal Weapon Scene



#### Course Synopsis

#### • Day One:

- Law and policy
- Safety procedures and range rules
- Rifle characteristics
- Ballistics
- Maintenance
- Tactical considerations and decision making



#### Course Synopsis

#### • Day Two:

- How to operate the rifle
  - Basic operation
  - Shooting skills
- Range training
  - 300 round total with less than 50 handgun rounds
  - Gun belt, vest, pistol, rifle, and flashlight or tac light needed
  - Qualification



### Legal Concerns

- PC 33220 (b) Authorizes Peace Officers to possess short-barreled rifles ...by peace officers, ... when on duty and the use is authorized by the agency and is within the course and scope of their duties, and the officers have completed a training course in the use of these weapons certified by the Commission on Peace Officer Standards and Training.
- This course satisfies the POST requirement for a 16 hour rifle course according to POST regulation 1081 (a) (28).

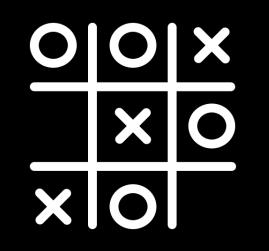
#### Legal Concerns -Discussion

 How can a negligent discharge can lead to civil liability?



### Legal Concerns/ Agency Policy Tic-Tac-Toe

- In your groups, each correct answer gives you the chance to place your "X" or "O."
- If you get the answer wrong, you lose the chance to place your mark.
- Three across of each type wins the match.



#### Legal Concerns – Case Law

- Summarize Tennessee vs. Garner
  - Fleeing felon
  - Police responded to a burglary in progress. Upon arrival, the burglar fled the officer's attempt to arrest him. The officer saw he was unarmed and believed he was not a threat to himself or others. As the burglar was escaping over a fence, the officer shot the suspect to prevent his escape.
  - Summarize the Supreme Court's Ruling
    - Supreme Court ruled that officers could only use lethal force on a fleeing felon whom they believe presents a danger of serious bodily harm to others.

#### Legal Concerns – Case Law

- Summarize Graham vs. Conner
  - Reasonable use of force
  - Officer Conner observed Graham enter a convenience store and almost immediately ran out. Conner detained Graham suspecting he had robbed the store. Unknown to Officer Conner, Graham was diabetic and simply in a hurry. This formed the basis for the "Reasonableness" standard for use of force.

- Describe the force continuum.
  - An escalating scale listing the lowest level of force at one end and the greatest level of force at the other.
- What are the least to the most intrusive uses of force.



- Where does the rifle fit into the force continuum?
  - Lethal Force- the maximum

- Does Policy list a force continuum?
  - No
  - Officers shall use only that amount of force that reasonably appears necessary given the facts and circumstances perceived by the officer at the time of the event to accomplish a legitimate law enforcement purpose. (policy 300.3).

Policy 312.3.4 Under what circumstances should an Officer deploy the rifle? (Mission of the Patrol Rifle)

- Officers may deploy the patrol rifle in any circumstance where the officer can articulate a reasonable expectation that the rifle may be needed. Examples of some general guidelines for deploying the patrol rifle may include, but are not limited to:
- Situations where the officer reasonably anticipates an armed encounter;

Policy 312.3.4 DEPLOYMENT OF THE PATROL RIFLE (cont'd)

- When an officer faced with a situation that may require the delivery of accurate and effective fire at long range;
- Situations where an officer reasonably expects the need to meet or exceed a suspect's firepower;
- When an officer reasonably believes that there may be a need to deliver fire on a barricaded suspect or a suspect with a hostage;
- When an officer believes that a suspect may be wearing body armor;
- When authorized or requested by a supervisor.

=========BONUS ROUND================

Both teams write 3 answers to the next question.

Select a representative to write them on the board.

If each team matches all 3 answers, both get to place a mark (keeping the same turns).

300.3.2 WHAT FACTORS SHOULD BE USED TO DETERMINE THE REASONABLENESS OF FORCE? (list at least 3)

When determining whether to apply force and evaluating whether an officer has used reasonable force, a number of factors should be taken into consideration, as time and circumstances permit. These factors include, but are not limited to:

- Immediacy and severity of the threat to officers or others.
- The conduct of the individual being confronted, as reasonably perceived by the officer at the time.
- Officer/subject factors (age, size, relative strength, skill level, injuries sustained, level of exhaustion or fatigue, the number of officers available vs. subjects).
- The effects of drugs or alcohol.
- Subject's mental state or capacity.

