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9mm vs. .223 caliber (5.56mm NATO) as a Primary SWAT Team Entry Weapon

An Administrative Research Paper
Submitted in Partial Fulfillment
Of the Requirements for Graduation
From the
Leadership Command College

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October , 2001

#154

ABSTRACT

The murder of Officer Aubry Hawkins coupled with the North Hollywood Bank robbery shootout have forced police officers and administrators alike to re-evaluate the need for increased firepower while responding to high risk calls for service. These two events demonstrated the plight police officers face when confronted by well-armed suspects determined to succeed in their criminal endeavor. While these events concern the police community as a whole; the questions which arise from them apply equally to SWAT officers involved in making high-risk entries.

A look at the primary entry weapons used by SWAT officers today reveals most are using two calibers; .223 caliber (5.56 NATO) and 9mm. The primary bullet used in these calibers is either the soft point ammunition for the .223 caliber (5.56 NATO) or the jacketed hollow point (JHP) in the 9mm. The ballistics and resulting wound trauma for each of these bullets reveals the 9mm provides much less terminal damage while remaining almost totally intact. This ability to remain intact results in the 9mm carrying a much higher potential for over-penetration.

A survey of SWAT teams across Texas reveals many still use the 9mm for their primary entry weapon for many reasons. Handling while in close quarters battle (CQB) is the primary reason for selecting the 9mm, primarily the MP5. The survey also indicated many senior administrators either allow or follow the input of their SWAT team leaders when selecting the primary weapon used for entry.

During the course of research for this paper it was believed the .223 caliber (5.56 NATO) would be found a superior weapon system for SWAT teams. Wound analysis and ballistic review supported this belief when using the soft point ammunition.

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Introduction

On December 24, 2000 Officer Aubrey Hawkins was ambushed while answering a suspicious person call at a sporting goods store in Irving Texas. His murderers were a group of well-armed, determined escaped convicts. This event coupled with the Bank of America shootout in North Hollywood, California in 1997 served to re-enforce the idea that police officers are outgunned and ill prepared to engage well-armed, armored suspects. While this belief prevails for the patrol officer it is just as relevant for the SWAT officer engaged in making an entry in the performance of his duties for the Tactical Unit.

This paper will look at the reasons for and the factors used to determine which caliber weapon and ammunition will be issued to SWAT Teams performing tactical entry duties. The paper will compare two (2) of the most common weapons systems being used today; the 9mm submachine gun (SMG) and the .223 caliber (5.56mm NATO) machine gun (commonly called assault rifles). The goal of the paper is to determine what factors are used by agencies to select the weapon of choice along with determining the ammunition to be issued.

The paper will examine several areas; type of weapon system, caliber selection, weapon selection reasons, ammunition type, ammunition selection criteria and overall satisfaction with the current weapon/ammunition system. This information will be gathered using a survey for SWAT Teams across the State of Texas. The survey will cover approximately 100 agencies, with follow-up telephone interviews of a few selected agencies and individuals.

A second area to be discussed will be wound trauma vs. ammunition ballistics. This topic will center on specific types of 9mm and .223 caliber (5.56mm NATO) ammunition. Manufacturer statistics along with medical research will be included and compared to try to determine which ammunition, for specific caliber's, provides Tactical Officers with the best stopping power, without over-penetration.

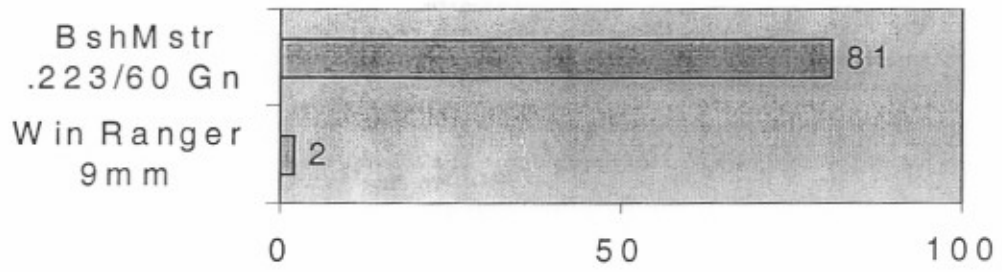
It is hypothesized the .223 caliber (5.56mm NATO) ammunition and weapon system will be found to be the most suitable alternative for Tactical Entry Teams in today's hostile environment. Today's .223 caliber (5.56mm NATO) offers Tactical Officers the ability to penetrate body armor (which is becoming increasing available and used by criminals) without the over penetration problems associated with early ammunition types. While the .223 caliber (5.56mm NATO) has been around for a long time it is just now beginning to become commonplace as a police patrol rifle, primarily due to the availability of the new ammunition. The death of Officer Hawkins, by suspects using a .223 caliber (5.56mm NATO) Colt AR15 stolen from a Texas Department of Criminal Justice prison located in Kenedy, Texas, serves as an example of this very problem, since his body armor was not rated to stop the .223 caliber (5.56mm NATO).

