EXHIBIT 27

Data Analysis of .223 Caliber Ammunition

Penetration Capabilities of Law Enforcement Ammunition

This presentation consists of data accumulated from the FBI's "Weapons Selection" test, San Diego County Sheriff's Department's "Structural Penetration Testing" and the Drug Enforcement Administration's "Construction Material Test" and is use with their permission

Purpose of ATF's Presentation

- Simplify data currently circulating in the Law Enforcement Community
- Dispel myths about ammunition
- Allow informed decisions of ammunition choice
- Facts of Ballistic superiority

Basic Terminology

- **Ballistics**
- **Terminal Ballistics**
- **Effective Penetration**

Ballistics

- The science dealing with the motion and impact of projectiles

Terminal Ballistics

- How the projectile reacts once it hits an object
- The projectile's effect on the object

Effective Penetration

- 12 - 18 inches
- Less than 12 inches, unlikely to reach vital organs from some angles
- More than 18 inches, unlikely to damage additional vital organs

Consideration of Under Penetration

- Failure to incapacitate subject
- Subject may cause injury to Agents and innocent parties

Consideration of Over Penetration

- Exits subject's body and wounds others
- Some projectile's penetration can be increased as a result of penetrating through an intervening barrier (plywood, dry wall, steel)

Ammunition and Weapon Consideration

- Operational use
- Ballistic Superiority
- Threat to Innocent Parties

Considerations for Operational Use

- A number of ATF arrests involved arrests take place in and around vehicles or making entry into residences
- Vehicles provide cover and concealment for agents and suspects
- Interior and exterior walls of a residence provide cover and concealment
- There is an increasing number of suspects using body armor

Ballistics Superiority

- Shotgun (slug) and rifle/carbines are always ballistically superior to other choices
- Handguns and subguns have similar ballistics
- Shoulder weapons are tactically superior
- Use of shoulder weapons will increase hit probability

