

.223 Wallboard Test

Conducted by:
New Jersey Division of Criminal Justice
At Fort Dix, New Jersey
March 20, 2003

The civil unrest of the 1960s started American law enforcement thinking about their arsenals. Special weapons and tactical training, beyond crowd control, began in earnest in the 1970s. Handgun caliber subguns would not become popular until the 1980s and in many cases the 1990s. .223 rifles were being used, not only for perimeter work, but also for entries in the early days of SWAT. Surplus Colt rifles and ammunition were abundant in the post Vietnam years. The Ruger mini-14s and their variants found their way into the law enforcement arsenals.

As the years progressed the .223 was replaced with handgun caliber carbines or subguns for entries and close quarter battle (CQB). The .223 was moved to perimeter duty. However, The North Hollywood incident, the variety of .223 ammunition and the events of September 11, 2001 have brought the .223 back into the CQB environment. Today we find .223 rifles being redeployed as entry tools and in many cases as a patrol supplement. The .223 rifle is back in the entry stack and seen as a viable CQB tool.

The terminal ballistics of the .223 on the human body has been well documented, as well as its penetrating characteristics. The penetrating reputation of the .223 has caused many administrators and trainers to pause when debating whether the .223 is safe for the CQB environment. "Threat, backstop and beyond" is the critical question. What happens to a .223 round if it should miss its intended target inside a building?

During a recent Assault Rifle Instructor Course conducted by the New Jersey Division of Criminal Justice, the firearms staff conducted a ".223 on wallboard test". The following are the results of this test.

Results

Four different types of .223 cartridges were fired through two different barrel length rifles (14" & 18.9"). All projectiles penetrated the simulated interior wall. **The secondary "room" is a tactical concern!**

While this test provides a certain amount of factual information, everyone is encouraged to test **their ammunition fired through their rifles** at mediums and distances which best represent **their neighborhood**.

Protocol

Firearms

Since barrel length relates to velocity, a 14" barreled rifle and an 18.9 inch barreled rifle were selected in order to assess performance of selected ammunition at different velocities.

Colt AR15 14 inch barrel

H&K G36E 18.9 inch barrel

Ammunition

The 24-member instructor class was asked to provide different types of ammunition they had brought to the course. While this selection is not at all scientific or all

encompassing, it provided a random sampling of what New Jersey law enforcement has selected to deploy.

- 55 gr. Federal Full Metal Jacket (Ball)
- 69 gr. Federal Hollow Point
- 60 gr. Hornady TAP
- 55 gr. Remington Soft Point

Velocities

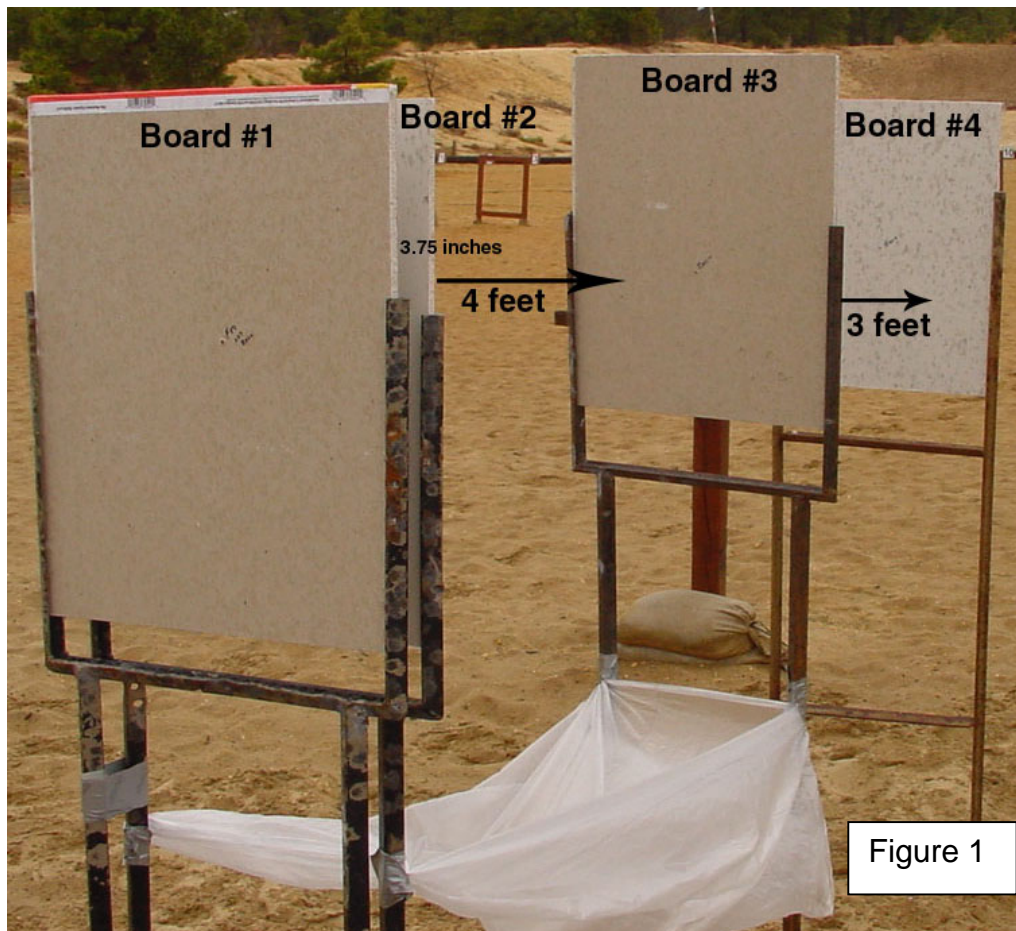
All ammunition was chronographed to document muzzle velocities.