The result of this research may provide SWAT Team officers with the needed information to influence administrator's views on the .223 caliber (5.56mm NATO) weapon system.

Review of Literature

Bullet wound analysis indicates it may be time for SWAT teams to re-examine their position and look to a rifle caliber weapon. Studies show the high-velocity .223 caliber (5.56mm NATO) delivers more of its energy to the target (Tikka, Cederberg, Levanen, Lotjoene, & Rokkanen, 1982) and that wound trauma from fragmenting bullets is much greater than from Full Metal Jacket (FMJ) ammunition. Fragmenting ammunition tests indicated that the ammunition loses 59% to 77% of its mass when it strikes a target (Fackler, Surinchak, Malinowski & Bowen, 1984) thus producing a much larger permanent wound channel. Fragmentation also reduces the possibility of over-penetration due to the break-up of the bullet. According to Huntington (1997), with the introduction of modern .223 caliber (5.56mm NATO) bullets many agencies are beginning to re-evaluate the 9mm Sub Machine Gun (SMG) as a SWAT Entry weapon.

Bullet penetration analysis indicates the minimum penetration needed to ensure reaching and traversing vital organs in most human bodies is 12 inches (30 centimeters) (MacPherson, 1994). Damage in the permanent wound channel is a direct result of tissue crushing and results in the tissue effectively being destroyed (MacPherson, 1994). These studies support what has been generally known and said before "a rifle will deliver more terminal damage than anything except a shotgun at close range" (Fairburn, 1997, 24). Terminal damage is a result of 2 factors, penetration and bullet fragmentation. Figure 1 shows the amount of fragmentation in the 9mm and the .223 (NATO 5.56mm) rounds.



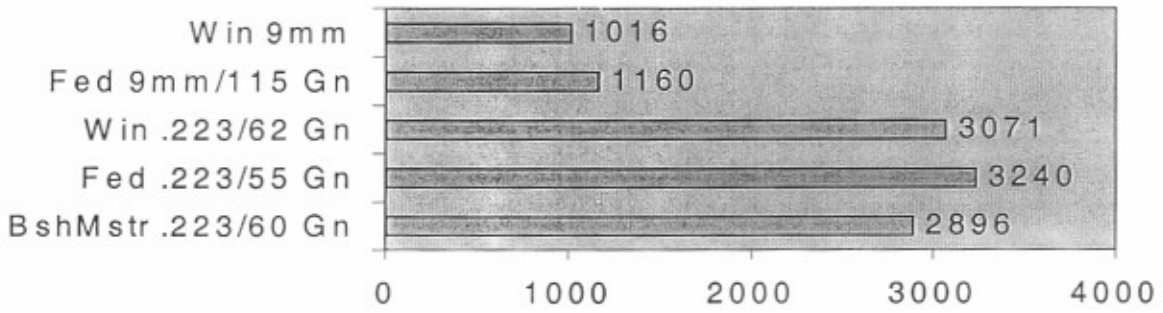
Amount of Bullet Fragmentation (percentage)
Figure 1
(Source: winchester.com and bushmaster.com)

The typical 55 to 62 grain .223 caliber (5.56mm NATO) soft point or polymer tipped bullet will lose approximately 81% of its total weight, while the typical 9mm hollow point round loses only 2% of its total weight. The 9mm round may weight anywhere from 125 to 147 grains. This ability to shed mass means the .223 caliber (5.56mm NATO) has virtually no over-penetration and has the added benefit of being accurate at greater ranges than the 9mm (Pilant, 41). The high velocity of the .223 caliber (5.56mm NATO) guarantees it will defeat soft body armor while offering little recoil (Fairburn, 25). This translates into fewer rounds on target to achieve greater terminal damage. Fewer rounds fired means less opportunity for misses and may provide the added perception of less force being used to bring a situation to resolution.