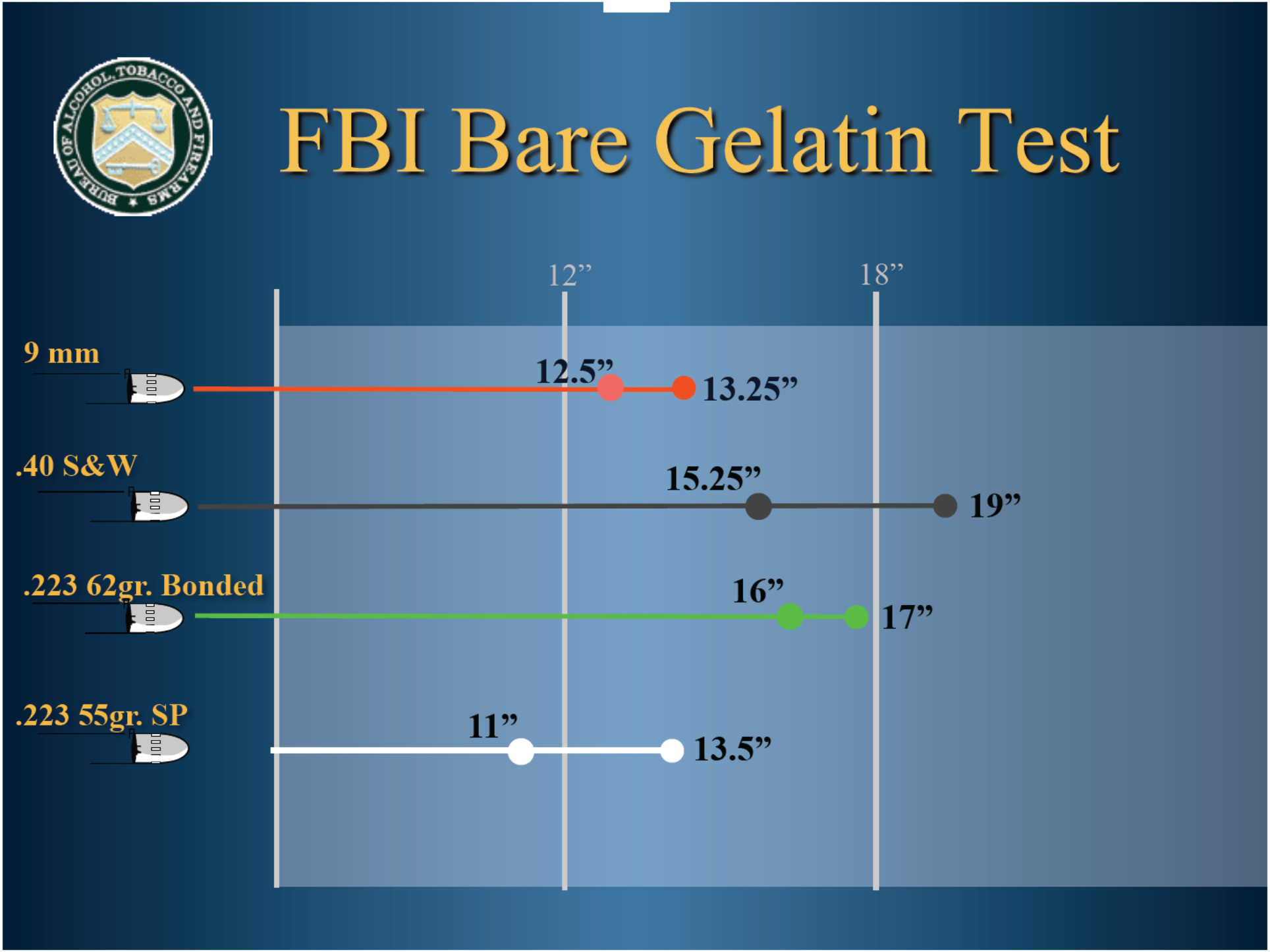
Threat to Innocent Parties

- Approximately 80% of rounds fired in Law Enforcement shootings miss the intended target according to FBI static's
- All missed shots will eventually hit something
- It is believed that the use of a shoulder weapon will increase hit probability
- What happens next will depend on the projectile and what it hits

How far will a projectile travel before it falls 60 inches to the earth?

- **This calculation is based on the assumption that an average person would fire a weapon from a height of 60 inches, Center mass to a target at the same height.**

– 870 Shotgun - 12ga. Slug	200 yards
– MP5 - 9mm	200 yards
– M-4 - .223cal.	500 yards