300.3.2 FACTORS USED TO DETERMINE THE REASONABLENESS OF FORCE (cont'd)

- Proximity of weapons or dangerous improvised devices.
- The degree to which the subject has been effectively restrained and his/her ability to resist despite being restrained.
- The availability of other options and their possible effectiveness.
- Seriousness of the suspected offense or reason for contact with the individual.
- Training and experience of the officer.
- Potential for injury to officers, suspects and others.

300.3.2 FACTORS USED TO DETERMINE THE REASONABLENESS OF FORCE (cont'd)

- Whether the person appears to be resisting, attempting to evade arrest by flight or is attacking the officer.
- The risk and reasonably foreseeable consequences of escape.
- The apparent need for immediate control of the subject or a prompt resolution of the situation.
- Whether the conduct of the individual being confronted no longer reasonably appears to pose an imminent threat to the officer or others.
- Prior contacts with the subject or awareness of any propensity for violence.
- Any other exigent circumstances.

- 312.2.7 PATROL RIFLE
- Authorizes use of issued or approved personal rifles.
- What must an Officer do to be authorized to carry a rifle on duty?
  - Must maintain qualification to carry.
- What is required for an Officer to carry their personal rifle on duty?
  - Personally owned rifles must be lawfully registered to the officer as an assault weapon before being authorized for duty use.

- True or False
- Any ammunition OK for duty.
  - False 312.2.4 Use only dept issued DUTY ammo.
- Do not carry when impaired by alcohol or drugs.
  - True 312.2.5

- True or False
- Rifles will be safely stored. Failure to safely store them at home could result in criminal prosecution.
  - True 312.3.2
- Warning shots are encouraged.
  - False 312.5 Warning shots are generally discouraged.

### Tic-Tac-Toe Tie Breakers

- What is the smallest country?
  - Vatican City < 1 Km</li>
- What team won the 2017 baseball World Series?
  - Houston Astros
- What is the speed of light?
  - 299 792 458 m / s or 186,282 miles per second
- Who sings, "Shake it Off?"
  - Taylor Swift
- What is CA Penal Code Section 383a?
  - The sale of rancid butter

### Safety and Range Rules

- The Four Basic Safety Rules include:
  - Treat all guns as if they are loaded.
  - Never point the muzzle at anything unless you are legally justified and within policy to do so.
  - Keep your finger off the trigger until your sights are on the target.
  - Always be aware of your target's environment. What is between you and the target and beyond it.

### Safety and Range Rules

- Range Rules:
  - After weapons have been grounded, and the line has been called safe by an instructor do not touch the weapon until all students are back from their targets, and the instructor has given the okay.
  - If a problem arises on the line, raise your non-gun-hand to summon an instructor.
  - Everyone has the authority to call a "Cease Fire" if they recognize anything unsafe.
  - No ammunition in the cleaning room (Carlsbad Range).

# Nomenclature, Specifications and Capabilities



Youtube.com ar15 and m-16 operation and function cycle



- During WWII, various militaries such as Germany, USSR, and the U.S. recognized the need for a better weapon that blended the advantages of the submachine gun and the standard rifle.
- Germany was first with the Sturmgewehr.
- USSR later introduced the AK-47.
- During the Cold War, the U.S. was under pressure to rapidly implement an "answer" to the AK-47.

## History and Development of the AR -15 History channel: tales of the Gun – M-16



## History and Development of the AR -15 History channel: tales of the Gun – M-16



• "AR" stands for Armalite. The company who first developed the "futuristic" rifle.



Highlight of Needs for Rifle and Ammo:

- Lightweight
- Easy to shoot, light recoil
- Greater "knockdown power" than pistol caliber
- Lighter ammo = more ammo per pound
- Intermediate range ammo (350 yards)
- Cheaper to manufacture
- Easier to maintain
- Needed to be superior to USSR's AK-47

Ar15.com

- Early reliability problems were later solved by chrome lined parts and the realization the rifle was not, "self-cleaning" as advertised.
- Some bias against the AR-15 (M-16) persists today due to numerous Soldiers and Marines who were killed due to malfunctioning rifles in the 1960's.







- The AR-15 is gas operated.
- Two varieties:
  - Direct Impingement hot gases a channeled directly to the bolt to cycle the action. This type is issued by Carlsbad PD. This course will focus on this type of weapon.
  - Piston hot gases are channeled to a piston which pushes the bolt carrier to cycle the action.