Another consideration when evaluating Jacketed Hollow Point (JHP) pistol ammunition is that it is sensitive to contact with other materials or barriers. This ammunition is best suited to expand when initial contact is made with soft tissue. The most common problem with Jacketed Hollow Point (JHP) bullets is the

plugging of the hollow point with an intervening barrier material prior to soft tissue contact (McCormick, 1996).

Bullet penetration and the resulting break up of the projectile are tied to the amount of energy the round is carrying. One measure of this energy is muzzle velocity. The muzzle velocity of 5 bullets is compared in Figure 2. Overall the .223 caliber (5.56mm NATO) bullet carries approximately 3 times the velocity of the 9mm, meaning more energy for transfer to the target.

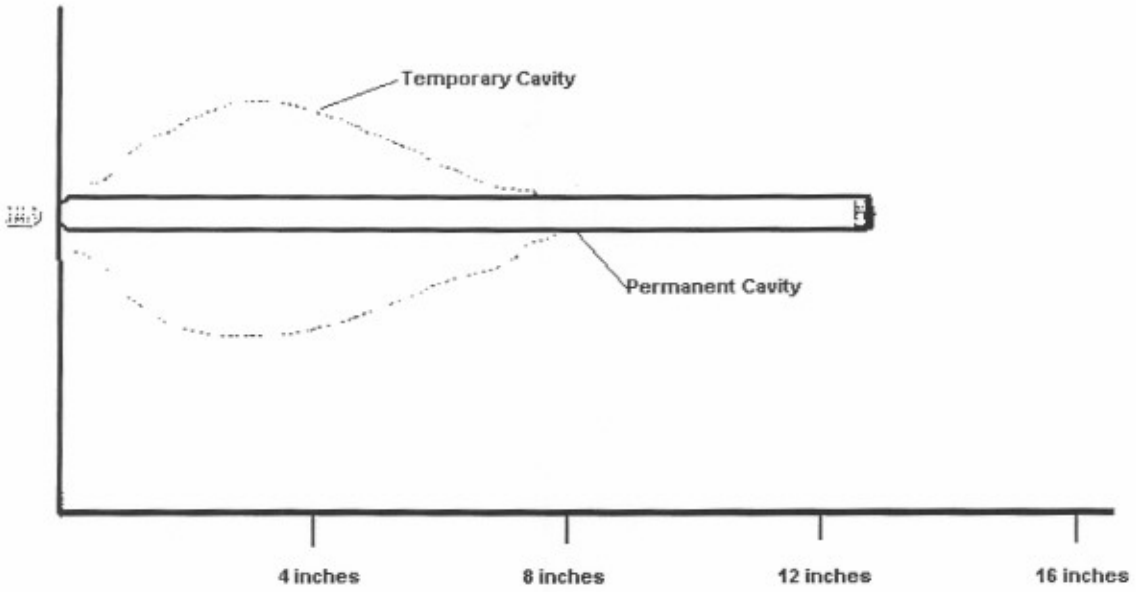


Muzzle Velocity (feet per second)
Figure 2
(Source: www.federalcartridge.com, www.bushmaster.com, www.winchester.com)

Bullet penetration and the resulting terminal damage are illustrated in the figures 3, 4 and 5. Figure 3 illustrates the breakup and penetration potential of a 9mm, 147-grain bullet. This round demonstrates very little fragmentation and a permanent wound cavity roughly the same size as the bullet.

The .223 caliber (5.56mm NATO) round provides better fragmentation and a larger wound cavity without the probability of having a significant amount of the bullet exiting the target. These characteristics apply to both the Jacketed Soft Point (JSP) and the Full Metal Jacket (FMJ) ammunitions. The bottom line,