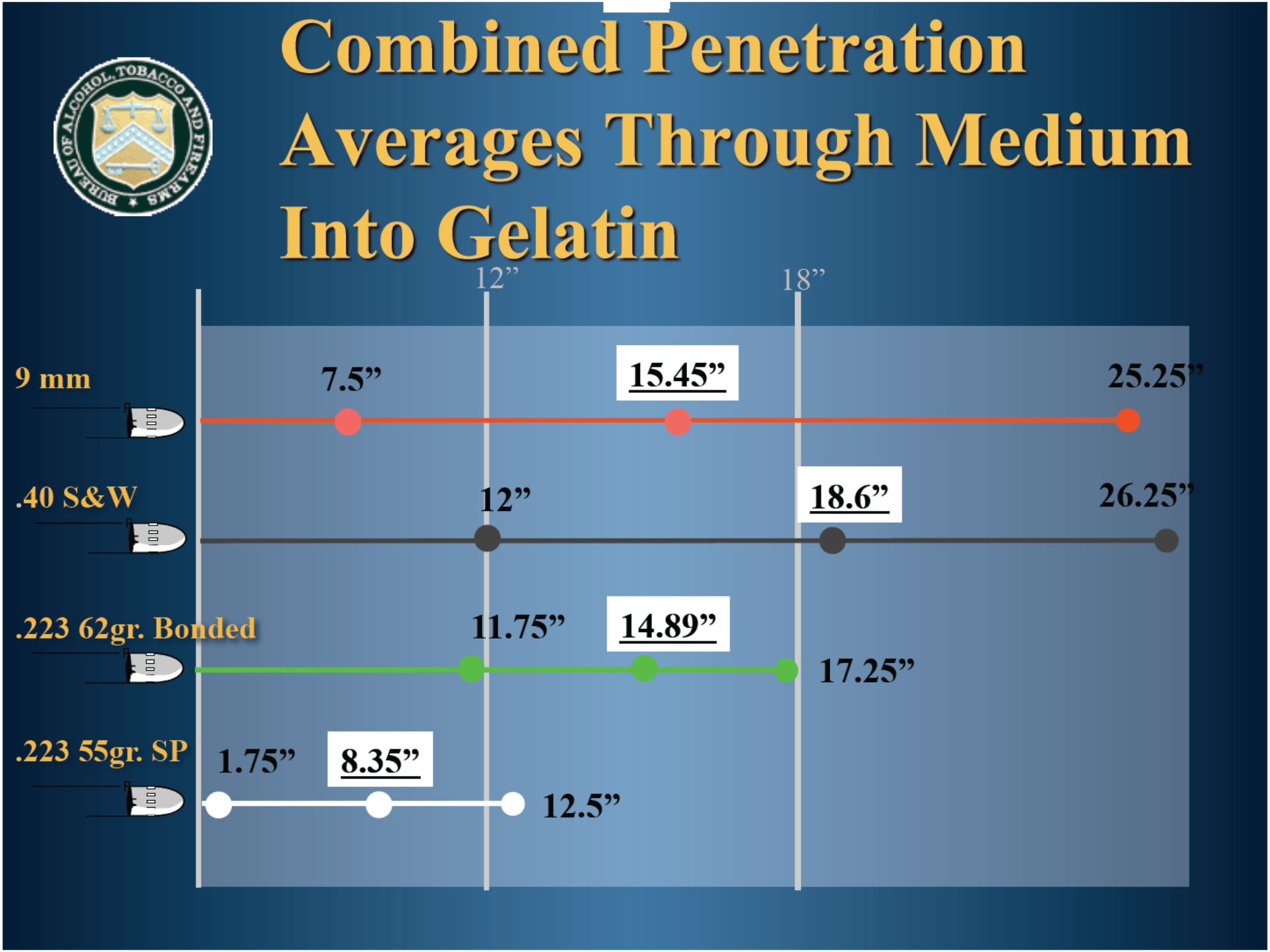

FBI Bare Gelatin Test
12”
18”
9 mm
12.5”
13.25”
.40 S&W
15.25”
19”
.223 62gr. Bonded
16”
17”
.223 55gr. SP
11”
13.5”