Muzzle Velocity Chart

Cartridge	H&K G36 18.9" Barrel	Colt AR15 14" Barrel
55 gr. Federal Ball	3,058 fps	2,911 fps
69 gr. Federal Hollow Point	2,721 fps	2,604 fps
60 gr. Hornady TAP	2,704 fps	2,534 fps
55 gr. Remington Soft Point	3,058 fps	2,849 fps

Setup

Two pieces of wallboard (Board #1 and Board #2) were positioned to simulated normal interior wall construction by having an on-edge 2" x 4" between the two pieces of wallboard. In an attempt to document each projectile's ballistics, in terms of trajectory and energy after exiting the interior wall, a third piece of wallboard (Board #3) was placed 4 feet from the simulated wall and another (Board # 4) 3 feet from the third wallboard. (See figure #1)



Testing All rounds were fired at a distance of **21 feet (7 yards)**

18.9" barrel – H&K G36E

55 gr. Federal Full Metal Jacket (Ball) (MV 3,058 fps)

This round passed through all four boards intact and appeared stable in trajectory. Tumbling or key holing did not occur as it did when fired from the 14" barrel. This round was observed striking an impact berm 100 yards from the testing area.

69 gr. Federal Jacketed Hollow Point (MV 2,721 fps)

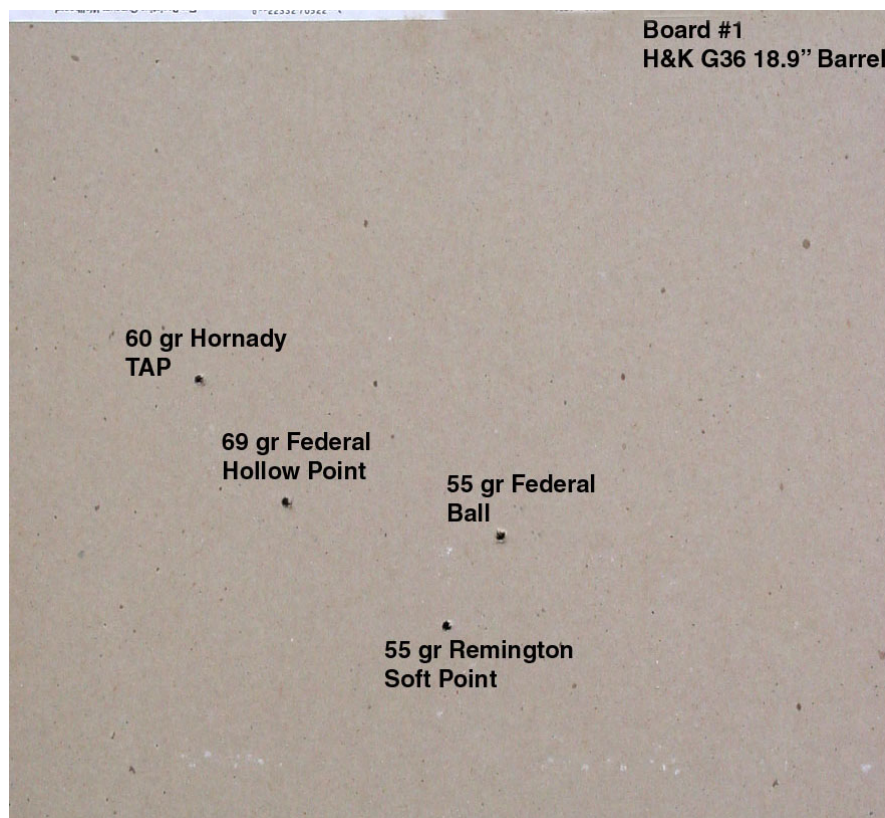
The hollow point round was fragmenting and beginning to tumble upon exiting the simulated wall. Its entry in Board #3 appeared to be in two parts and elongated. Fragmentation and tumbling continued through Board # 3 with two large pieces striking Board #4 several inches apart and a small third piece embedding itself in the wallboard.