- Cycle of Operation:
  - Firing
    - Squeezing of the trigger causes the hammer to strike the firing pin.
    - The firing pin punches the primer of the cartridge causing it to discharge.
    - Rapidly burning gases expand in the chamber forcing the bullet down the barrel.
    - A small vent (gas port) in the barrel at the front sight forces hot gases through a tube back toward the bolt.
    - Hot gases enter the gas key in the bolt carrier and into the expansion chamber.

- Cycle of Operation:
  - Firing

AR15 / M16 Gas Impingement

Kr-15.com

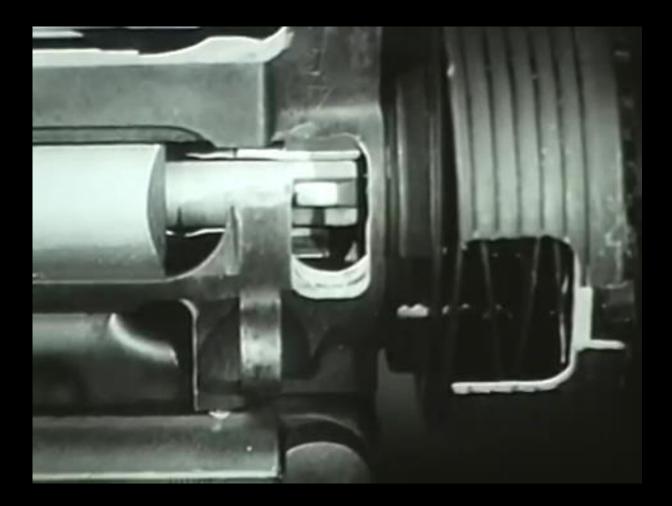
- Cycle of Operation:
  - Unlocking
    - Hot gases entering the expansion chamber force the bolt and the bolt carrier apart. The bolt carrier moves rearward.
    - The outward motion of the bolt causes the cam pin to slide in its angled slot. This causes the bolt to rotate.
    - The rotation of the bolt causes an alignment of the bolt lugs (teeth) and the space between the barrel extension lugs.
    - The bolt is now unlocked.

https://www.youtube.com/watch?v=xPwTGfhUulk

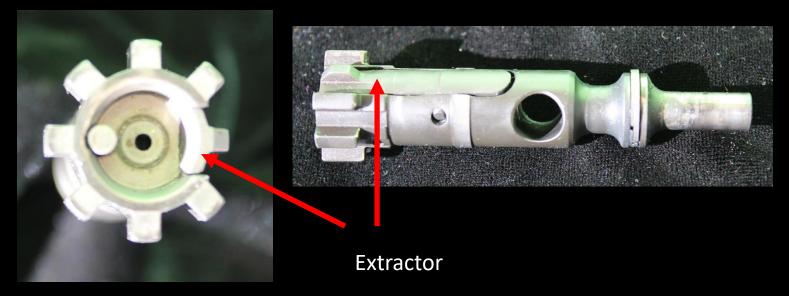


Youtube.com – Adams Arms

Youtube.com ar15 and m-16 operation and function cycle



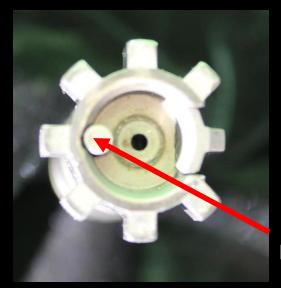
- Cycle of Operation:
  - Extracting
    - The extractor is a semi-circular, spring-loaded hook on the bolt face.
    - The extractor pulls on the cartridge by a protruding rim on the cartridge's case head.



- Cycle of Operation:
  - Extracting

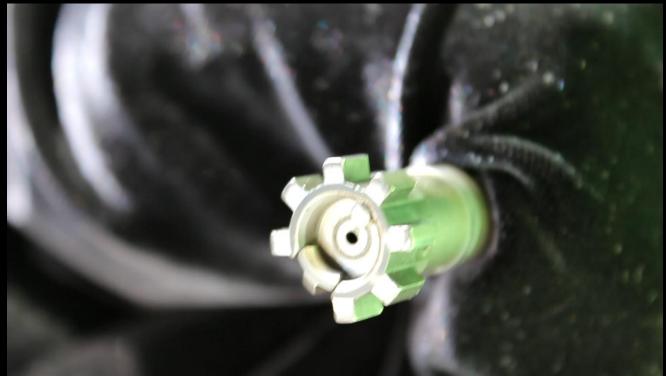


- Cycle of Operation:
  - Ejecting
    - The ejector is a spring-loaded cylinder protruding from the bolt face.
    - The ejector is compressed when the cartridge is chambered and applies pressure on the cartridge's case head.