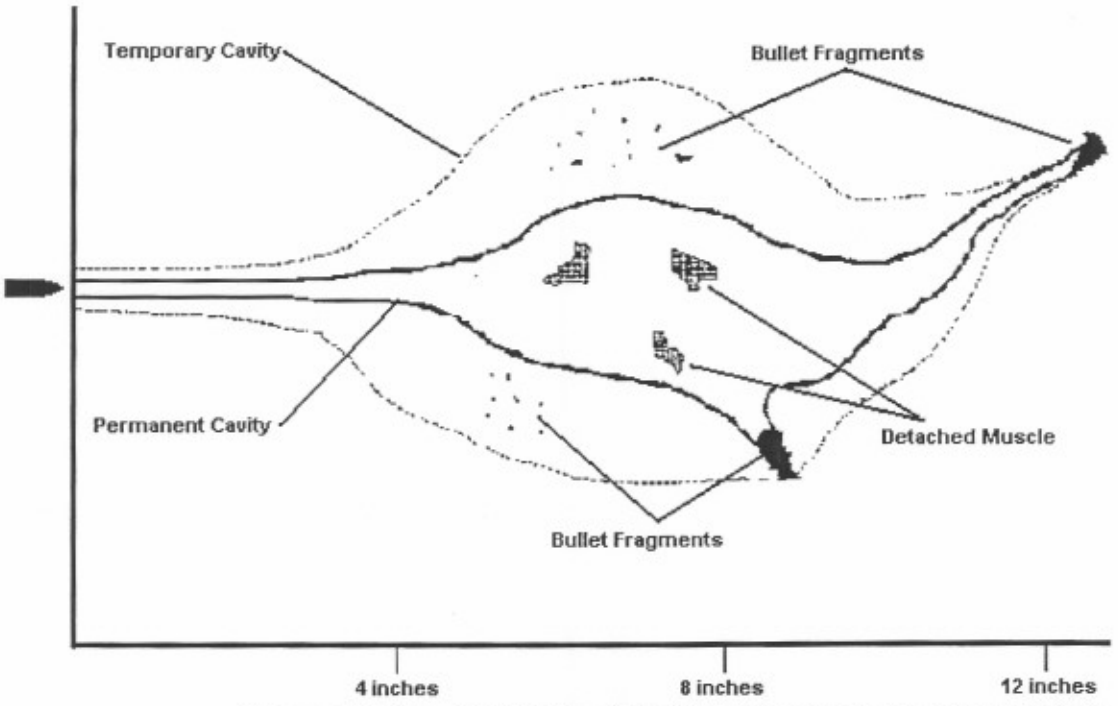
according to Dorman (2000), is that if you're looking for the best man-stopper, all handgun rounds perform poorly.



Wound Profile: 9mm (147 Grain JHP @ 1050 FPS)

Figure 3

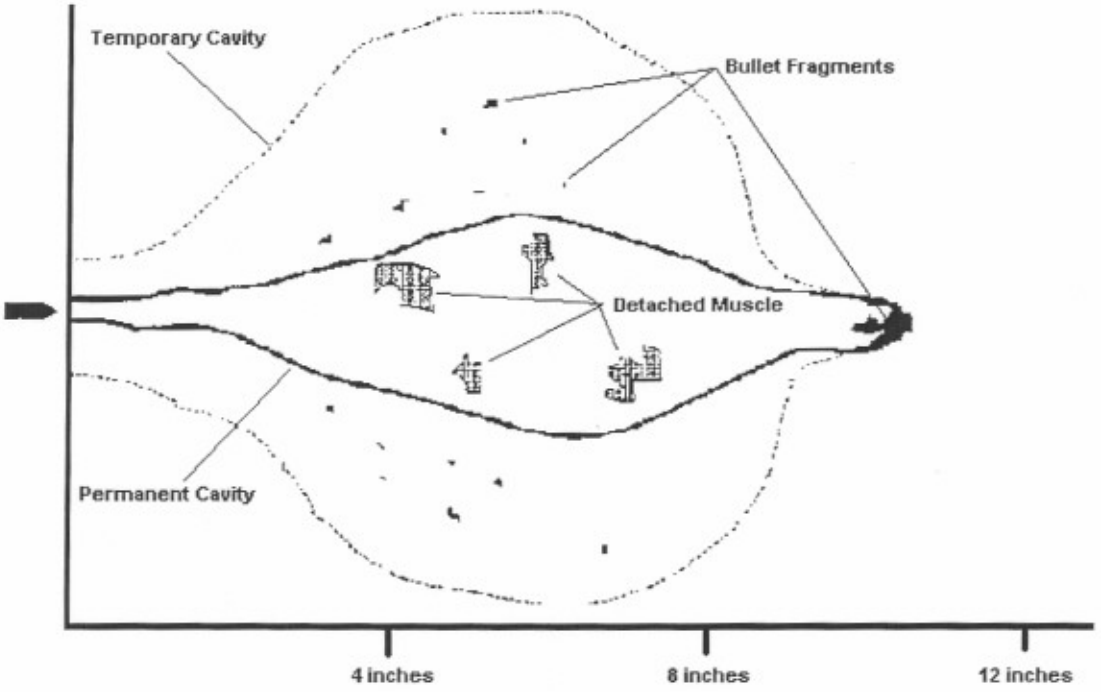
(Source: Fairburn, R., 1994, 192)