60 gr. Hornady TAP (MV 2,704 fps)

The TAP round is breaking up coming out of the simulated wall. Two large fragment holes penetrate Board #3 as well as a series of smaller fragments. Board #4 indicates the smaller fragments lose their energy; only the two larger fragments penetrate Board #4.

55 gr. Remington Soft Point (MV 3,058)

The soft point round appears stable and the nose of the projectile appears to be dialating, revealing jagged edges exiting the simulated wall. Board #3 shows total penetration with a much larger exit cavity than in Board #2. Board #4 indicates the projectile was fragmenting upon exiting Board #3. Board #4 also reveals all fragments had enough energy to totally penetrate this last board



**Board #2 Back
H&K G36 18.9" Barrel**

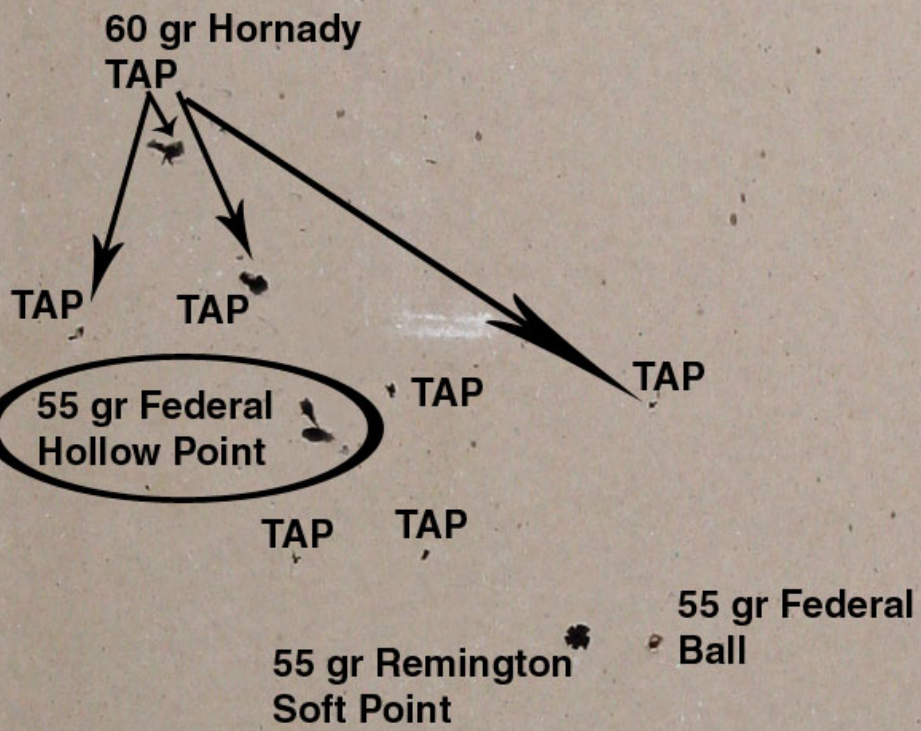
**60 gr Hornady
TAP**

**69 gr Federal
Hollow Point**

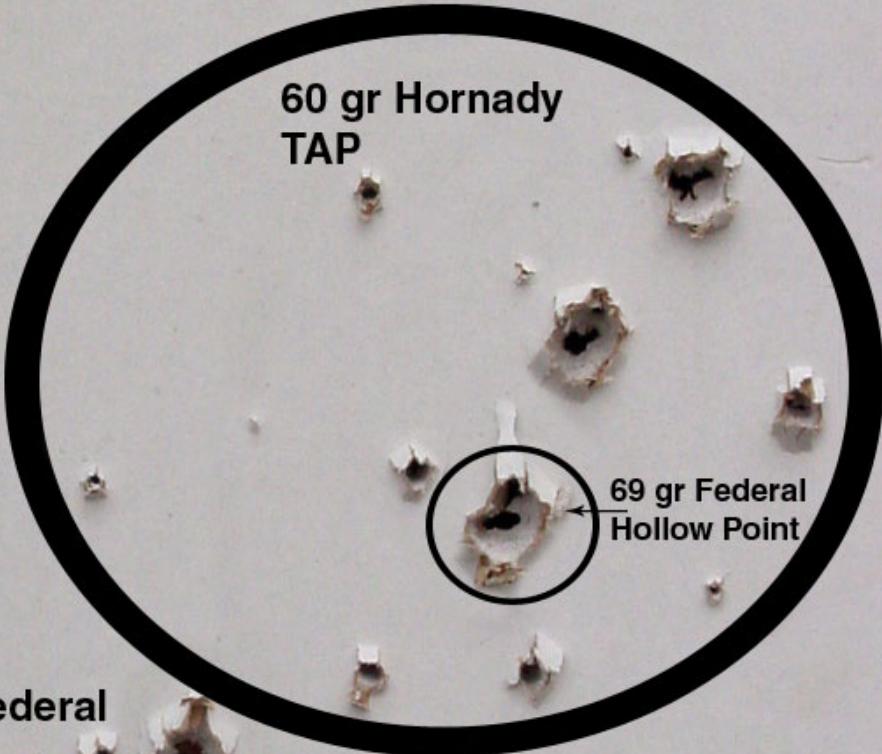
**55 Gr Federal
Ball**

**55 gr Remington
Soft Point**

Board #3
H&K G36 18.9" Barrel



Board #3 Back
H&K G36 18.9" Barrel



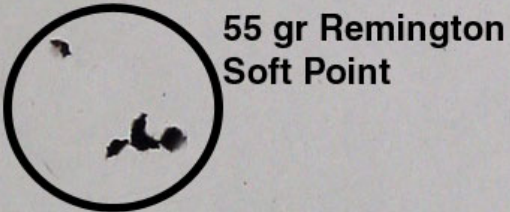
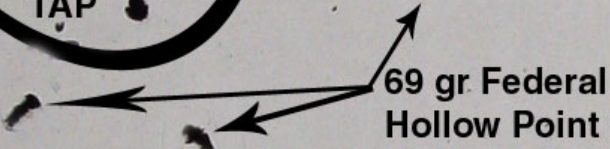
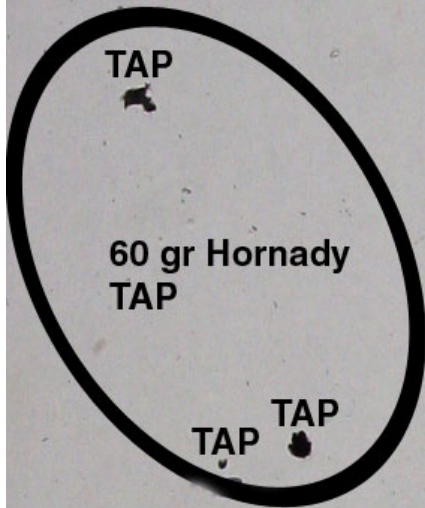
60 gr Hornady
TAP