- Cycle of Operation:
  - Extractor and Ejector



- Cycle of Operation:
  - Cocking/Feeding
    - As the bolt carrier moves rearward, the lower side of the bolt carrier pushes the hammer back and down to reset the sear and is now cocked.
    - The rearward motion of the bolt carrier compresses a spring in the buffer tube. This spring pushes the bolt carrier group forward again.
    - The lower edge of the bolt catches the case head of the next cartridge and strips it out of the magazine and pushes it toward the chamber.
    - The bolt is forced to stay extended because the cam pin is immobilized in a slot in the receiver.

- Cycle of Operation:
  - Chambering
    - The cartridge is guided into the chamber by the bolt.
    - The cartridge has no room to expand in the chamber.
    - The bullet seats into the lands of the barrel's rifling (depending on tolerance of the rifle).

- Cycle of Operation:
  - Locking
    - The bolt lugs are aligned with the space between the lugs on the barrel extension.
    - The bolt begins to rotate to lock the lugs as the cam pin leaves its channel in the receiver and is allowed to move in its angled slot in the carrier.
    - The bolt collapses into the bolt carrier
    - Once the bolt fully seats into the carrier, the bolt carrier assembly is now short enough to allow the firing pin to protrude through the bolt face when the hammer strikes it.

https://www.youtube.com/watch?v=wAqE-KLbiYc

• Click the link above for the video

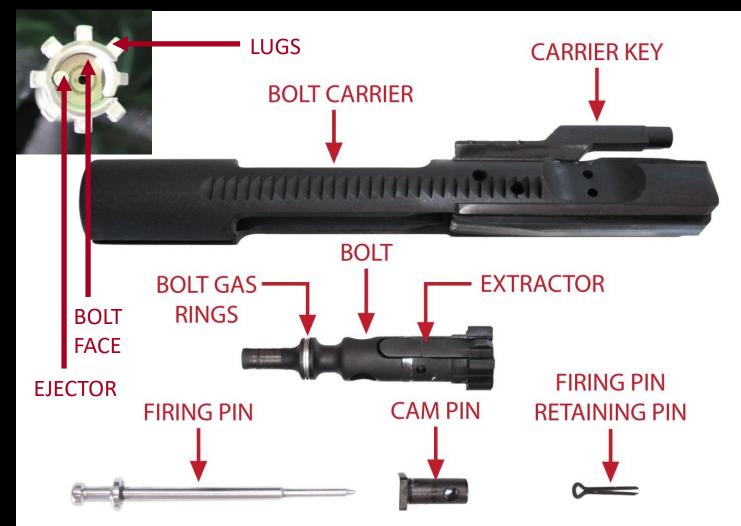
- Nomenclature learning activity:
  - In your groups, work together to identify the parts.
- Answer Key:





© 2009 Intellectual Group, LLC. All Rights Reserved.





# Specifications

- Type of Weapon
  - Smith and Wesson M&P 15 or Colt AR-15
- Barrel Length
  - 16 inch
- Overall Length
  - 35" extended/ 32" collapsed (6 position CAR stock)
- Caliber
  - 5.56 mm (also .223 caliber)



# Specifications

- Magazine Capacity
  - 30 round detachable magazine
- Weight (empty)
  - 6.67 pounds
- Type of Sights
  - A2 front post
  - Adjustable dual aperture rear sight (picatinny rail)
  - Optional electronic sight
- Approximate Muzzle Velocity
  - 3240 feet per second (from 24" barrel)



# Capabilities

- Maximum Range
  - About 4000 yards (2 ¼ miles)
- Maximum Effective Range
  - About 550 yards (velocity down to about 1300 feet per second)
- Penetration of Soft Body Armor
  - Level 2 armor through 3a
  - Will not penetrate level 3 or 4 (rifle armor plates)
- Full/Semi-Automatic
  - Full auto is beneficial for area fire (military application)
  - Full auto is good to suppress adversaries (pin down)
  - Full auto is beneficial for very close targets
  - Full auto is hard to account for every round fired/ every round on one target

