U.S. Coast Guard .40 Caliber Ammunition

Presented by:

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.40 Caliber Ammunition

History

- .40 S&W was introduced in the late 1980’s as a law enforcement cartridge
  - Developed jointly by Winchester and Smith & Wesson
  - Testing revealed that a reduced velocity 10mm cartridge achieved desired terminal performance
    - Less powder
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Transformation

- Less recoil than conventional 10mm ammunition
- More airspace in the cartridge case
- 10mm case could be shortened enough to fit within the medium-frame handguns
- Small pistol primer replaced the large pistol primer used in the 10mm cartridge
- New cartridge developed – 40 S&W
Requirement

- Department of Homeland Security chose .40 caliber as the common carry pistol.

- Sig Sauer P229 & P239 were chosen as the replacement service pistols of the USCG.
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Requirement (continued)

- USCG initially procured commercial ammunition to support new service pistol
- USCG directed NSWC Crane to obtain full type qualification for 3 cartridge types
  - 155 grain ball
  - 155 grain jacketed hollow point
  - 155 grain frangible
Performance Requirements

- Performance requirements developed around the performance of commercial rounds procured by USCG
  - SAAMI dimensional requirements
  - Standard small pistol primer (Ball & JHP)
  - Non-toxic primer (Frangible)
  - Pressure & velocity - SAAMI
  - Accuracy – 1.5” average mean radius @ 25 yards, Ten 5-shot groups, ransom rest
  - Waterproof (Ball & JHP) – bubble test
Performance Requirements (continued)

- Function – P229 & P239
- Penetration – JHP
  - Bare gelatin @ 10’ & 25 yards
  - Gelatin with 4 layers of clothing @ 10’
  - Autoglass @ 10’, gelatin with 2 layers of clothing placed 18” behind glass
    - Top edge of the glass will be tilted back 45° from vertical and angled 15° from the pistol’s line-of-sight
  - Simulated car door @ 10’, gelatin with 2 layers of clothing placed 18” behind door

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Performance Requirements (continued)

- Penetration – Frangible
  - 3/8” AR500 steel plate @ 5’, 50 shots into ½” diameter impact area shall not penetrate and no fragments shall return to the shooters position
  - Type II Body Armor @ 15’, 3 shots shall not penetrate, greater than 2” from previous shot, greater than 3” from edge
- Ballistic match (Frangible) – center of impact less than 2-1/2” from center of impact of standard ball ammunition (MK 309 MOD 0)
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Solicitation for Contract

- Full and open competition
  - All 3 cartridge types
- $15M 5 year IDIQ contract awarded to Federal Cartridge Company for Ball & JHP cartridges
Solicitation for Contract (continued)

- No contract award for 155 grain frangible cartridge
  - No samples met specification requirements
  - Frangible projectiles are larger than ball projectiles of the same weight due to varying material densities
  - Unable to meet the required velocity and ballistic match with 155 grain frangible projectile
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.40 Caliber Ball
MK 309 MOD 0
DODIC: DWGX
NSN: 1305-01-550-0179
.40 Caliber JHP
MK 308 MOD 0
DODIC: DWGW
NSN: 1305-01-548-6279
## .40 Caliber Ammunition

### Terminal Performance

<table>
<thead>
<tr>
<th>Cartridge</th>
<th>Average Depth of Penetration</th>
<th>Average Maximum Fracture Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>9mm JHP - 115 grain</td>
<td>9.3&quot;</td>
<td>3.0&quot;</td>
</tr>
<tr>
<td>9mm JHP - 147 grain</td>
<td>12.5&quot;</td>
<td>2.1&quot;</td>
</tr>
<tr>
<td>.40 Caliber JHP - 155 grain</td>
<td>10.3&quot;</td>
<td>3.2&quot;</td>
</tr>
<tr>
<td>.45 ACP JHP - 230 grain</td>
<td>13.7&quot;</td>
<td>2.0&quot;</td>
</tr>
</tbody>
</table>
Current Ball & JHP Status

- Completed Life Cycle Series Testing
  - 28 day temperature & humidity, transportation vibration, shipboard vibration, 4 day temperature & humidity, 40-foot drop
- Completed Safety Testing
  - 5-foot drop, transportation handling, shipboard shock
- Completed Environmental Testing
  - High temp storage, low temp storage, temp shock, aggravated humidity
- Completed post hazard testing
  - Pressure, velocity and function

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Current Ball & JHP Status (continued)

- Currently preparing Final Letter Data Package for full qualification of the cartridges
- Fielded via Limited Release
- Current users
  - USCG
  - Naval Criminal Investigative Service
Current Frangible Status

- No bid samples met requirements on initial solicitation
- Specification revised
  - 115 grain minimum projectile weight
  - Accuracy requirement modified
    - 4” SAAMI test barrel
    - Ten 5-shot groups @ 50 yards
    - 4.5” maximum individual extreme spread
    - 3.5” maximum average extreme spread
Current Frangible Status (continued)

- New solicitation
  - Full and open competition
  - Approximately $10M
  - Product bid samples currently being tested:
    - Pressure, velocity, accuracy, function, penetration and ballistic match
- Anticipate contract award late FY11
Questions?