69 gr Federal
Hollow Point

55 gr Federal
Ball →

55 gr Remington
Soft Point

Board #4
H&K G36 18.9" Barrel



55 gr Federal Ball

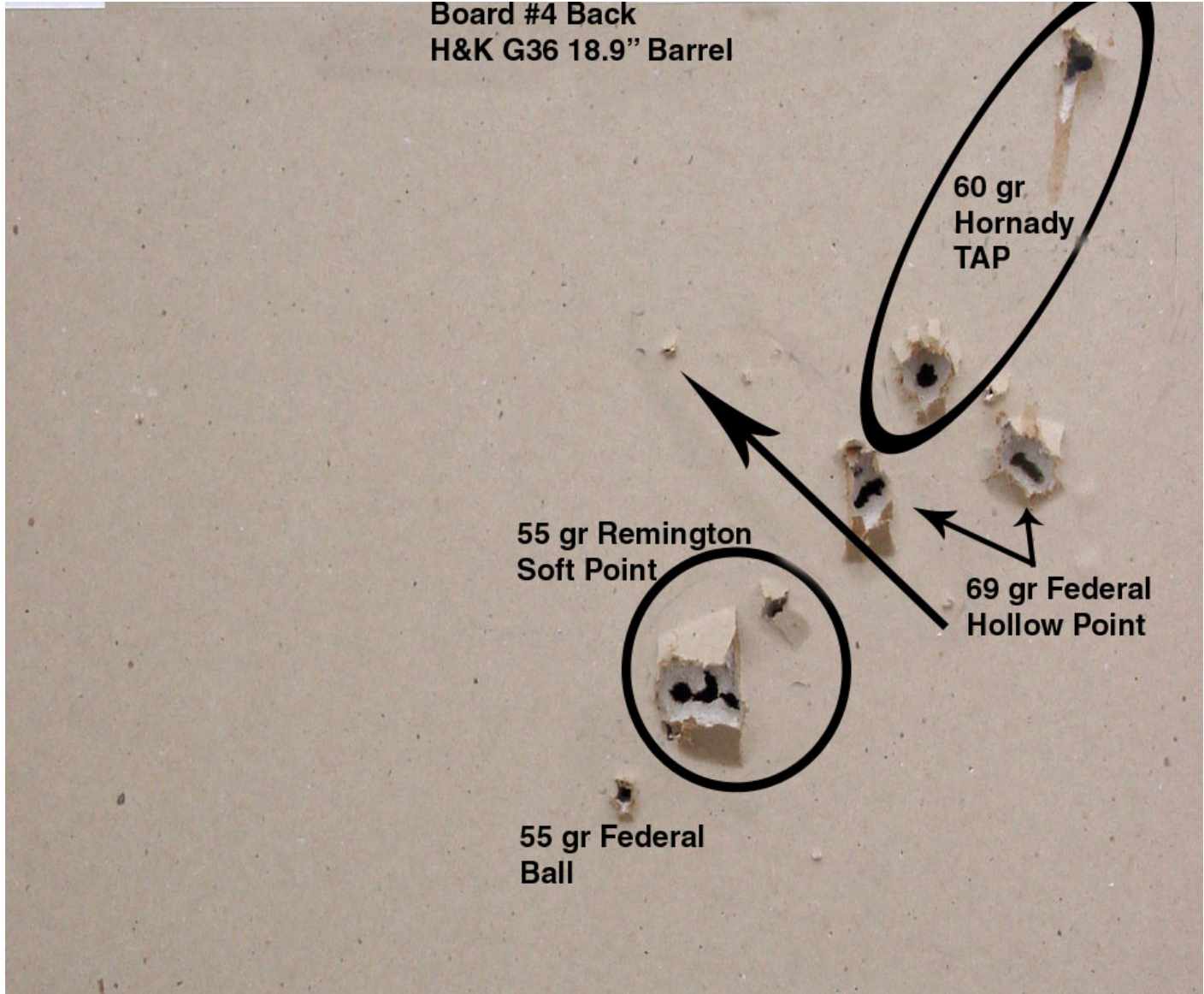
Board #4 Back
H&K G36 18.9" Barrel

60 gr
Hornady
TAP

55 gr Remington
Soft Point

69 gr Federal
Hollow Point

55 gr Federal
Ball



14" barrel – Colt AR15

55 gr. Federal Full Metal Jacket (Ball) (MV 2,911 fps)

This ball ammunition penetrated all four boards and was observed striking the impact berm 100 yards away from the test area. While the same ammunition appeared stable when fired from the 18.9" barrel, the slower velocity of the 14" barrel indicates tumbling as the projectile leaves the simulated wall. Board #3 shows the attitude (nose down). Board #4 (3 feet away) indicates the projectile was nose up on impact.