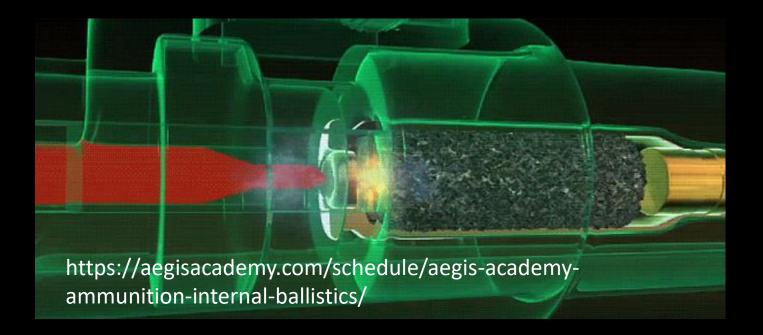
# Limitations of the Patrol Rifle

- What are some limitations of the patrol rifle?
- Two hands required
- Harder to "Go Hands-On"
- Cumbersome (can't holster it)
- Hard to carry magazines on the body in patrol
- Limited penetration of intermediate barriers (vehicles, buildings) with soft nose bullets.

# Ballistics



 Internal Ballistics are the dynamics of what happens inside the chamber and barrel when a cartridge is fired.



- Internal ballistics can be affected by many factors such as gun powder type and barrel length.
- Short barreled rifles can loose as much as 400 feet per second in velocity.
  - Reduced velocity would affect ballistic trajectory.

- Why is rifle twist rate important?
- Twist rate should match bullet weight. A heavy bullet needs a very fast twist rate. A light bullet needs a slower twist rate.
- Modern rifles use 1/9 to 1/7 twist rate that easily stabilize duty and typical target loads. (53. gr to 70 gr.)
- Historically twist rate was 1/12, which under stabilized = "lame duck" spiral.



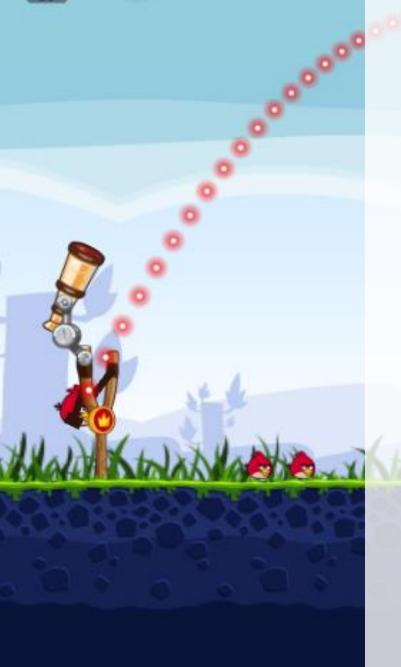
- What is the difference between .223 cal. And 5.56mm?
  - The .223 cal cartridge was first made as a sporting cartridge.
  - The 5.56 mm was later created as a military cartridge based off the .223 cal.
  - The case shape is identical, but subtle differences in:
    - Powder load
    - Chamber shape
    - Chamber space
    - Bullet shape

- The basic summary is, the 5.56 mm has higher chamber pressures and takes up more space.
- Firing a 5.56 mm cartridge in a .223 chamber will result in excessive chamber pressures that may exceed limits of the rifle, causing damage to the chamber.
- Firing a .223 cal cartridge in a 5.56mm chamber might result in slightly lower pressure than the manufacturer intended for optimum performance.
- The safest option is to use only 5.56mm barrels!



# The science of the motion of projectiles in flight.

- Physics question: Assume a theoretical environment of being in a vacuum without curvature to the earth. If you fire a gun horizontally and drop a bullet at the same time, which bullet will hit the ground first?
- Answer: They will hit the ground at the same time. Gravity acts upon them equally.



- Bullets can fly further by angling the barrel slightly upward.
- This upward, then downward path of the bullet is called the ballistic arc.
- The highest point of the arc is called the, "maximum ordinate."

Slow motion bullet path video

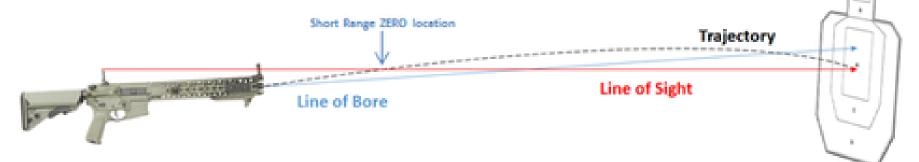
https://www.youtube.com/watch?v=cSDDWq\_YLXg