Wound Profile: .223 (5.56mm) M193 Ball (55 Grain FMJ @3150 FPS)

Figure 4

(Source: Fairburn, R., 1994, 193)



Wound Profile: .223 Remington (50 Grain JSP @3150 FPS)
Figure 5
(Source: Fairburn, R., 1994, 193)

SWAT Teams need to look carefully at their current entry weapons and the reasons for selecting that weapon. One criterion, shared by many tactical officers, is caliber compatibility. If officers are issued 9mm handguns then they should be issued 9mm SMG's (sub machine guns) (Paynter, R., 2000, 37). This idea is supported by the survey instrument which indicates caliber is a factor in 24%of responding departments.

Methodology

It is hypothesized that the .223 caliber (5.56 NATO) round will be found to be better suited, in today's environment, as the primary entry weapon for SWAT teams. Research for the 9mm v. .223 caliber (5.56mm NATO) as the primary entry weapon for SWAT Team subject was conducted in three areas. A survey of 96 SWAT Teams in Texas was conducted along with a study of wound

trauma. Additional information relating to bullet ballistics, as it related to penetration and characteristics, was also reviewed. It is believed the research findings and a study of current literature will support the hypothesis that the .223 (NATO 5.56mm) is a more suitable weapon for SWAT Entry teams in today's hostile environment.

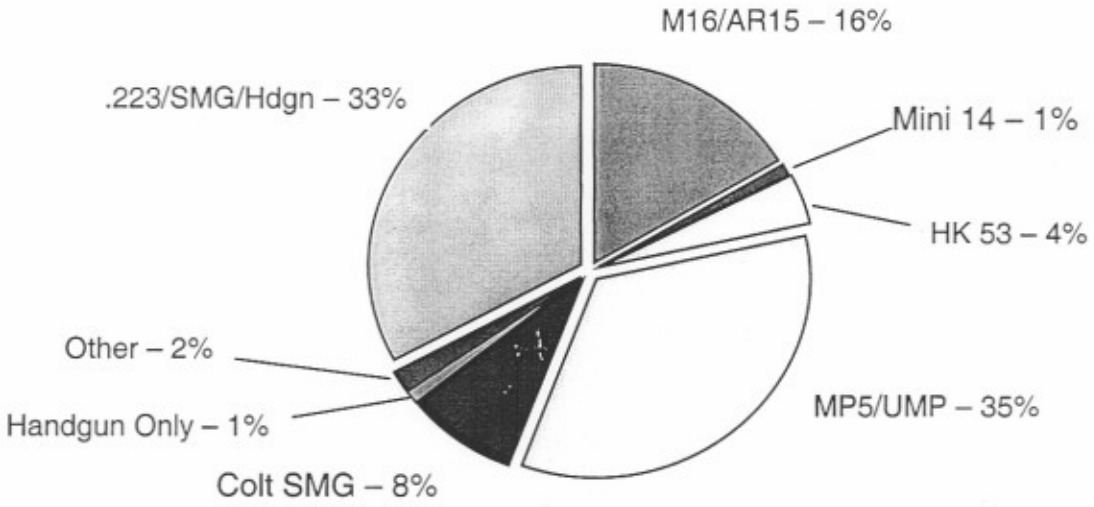
The survey instrument (Appendix 1) was comprised of 16 multiple choice questions ranging from what type of weapon is currently being used for SWAT Entry to who makes the decision on the type weapon being used. Information on SWAT shootings was also gathered along with the type weapon and ammunition used during the shooting. The raw data results of the survey are included in this paper as Appendix 2.

There were 96 surveys mailed out to SWAT Teams holding "Team Memberships" in the Texas Tactical Police Officers Association (TTPOA) as of April 2001. A total of 80 teams completed and returned the survey for a response rate of 83.3%. This response rate was achieved by enclosing a stamped, self-addressed envelope and a cover letter explaining the reasons for the survey, not to mention a targeted audience. Many respondents also asked to be informed of the results of the survey for future decision making reasons. Charts were constructed from the survey responses. Responses were totaled then compiled using a combination of survey questions.

