Advanced Light Armament for Combat Vehicles (ALACV) Program Status

Presented at the 38th Annual Gun and Ammunition Symposium by Gary Moshier TACOM-ARDEC
BACKGROUND:
- ARDEC STO
- FY00-FY03
- Total Funding: $7.73M
- FY03 Funds: $2.2M

GOALS:
- 30% Improvement in KE Behind Armor Effects
- 400% Improvement in Lethal Area for Air Bursting Munitions
- TRL 6 by end of FY03
- CALIBER: Super 40
ICV Lethality Requirements

- Provide Protected Transport for a 9-Man Squad with Equipment
- Identify and Defeat Enemy Infantry at 1500m (T), 2000m (O)
- Identify and Defeat Light Armored Vehicles at 1500m (T), 2000m (O)
Super 40 or “Lightweight 40” Concept

- Larger Projectile
- Additional Propellant

- Compatible with Mk44 w/ Barrel Change
- Provides Built-In Growth from 30mm to Super 40
- Same Round Stowage as 30mm
- Significant AB Performance Gain
- Modest AP Performance Gain
- Super 40 Development Initiated within ALACV Program
Why the Mk44 / Super 40 System?

Results of Medium Caliber Armament Study (MCAS) and Lethality IPT Study

- Highest Kills per Stowed Load Lethality (Super 40)
- Second Lowest System Weight (25mm is Lowest)
- Least Cost System
- Lowest Risk (Mk44 and 30mm Ammo are in Production)
- Super 40 Growth Potential
- In Service with USMC, US Navy, Norway, Finland and Switzerland
Joint Service Opportunities with the Mk44 Super 40 System

- Mk44 30/40 Gun in Production for AAAV and US Navy
- Armament for AAAV, LPD-17 Class Ship, RAMICS and Possible use on AC-130 Gunship
- Approximately 1000 Systems to be Produced
- 30mm Defeats Current USMC Threat Array
- Super 40 is Growth Path
- USMC Willing to Partner with the Army on Super 40
ALACV Development “Team”

- Cartridge Case: GDOTS/Santa Barbara
- Propulsion System: GDOTS
- Turned Count Electronics: ATK
- Safe & Arm: CCAC Fuze Division
- Warhead: WECAC/CCAC
- Explosive: ATK
- Projectile/Trace: CCAC/GDOTS

- Mk44 Weapons: ATK GSC and PM AAAV
- Target Assessments: ARL, AMSAA and PM AAAV
- Telemetry: FSAC
- Adv. Algorithm: ARL Adelphi
- Tungsten Rods: AOT
- Demonstration Testing: ATC
Super 40 AB-T Development

- **Warhead Development**
  - Gen I: 250% Improvement Demonstrated
  - Gen II: 300% Improvement Estimated
  - Gen III: +400% Improvement Expected

- **Fuze Development**
  - ATK, GDOTS and Oerlikon 30mm AB Fuzes Demonstrated 6-7 Nov 02 at APG

- **AB Cartridge**
  - TP-Ts Fired from both Mann Barrel and Mk44 Autogun
  - Approximately 260 Rounds Tested to Date
Super 40 APFSDS-T Development

- Advanced Penetrator Development
  - NOVEL: 30% Improvement at up to 56% Range
  - ENLE: 30% Improvement at up to 87% Range
  - ENLE w/MIC: Plus 30% but Target Specific
- APFSDS-T Rounds w/ Monolithic Core
  - Approximately 150 Rounds Fired to Date
  - Fired from both Mann Barrels and Mk44 Autogun
  - Excellent Dispersion and Armor Penetration
  - Demonstrated at APG 6-7 Nov 02
ALACV Accomplishments

- Medium Caliber Armament Study (MCAS) Completed
- Successful Testing of NOVEL and ENLE Penetrators
- Super 40 AP and AB (Inert Warhead) Rounds Successfully Fired from Mk44 cannon
- Super 40 TP-T and APFSDS-T Rounds Successfully Fired at 6-7 Nov 02 Demonstration at APG
- Low Profile Turret Study Conducted
- ALACV Follow-On Program Proposal Initiated
Application to FCS ICV

- Mk44 Super 40 Leading Candidate for ICV
- Lightweight Low Profile Turret Concepts Initiated
- Armament Integration Issues Being Examined
Planned Activities

- Arena Testing of Gen III Warhead - Apr 03
- Continued Testing of ENLE Rods against Classified Targets - 3QFY03
- Super 40 AB-T Demonstration - Jul 03
- Continued Support to ICV Integration Efforts
- Follow-On Program Planning
ALACV Summary

- Super 40 Airburst and Advanced KE Developments Going Very Well
- Program On-Track to Complete all STO Requirements
- Super 40 AB Demo Planned for Summer 03
- Mk44 Super 40 Leading Candidate for ICV
- Follow-On Efforts in Planning Stages