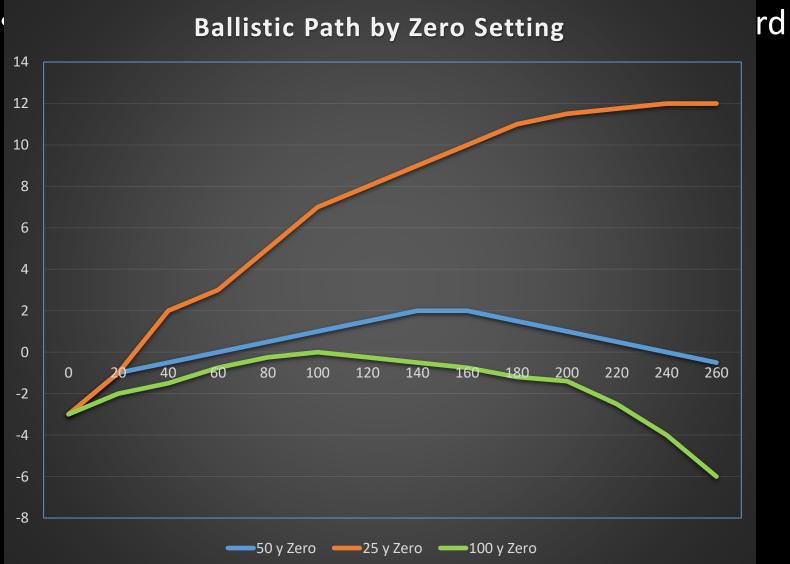
Bullet trajectory video

https://www.youtube.com/watch?v=VqOqZBRZsj8

- What does the term "Zero" mean in reference to the rifle?
- The zero is the point where the sights align with the path of the bullet.

Max ordinate: highest point in trajectory





Why do we zero the rifles at 50 yards?

- Greater zone for "point-of-aim, point-of-impact" (shallow max. ordinate, approximately 1.5 - 2 inches)
- Most patrol engagements will not occur farther than 250 yards
- Second zero at approx. 240 yards
- Caution:
  - Hold-over at close range, 5 to 15 yards

# **Terminal Ballistics**

 Terminal Ballistics – The science of the behavior of a projectile and its effects when it hits something.



www.sporting-rifle.com (Hornady .243 Win 75gr SST)

# Terminal ballistics

- What are preferred terminal ballistics for law enforcement rifles?
  - significant energy/ range increase compared to pistol
  - rapid incapacitation
  - "Barrier blind" terminal performance (offers similar penetration regardless of the barrier it hits)
  - will not over penetrate target

# **Terminal Ballistics**

- The soft nose .223 cal bullet is designed to perform well when impacting tissue; however, it does not penetrate intermediate barriers well such as:
  - Structures (wood, metal, concrete, glass)
  - Vehicles (Sheet metal, frame metal, windshield, tempered glass)

### Terminal Ballistics: Penetration into ballistic gel



## Terminal Ballistics: Penetration into ballistic gel

• Federal TRU 55 gr. Soft point



- Terminal Ballistics The science of the behavior of a projectile and its effects when it hits something.
- The video is similar in performance to our duty round.

https://www.youtube.com/watch?v=tdo1JC5fqPw

- <u>https://www.youtube.com/watch?v=OwAbIdamK2A</u>
- .45 ACP Hydrashock into ballistic gel

- Varies with caliber (.40 cal vs .223 vs .308)
- Varies with ammunition used (FMJ vs soft nose)
- <u>https://www.youtube.com/watch?v=HRbAfdoU9vY</u>
  - Military 5.56 mm (M855) into ballistic gel

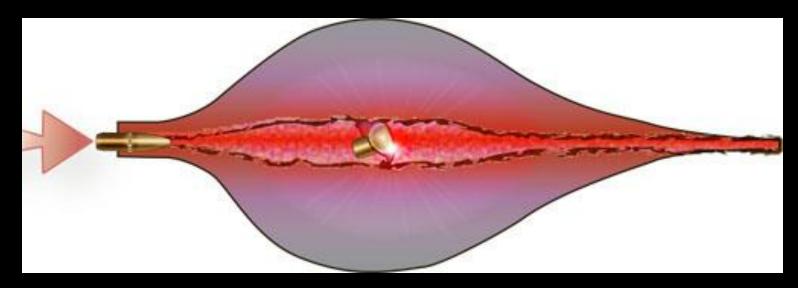
- Shotgun loads into ballistic gel
- https://www.youtube.com/watch?v=rhZf\_x8Esms