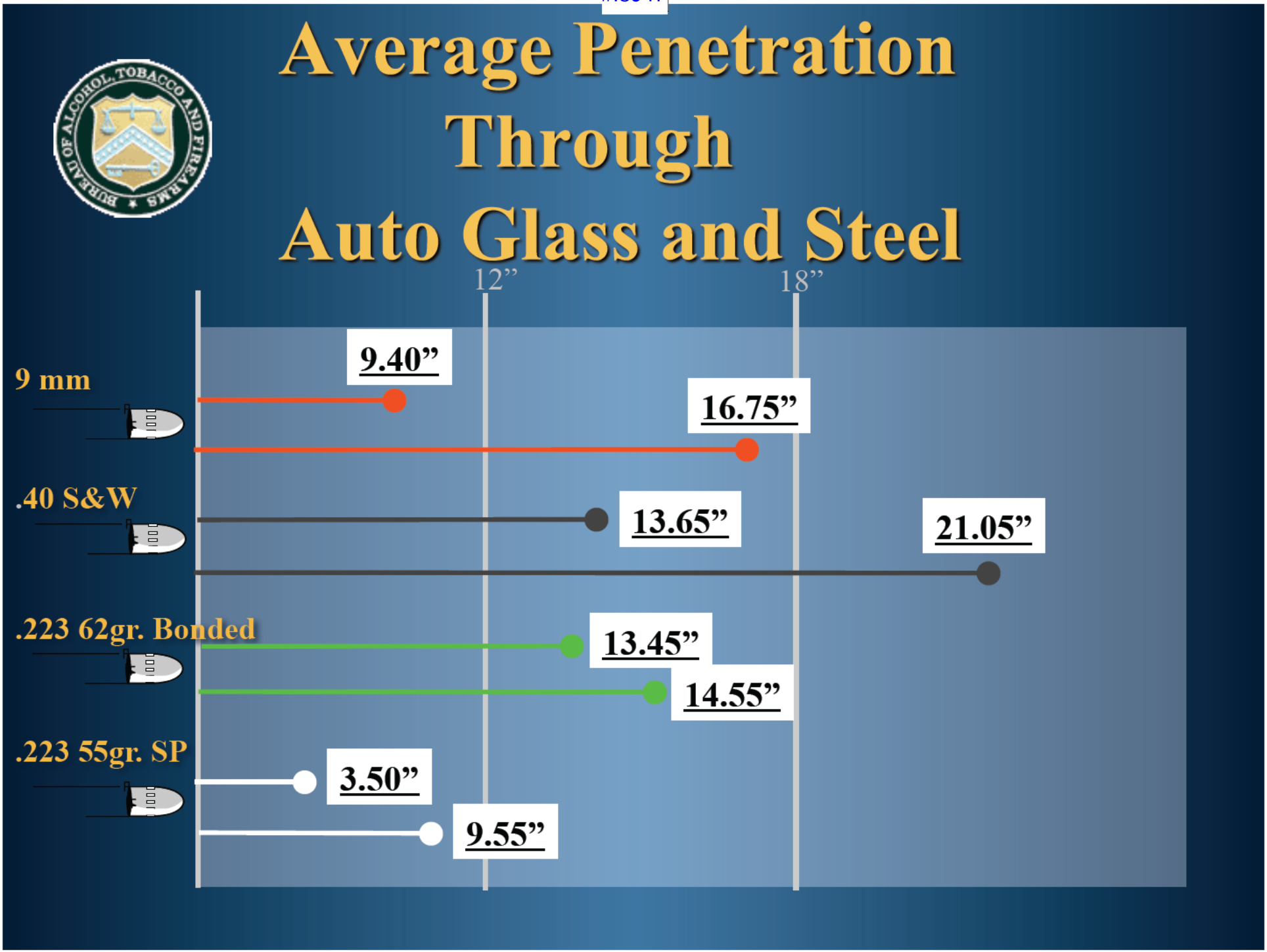
Penetration Tests

- FBI penetration test
- San Diego penetration test
- DEA penetration test

FBI Penetration Test

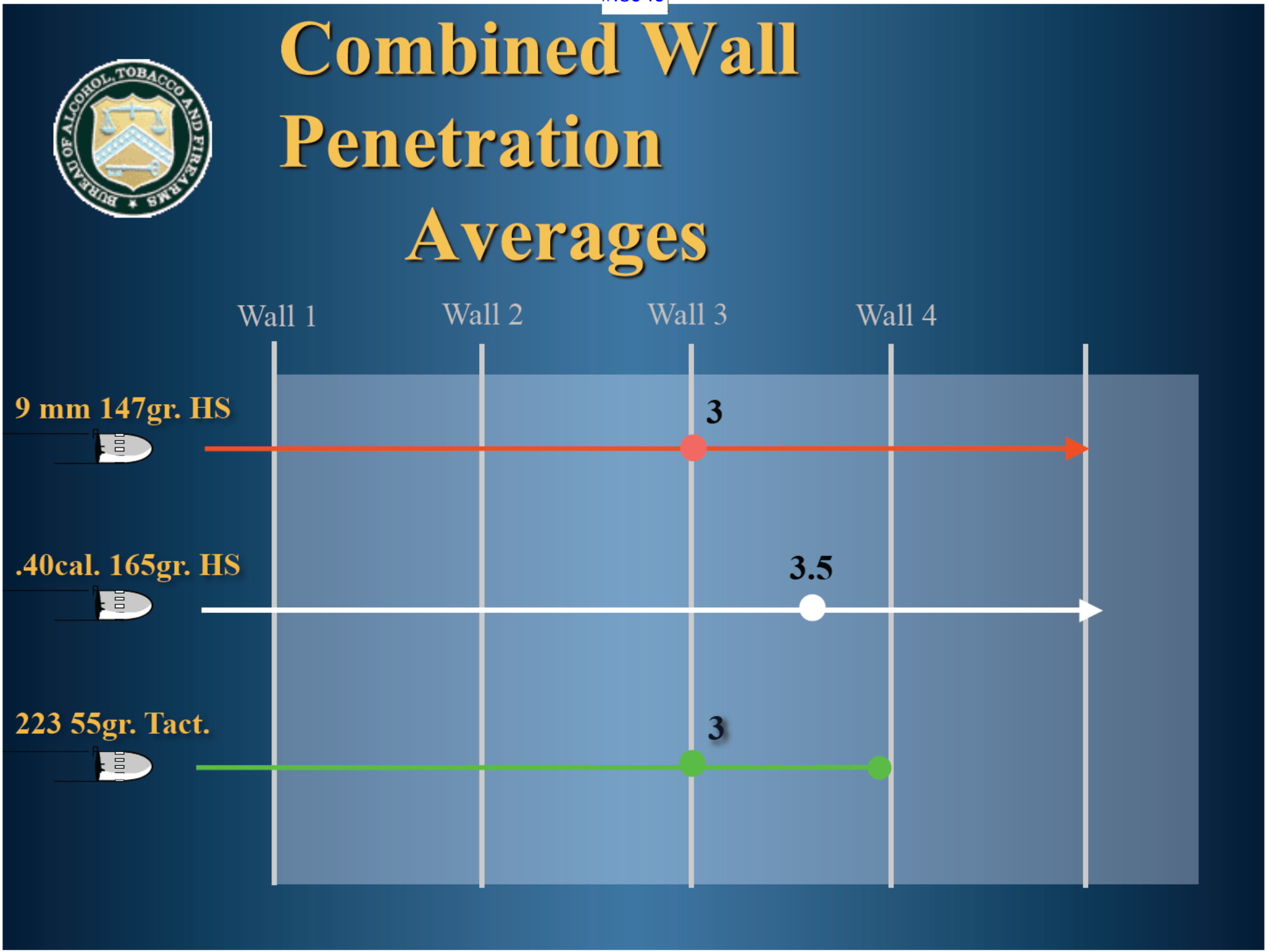
- Consisted of firing through a variety of different material barriers into ballistic gelatin
- Barrier Materials
  - Steel car door
  - Automobile glass
  - Plywood
  - Drywall
  - etc.


Combined Penetration Averages Through Medium Into Gelatin
12”
18”
9 mm
7.5”
15.45”
25.25”
.40 S&W
12”
18.6”
26.25”
.223 62gr. Bonded
11.75”
14.89”
17.25”
.223 55gr. SP
1.75”
8.35”
12.5”


Average Penetration Through Auto Glass and Steel
12”
18”
9 mm
9.40”
16.75”
.40 S&W
13.65”
21.05”
.223 62gr. Bonded
13.45”
14.55”
.223 55gr. SP
3.50”
9.55”