69 gr. Federal Jacketed Hollow Point (MV 2,604 fps)

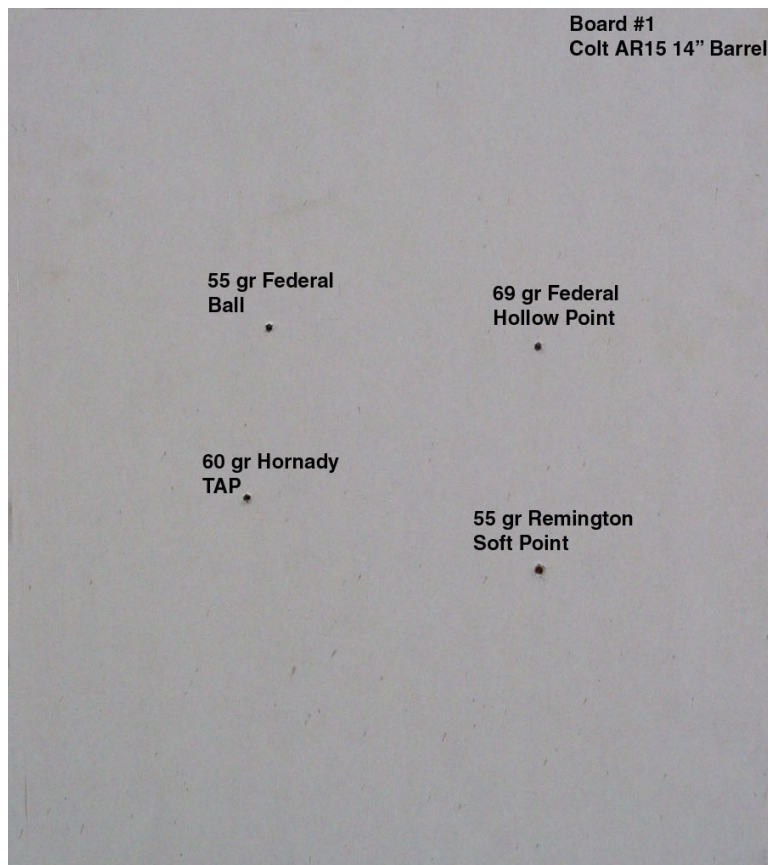
The hollow point penetrated all four boards. It appears stable as it exits the simulated wall and upon impact of Board #3. It appears to begin tumbling upon exiting Board #3 and is key holing upon impact of Board #4.

60 gr. Hornady TAP (MV 2,534 fps)

As with the faster 18.9" barrel, the TAP round is dialating while exiting the simulated wall. The impact on Board #3 shows a large jagged hole. The fragmentation seen with faster velocity from the 18.9" barrel is remarkably absent from Board #3. Board #4 reveals the fragmentation pattern of Board #3 with the 18.9" barrel.

55 gr. Remington Soft Point (MV 2,849 fps)

The soft point is obviously expanding while exiting the simulated wall (see Back of Board #2). Large jagged hole appears on impact of Board #3. Board #4 reveals fragmentation (2 pieces).



**Back of Board #2
Colt AR15 14" Barrel**

**69 gr Federal
Hollow Point**



**55 gr Federal
Ball**



**55 gr Remington
Soft Point**



**60 gr Hornady
TAP**



Board #3
Colt AR15 14" Barrel

**55 gr Federal
Ball**

(beginning to keyhole)