Findings

Currently SWAT Teams are using a mixture of rifle and handgun types and ammunition for entry duties. Figure 6 shows teams are split between using

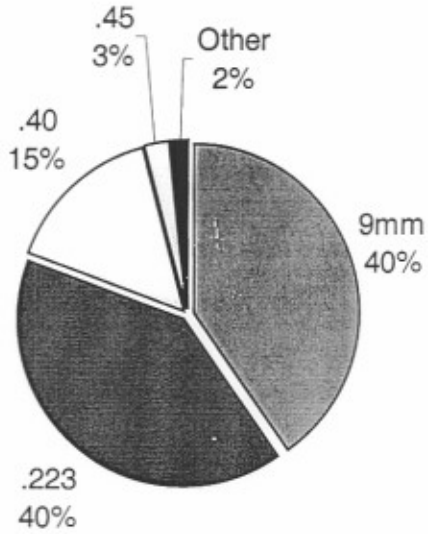
.223 (NATO 5.56mm) only at 21%; a combination of .223 caliber (NATO 5.56mm) and Handgun/Sub-Machine Gun (SMG) at 33%; and Handgun/SMG at 44%.



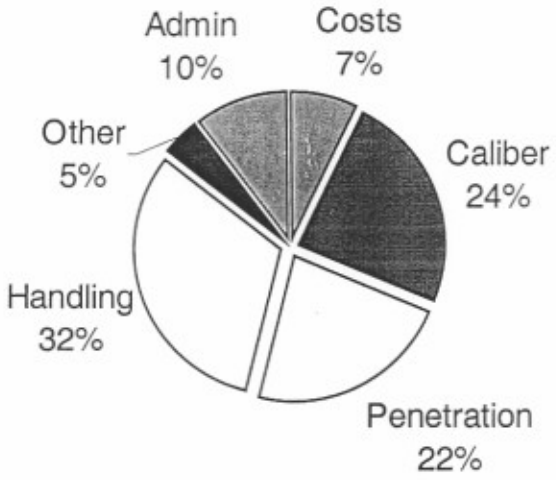
Primary SWAT Entry Weapon
Figure 6

While SWAT teams show some diversity on the type weapons used, they seem to be in agreement on the caliber used by their Entry Teams. The teams were split into 2 major groups, .223 caliber (5.56mm NATO) and 9mm with a few selecting other calibers for various reasons. Figure 7 shows 80% of the responding teams selected either the 9mm or the .223 caliber (5.56mm NATO).

SWAT Teams selected their entry weapon based on a number of reasons (Figure 8). Most teams selected their weapons based on the weapons Close Quarters Battle (CQB) handling followed by caliber then penetration ability. These categories indicate team operators and leaders have been consulted during the decision making process.



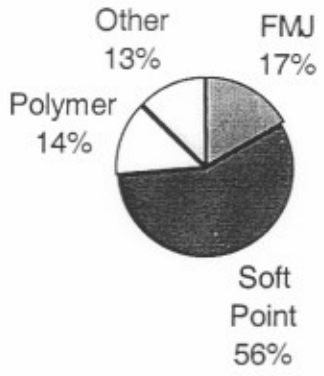
Caliber of Entry Weapon
Figure 7



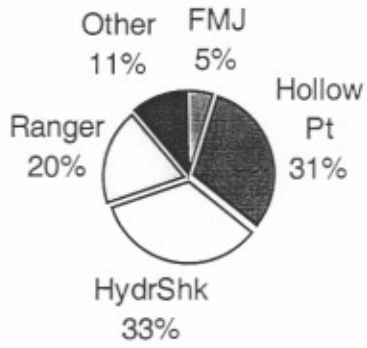
Reasons for Selecting Entry Weapons
Figure 8

Survey results indicated the majority of teams who use .223 caliber (5.56mm NATO) selected the soft point ammunition (56%) followed by the Full Metal Jacket (FMJ) (17%) then the polymer tipped ammo (14%). Handgun users

were a little more diverse with HydraShok (33%), Hollow Point (31%) and Ranger/Black Talon (20%) being the top three.