San Diego Wall Penetration Test

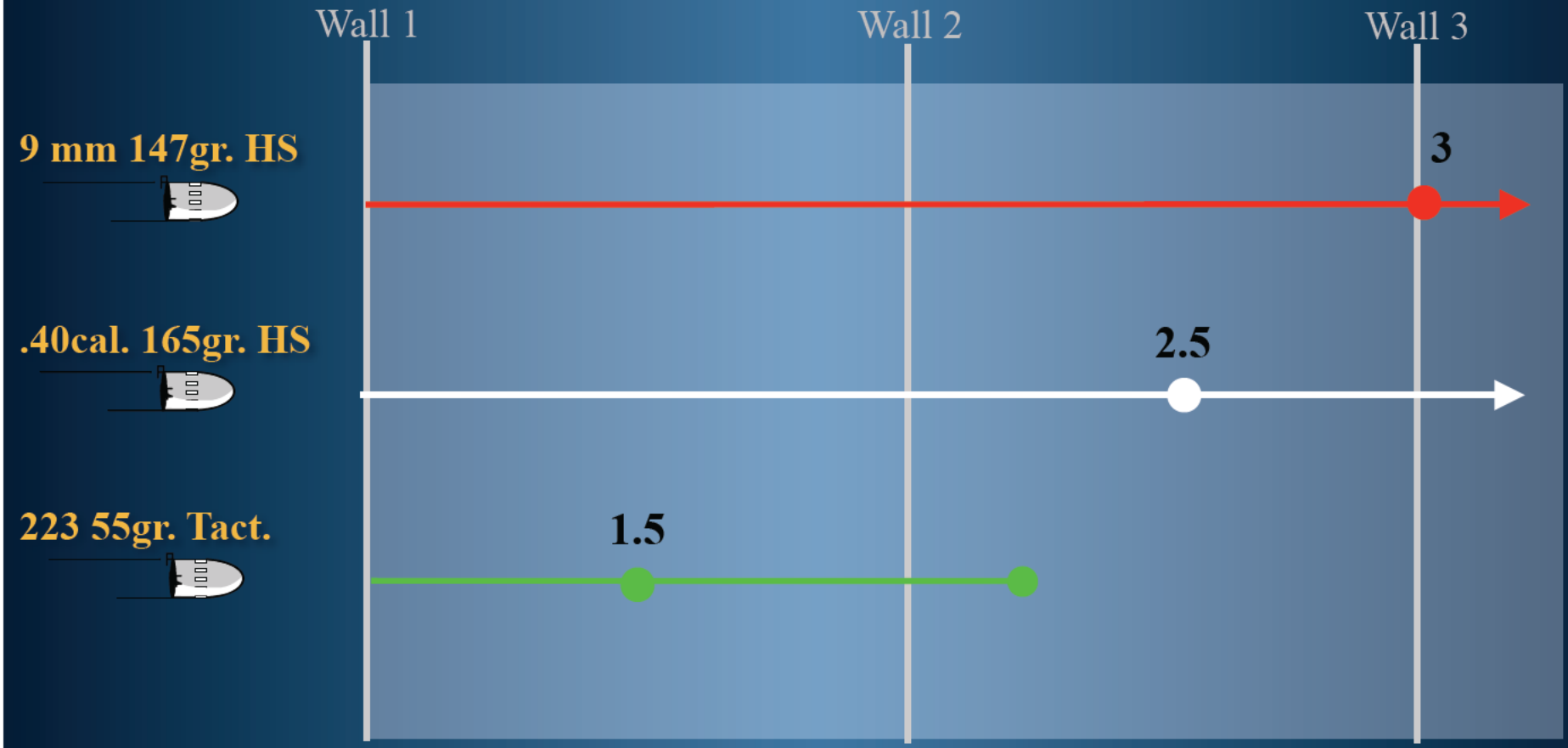
- Consisted of firing rounds through 4 walls approximately 5 yards apart. The walls were constructed of various materials to include:
  - 1/2” Wood Siding
  - Stucco material
  - Insulation
  - 1/2” Gypsum
  - Cinder block


Combined Wall Penetration Averages
Wall 1
Wall 2
Wall 3
Wall 4
9 mm 147gr. HS
3
.40cal. 165gr. HS
3.5
223 55gr. Tact.
3