- Methods of Incapacitation
  - Neural-Brain or spinal column damage
  - Hydraulic- bleed out
  - Mechanical- skeletal or massive tissue damage
  - Psychological- overwhelm suspect's will to fight

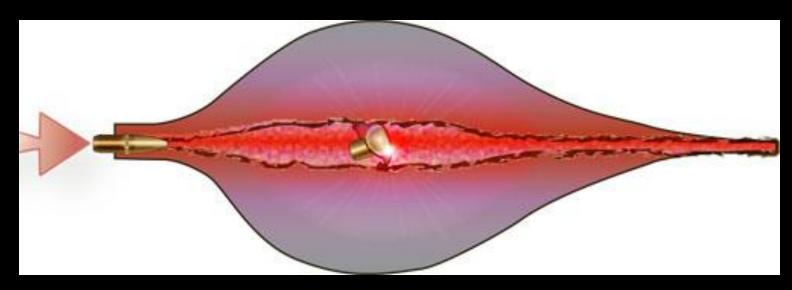
- Neural- instant incapacitation.
- Vascular- 6-10 seconds. Much longer for peripheral wounds.
- Mechanical- instant; however, only in that area.
- Psychologicalvariable (even a miss affects this).

- Method of Wounding
  - Bullets create a puncture wound
  - Permanent Cavity
  - Temporary Cavity

bemil.chosun.com



• When the bullet speed is greater than 2000 fps, the temporary wound cavity creates permanent damage due to explosive cavitation.



bemil.chosun.com

• What is the difference between the Full Metal Jacket .223 bullet and the Soft-Nose .223 bullet?



- Characteristics of .223 soft nose on tissue:
  - Soft nose .223 bullet creates "Snow Storm" appearance on X-ray at the bullet disintegrates on impact.
  - Soft nose .223 bullet generally does not over penetrate.
  - An impact to the head may be explosive due to High Velocity shock wave.
  - A tangential impact to the head is less likely (than pistol) to ricochet.

A "Soft Nose" bullet is missing the hard copper shell, or jacket on the tip



"Lead Snow Storm" effect of a high velocity soft nosed rifle bullet impacting the hip.

http://radiographics.rsna.org/content/ 19/5/1358.figures-only "Lead Snow Storm" effect of a high velocity soft nosed rifle bullet impacting the chest.



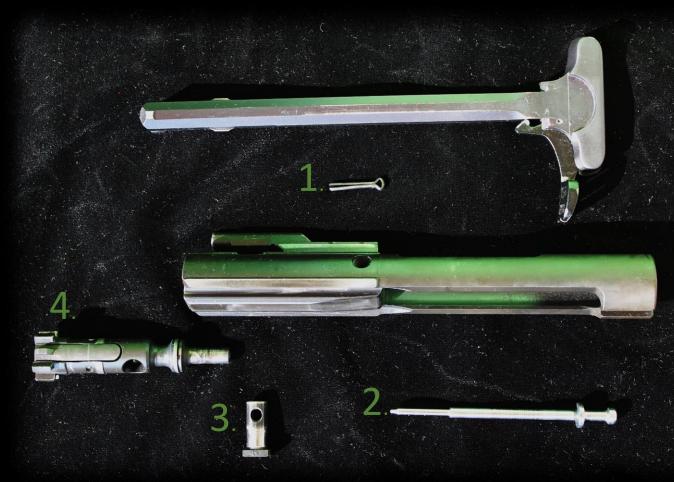


- Disassembly
  - Take down pin
  - Pull out the charging handle to remove the bolt carrier assembly



Disassemble the bolt carrier in this order:

- Remove firing pin retaining pin.
- 2. Remove the firing pin.
- 3. Remove the cam pin.
- Remove the bolt from the assembly.



- Cleaning- remove carbon, don't over-clean
  - Bolt carrier assembly
  - Receiver
  - Chamber/ lugs
  - Barrel

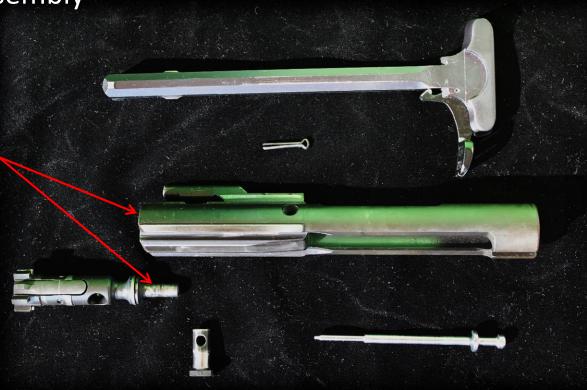


A Bore Snake speeds up barrel cleaning



- Lubrication- identify wear points
  - Bolt carrier assembly
  - Receiver

Heavy carbon build-up on end of bolt and in the carrier



- Protection- understand what can corrode
- Know your environment (coastal vs desert)
- Do not over lubricate (can attract dirt)
- Thin coat
- Do not mix cleaners

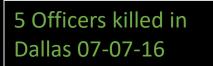
- To deploy the rifle:
  - the operator must have taken the POST approved training.
  - Have passed the department qualification.



