152mm Demilitarization

Demilitarization of 152mm TP-T
&
Canister (Flechette) Projectiles
at
Tooele Army Depot

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152mm Demilitarization

- Scope of Project
- Description
- History
- Challenges/Solutions
Demil Scope

- Two Basic Types of Projectiles
  - M411 Series TP-T
  - M625 Series Canister (flechette)

- R³ (Resource Recovery, Recycle) Operation
  - Recover Steel & Aluminum from Projectile
  - Recover Propellant (Sold to Commercial Firm)
Remove All Energetics
- Propellant
- Nitrocellulose Case
- Tracer Element on TP-T round

Deform/Demil Projectile Body
US Army identified a need for armored reconnaissance vehicle for use by airborne units.

- Counter to Soviet Bloc PT76
- Air Transportable
- Amphibious
- AT & AP capability
M551 “Sheridan” AR/AAV (Armored Reconnaissance/Airborne Assault Vehicle) – fielded 1967

- Lightweight; aluminum hull & steel turret.
- Amphibious (with hull skirt)
- M81 152mm Launcher developed to give effective anti-tank capability, yet save weight & space as compared to the 90mm & 105mm guns used on M48/M60 series MBTs.
  - Dual capability
    - Fires conventional projectiles for use in AP and close range AT situations
    - Fires Shillelagh AT missile for use in long range anti-armor, “bunker busting” etc.
Sheridan used in Viet Nam to replace M48 Patton tank in Cavalry units.

Also used in Panama, and Operation Desert Shield/Desert Storm

M551 last used by 82nd Airborne.

"Caseless" 152mm round was developed.

First Successful use of "Caseless" Cannon Projectile

★ Saves weight

★ Eliminates empty shell cases inside vehicle

Used in both AT and AP applications

Sheridan and 152mm round removed from service in 1997
M411 TP-T Round

- DODIC D383
- 30,700 Qty Demilitarized
- Steel projectile
  - Mixed M411A1/2/3 & M411 less Spotting Charge
- Aluminum Lock Ring screwed onto base
  - Holds cartridge case to base of Projectile
- M13 Tracer
  - Steel tracer cup cemented into cavity in base
  - Aluminum foil disk and retainer screwed over tracer
M625 Canister Round

Description

✓ DODIC D390
✓ 14,700 Qty Demilitarized
✓ Inert aluminum projectile w/ crimped on steel “lid”.
   ➢ 10,000 1 ½” Flechettes in each round
   ➢ Aluminum & Steel Flechette “Bays” (Collars) inside canister
TP-T Challenges

- Deform Projectile
- Remove Tracer
- Remove Lock Ring
Removing Lock Ring with APE 1002
- Base of round prevented complete access
- Fixture could not remove cemented Lock Ring

Removing Lock Ring with Cable Shear
- Base of round prevented adequate access
- Hard to center shear on ring – could easily slip off
- Frequent replacement of cutters due to cutting into steel at base
Cutting base of projectile with powered saw

- Time-consuming
- Projectile base still had cartridge case “bowl” attached, requiring additional operation
- Too large to demil in APE 1236 furnace
TP-T Remove Lock Ring--
What Didn’t Work

✅ Use Air Chisel to Drive Lock Ring Off

➢ Feasible, but time-consuming
➢ Hard on operator
  ● Potential Repetitive Motion injuries
  ● Increased safety risk
Removing Lock Ring with Non-standard APE Lock Ring Cutter.

Used with modified Rocket Shear to deform projectile.
TP-T Remove Tracer

What Didn’t Work

✓ Unscrew Tracer Retainer & Pull out Tracer
   ➢ Retainer glued in; broke removal tools

✓ Using open burn pan and bulk propellant to burn off cartridge case bowl & ignite tracer
   ➢ Labor Intensive
   ➢ Cartridge case “bowl” merely charred under retainer; remained relatively intact
   ➢ Tracer did not burn, even with foil ruptured.
Removing Tracer with Non-standard APE Drillout Machine

What Did Work

☑️ Removing Tracer with Non-standard APE Drillout Machine
Canister Challenges

- Deform Projectile
- Remove Flechettes
Canister Remove Flechettes & Deform Projectile

What Didn’t Work

✔ Use Shear to “Pop” Lid off
  ➢ Deformed end of canister
    • Lid didn’t come off completely; had to be pried off
    • Flechettes couldn’t come past deformed opening

✔ Use “Can Opener” Style Hand Tool
  ➢ Time-consuming
  ➢ High Potential for Repetitive Motion Injury

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Canister Remove Flechettes & Deform Projectile

What Did Work

✓ Cut Base off Canister with Circular Cutter

✓ Flechettes dumped out and collected

✓ Cases & Flechette Bays Dumped into Scrap Container
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