DEA Wall Penetration Test #1

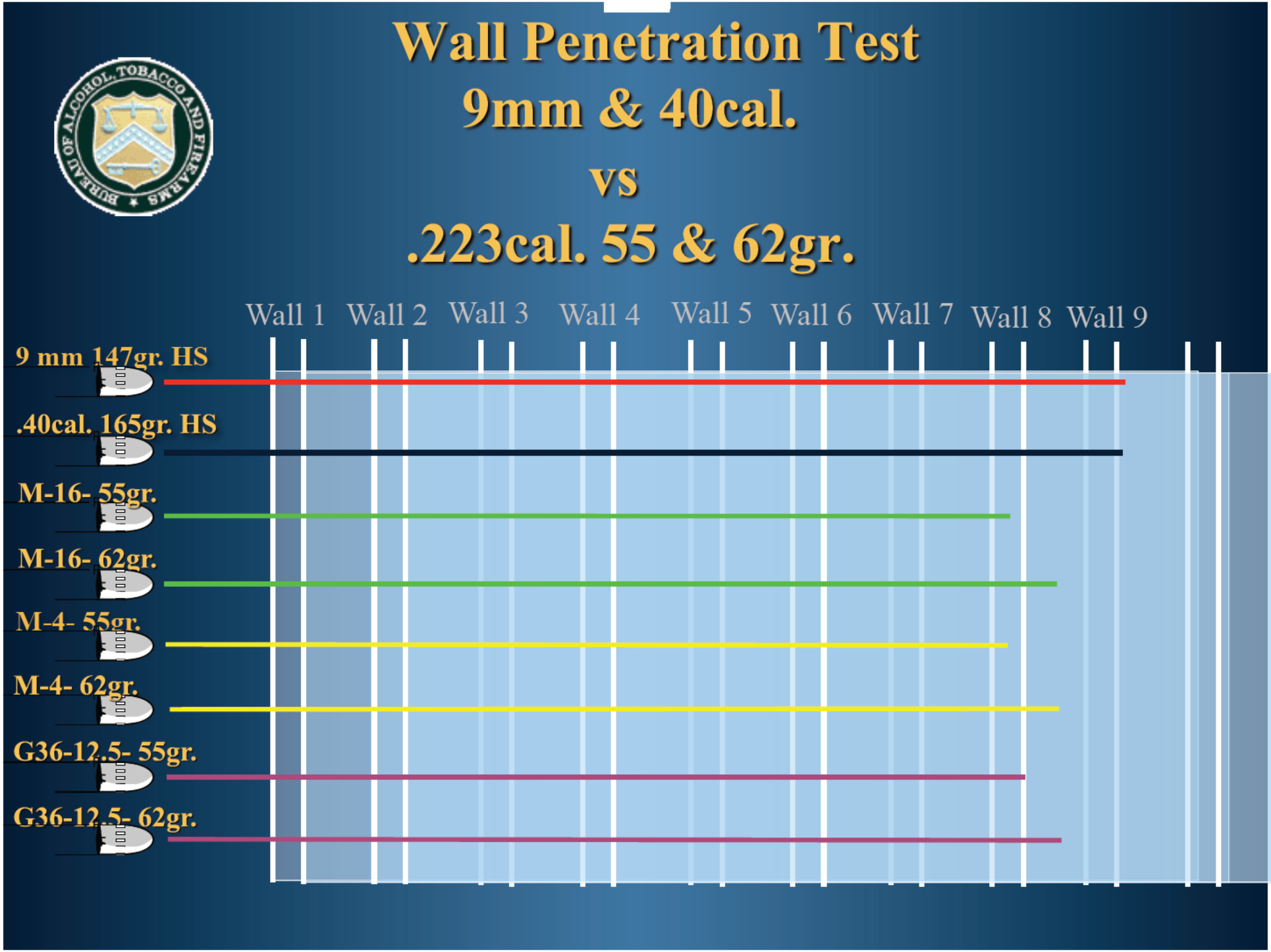
- Consisted of firing rounds through 3 walls approximately 2 yards apart.
- Wall #1 was constructed of:
  - 1 sheet of 1/16" plastic siding
  - 2 sheets of 7/16" plywood
  - 1 sheet of 9/16" hard insulation
  - 2" of soft insulation
  - 1 sheet of 1/2" drywall
- Walls # 2 and #3 were constructed of:
  - 2 sheets of 7/16" plywood
  - 2 sheets of 1/2" drywall
  - 2" of soft insulation