- Physical environment
  - Be aware of cover and concealment
    - If you are not advancing, you should be seeking cover



- Physical environment
  - Do not crowd your cover
  - Try to keep the suspect in view







- Rifle caliber rounds will penetrate soft body armor (yours or theirs!)
- Consider wearing rifle plates if encountering a suspect armed with a rifle.

## **Ballistics - Armor**

- The National Institute of Justice (NIJ) sets standards for body armor.
- The ratings for low velocity include:
  - 2A-lowest
  - 2- intermediate
  - 3A- highest for soft body armor
- The ratings for high velocity include:
  - 3 standard rifle protection
  - 4 stops armor piercing ammo

The .223 bullet will penetrate any soft body armor



- .45 caliber
- .44 magnum
- 7.62 X 39 mm (AK47)
- -.30-06 AP



- The patrol rifle affords the opportunity to maintain safe distances to adversaries.
  - Deploy at distances where the rifle provides the advantage over a suspect armed with a pistol or shotgun



- Optics
  - Electronic optics have an advantage over iron sights for close to medium distance shooting.
  - Electronic sights require the shooter to focus on the threat to be in focus.
  - Iron sights can be more accurate, but require the shooter to focus on the front post rather than on the threat.







- If your rifle is in a very cold patrol car (A/C) and brought outside, the optics may fog up.
- Breathing on the optic during cold weather may cause it to fog up.
- This occurred to Riverside SWAT and nearly cost deputies their lives.

https://www.pe.com/2017/01/13/man-suspected-of-firing-at-chp-officer-swat-team-was-killed-sheriffs-officials-say

Satior

	Rifle	Shotgun
Range	X	
Barrier penetration		X
Power	X	X
Maneuverable		
Ammo capacity	X	
Rapid follow-up	X	
Armor penetrating	X	
Ease of reloading	X	
Accuracy	X	
Intimidation	X	X
Accepted by public		X

- Noise overpressure can cause hearing damage
- According to OSHA, exposure to impulse noise of 140 db or greater can result in hearing damage.
- An unsuppressed rifle can generate 160 170 decibels.
- Consider packing hearing protection.



• Excerpt:

"Over the last 25 years, America has seen a disturbing militarization of its civilian law enforcement, along with a dramatic and unsettling rise in the use of paramilitary police units (most commonly called Special Weapons and Tactics, or SWAT) for routine police work."

Abstract from Amazon.com

# A LEY BAL e Rise of Paramilita olice Raids in America

www.freerepublic.com

Many Americans are concerned over the increased use of military style equipment and weapons by law enforcement.

• Form into two groups and prepare an argument to present to the class.

Should the concerns of the Public affect when we deploy with the rifle?

Allow Policy 312.3.4 to be your guide. Deploy the rifle:

- When expecting an armed encounter.
- When the unique attributes of the rifle are needed for range, power, armor penetration, or accuracy.
- When authorized or requested by a supervisor.

#### Shooting Decision

- Know your abilities and limitations, and those of your weapon.
- What if:
  - your backstop is residential stucco?
  - your target is on a ridgeline with open sky as the background?
  - your target is in a vehicle?
  - during a critical incident, you are on the arrest team and every other officer has a rifle?

## Shooting Decision

Watch this video and discuss in your groups

#### Negative Group

- What did these Officers do wrong?
- What should they change if they could have a "do-over?"



#### Rifle Advocate Group

- What did the Officers do right?
- What are some of the challenges the Officers faced?



#### Shooting Decision

- Exercise fire discipline
  - Adhere to department policy and state and federal laws.
  - We are accountable for every round fired.
  - Shoot at what you know...not what you think
    - avoid sympathetic fire
    - avoid Blue-on-Blue casualties
- Exercise judgement
  - Just because in a certain situation you CAN shoot, does not always mean you SHOULD shoot.