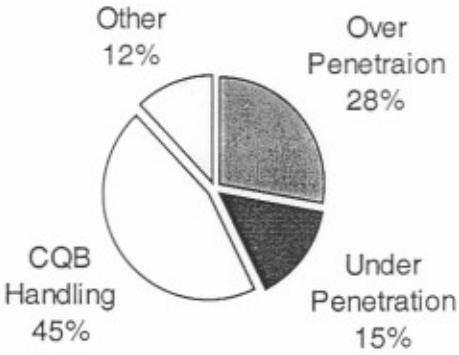


Type .223 Ammunition
Figure 9



Type 9mm Ammunition
Figure 10

The decision of which weapon system to use was left to the Tactical Commander the majority of the time followed by the Senior Administration. Survey results indicated a willingness of Administration to listen to the Team Operators and follow their suggestions when it comes to weapons selection (Figure 11) a majority of the time.



Major Concern for Selecting Entry Weapon
Figure 11

This survey deals primarily with current usage and past selection processes. The overwhelming majority of teams indicated they were satisfied with their current weapon and had no plans to change.

Conclusions

The problem faced by SWAT teams today is how to balance the need for a weapon system which offers the penetration needed to defeat soft body armor while not demonstrating the ability to over-penetrate the target. The purpose of this study was to find a suitable solution that is palatable to both administrators and SWAT teams alike. The hypothesis presented here is that the .223 caliber (5.56 NATO) round is superior to the 9mm as a primary entry weapon for SWAT, as long as a soft point or polymer tipped bullet is selected.

Surveys indicate many SWAT teams in Texas are still using the 9mm-sub machine gun as their primary entry weapon. This caliber does not always provide the penetration and terminal damage needed when facing well-armed, armored criminals. With the availability of body armor and rifle-caliber weapons SWAT teams need to be looking at entry weapons which have the ability to penetrate and inflict maximum damage with as few rounds as possible. It was believed research would support the hypothesis that SWAT teams are under-gunned and a better caliber weapon is available for their use.

Research findings indicate the 9mm round under performs in several categories when compared to the .223 caliber (5.56mm NATO). The 9mm has the potential for over penetration due to its ability to remain intact, retaining as much as 98% of its original mass. The 9mm does not provide the ability to inflict

maximum terminal damage for the same reason. Generally, the findings of this study support MacPherson's (1994) conclusion that Jacketed Hollow Point (JHP) ammunition penetration and fragmentation is inadequate for the role in law enforcement.

The .223 caliber (5.56mm NATO) jacketed soft point (JSP) round, on the other hand, literally explodes on contact, shedding 81% of its mass and thus produces a permanent wound channel much larger than the 9mm. With the proliferation of new soft point .223 caliber (5.56mm NATO) ammunition, this caliber is better suited for today's tactical environment. The SWAT officer's need for caliber compatibility is over-shadowed by the need for a weapon system, which is effective against armored suspects with the fewest rounds fired. Patrol rifles are becoming the standard for today's patrol officer; SWAT should be just as prepared to face suspects on equal footing. According to Cpl. Mike Finley, Dallas PD SWAT officers select between the 9mm and the .223 caliber (5.56mm NATO) weapon based on personal preference and experience (personal interview, 07/18/01).

While this study focused on the 9mm v. .223 caliber (5.56mm NATO) it should be noted that the future caliber for SWAT may already be available. Fabrique Nationale (FN), a Belgian company, is marketing the FN P90. This weapon system fires a unique caliber, 5.7 x 28, and offers many advantages over the .223, AR15/M16 system. These advantages include a 50 round magazine, caliber compatibility with a pistol, simple operation, lighter weight and fewer parts. The P90 is ambidextrous without any additional components. One of the

unresolved questions of the P90 system is the ballistics of the 5.7 x 28 SS190 ammunition during actual shootings. There are few known engagements in the United States so the penetration and wound ballistics issues are still being evaluated (results so far are very promising). According to Wall of Houston SWAT, the Peruvian military used the P90 during a televised hostage rescue at the Japanese Embassy. There were not any autopsies performed so it is still a matter for debate on how the round actually performs (2001, 68). Houston SWAT currently fields this new weapon system and has had one engagement with an armed suspect being killed with the P90. Initial autopsy reports indicate the P90 bullet performed as designed resulting in no exit wounds with extensive terminal damage.

For SWAT Teams currently evaluating their weapons systems each of the discussed calibers has its advantages and drawbacks. It is the author's opinion, however, that the .223 caliber (5.56 NATO) is far superior to the 9mm for today's increasingly hostile environment where soft body armor is becoming the norm and not the exception.