**69 gr Fedreal
Hollow Point**

**60 gr Hornady
TAP**

diameter larger than original

**55 gr Remington
Soft Point**

diameter larger than original

**Board #3 Back
Colt AR15 14" Barrel**

**69 gr Federal
Hollow Point**



**55 gr Federal
Ball**



**55 gr Remington
Soft Point**



**60 gr Hornady
TAP**



Board # 4
Colt AR15 14" Barrel

69 gr Federal
Hollow Point

keyholing

55 gr Federal
Ball

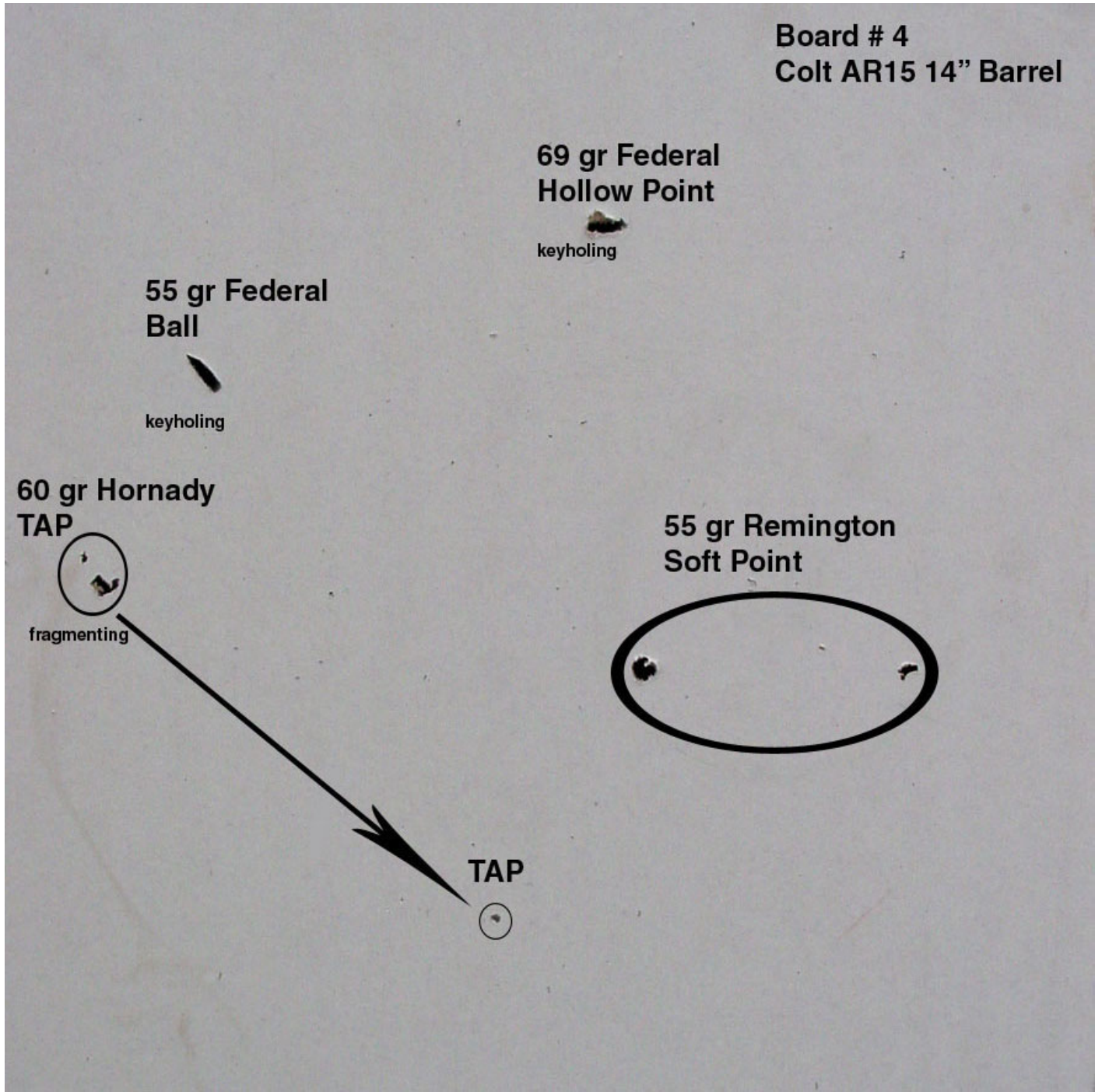
keyholing

60 gr Hornady
TAP

fragmenting

55 gr Remington
Soft Point

TAP



Board #4 Back
Colt AR15 14" Barrel

69 gr Fedreal
Hollow Point

TAP

keyholing

55 gr Federal
Ball

TAP

keyholing

60 gr Hornady
TAP

TAP

TAP

55 gr Remington
Soft Point

TAP

TAP

TAP