Combined Wall Penetration Averages

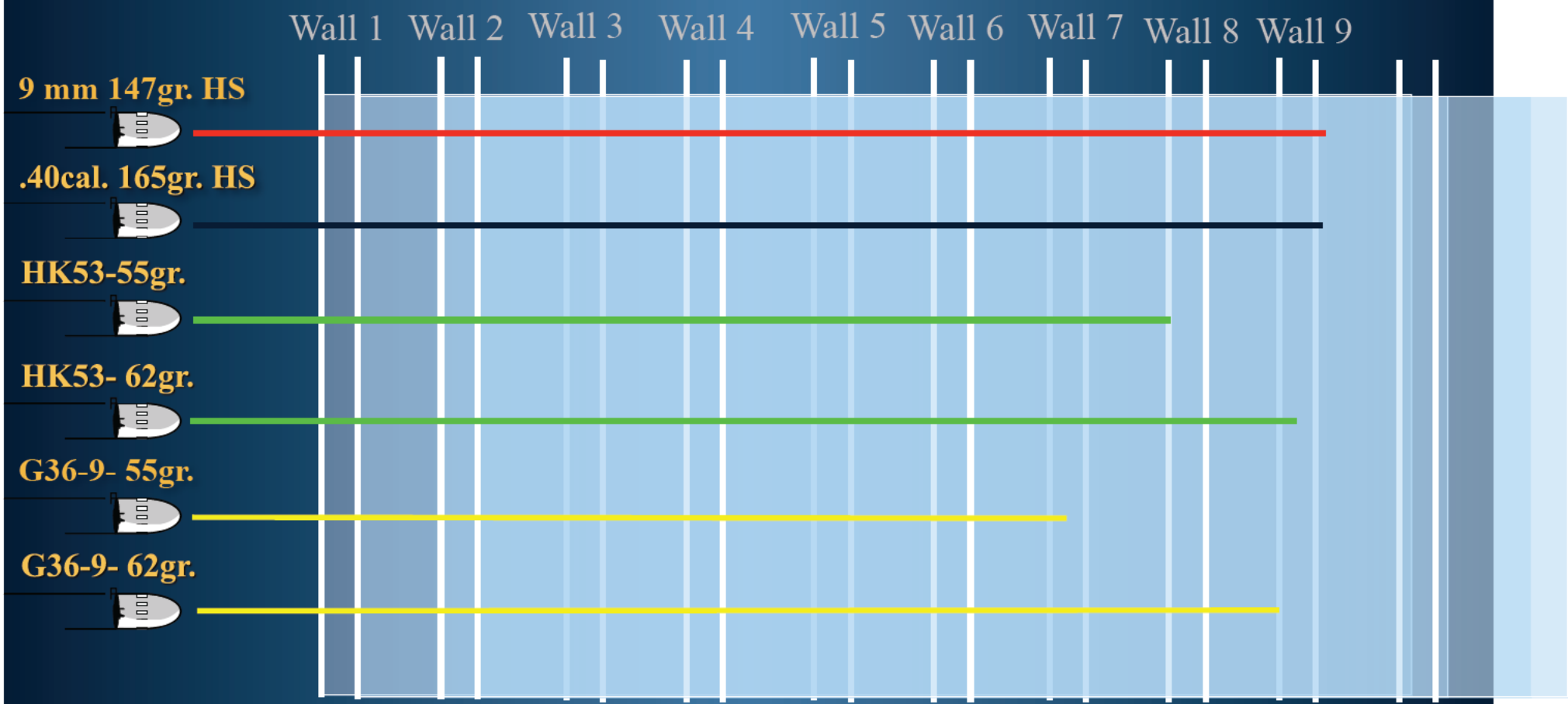


DEA Wall Penetration Test #2

- Consisted of firing rounds through 9 walls approximately 4 yards apart.
- Walls #1 - #8 were constructed of:
  - 2 sheets of 1/2” drywall, this simulates the construction of an interior wall of a residence
- Wall # 9 was constructed of:
  - 1 sheet of 1/2” drywall
  - 1 sheet of 7/16” plywood
  - 3” soft insulation
  - 9/16” hard insulation
  - 1/16” plastic siding, this simulates the construction of an exterior wall of a residence


Wall Penetration Test
9mm & 40cal.
vs
.223cal. 55 & 62gr.
Wall 1
Wall 2
Wall 3
Wall 4
Wall 5
Wall 6
Wall 7
Wall 8
Wall 9
9 mm 147gr. HS
.40cal. 165gr. HS
M-16- 55gr.
M-16- 62gr.
M-4- 55gr.
M-4- 62gr.
G36-12.5- 55gr.
G36-12.5- 62gr.

Wall Penetration Test Continued



Results of Data for ATF's Mission

- **Weapon of choice**
  - ✓ Colt M4