Weapon Systems & Technology Directorate
Ben ét Laboratories

XM324 Non-Line of Sight Cannon
NLOS-Cannon

Chris Aiello
XM324 NLOS-Cannon

- **Objective:**
  - Design and Develop a lightweight armament for the FCS Non-Line of Sight Cannon (NLOS-Cannon) Platform
XM324 NLOS-Cannon

• Key Parameters:
  – 155mm, 38 Caliber Lightweight Cannon
    • High Strength Steel Alloy
    • Optimized for Minimum Tube Mass
    • Fires MACS Propellant (Zones 1 through 4)
    • Indexable Tube
  – High Rate of Fire
    • Thermal sensors embedded in the tube wall to monitor real time internal tube temperature
XM324 NLOS-Cannon

• Key Parameters:
  – Lightweight Screw Block Breech
    • High Strength Steel Alloy
    • New 6 Sector Design – Up Swing to Open

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- Key Parameters:
  - Minimize System Impulse
    - High Efficiency Multi-Vaned Muzzle Brake
    - ~33% Decrease in Impulse Transmitted to System
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• Modeling and Simulation:
  – Modeling of entire cannon performed with 3D Computer Aided Design Package
  • Drawings parametrically linked to models and assemblies
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- **Modeling and Simulation:**
  - Extensive use of modern analytical methods utilized during the design cycle
  - *Finite Element Methods – Structural Design*

**Comparative Breech Structural Analysis**

![Comparative Breech Structural Analysis Diagram]

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• Modeling and Simulation:
  • *Finite Element Methods – Dynamic Load Analysis*

Dynamic System Axial Response
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- Modeling and Simulation:
  - *Computational Fluid Dynamics – Muzzle Brake Optimization*

CFD of Brake During Firing
XM324 NLOS-Cannon

• Testing:
  – Live Firing at Yuma Proving Grounds
    • 44 Rounds Fired to date
    • Test Data indicates performance within expected ranges
  – Fatigue Testing
    • First Breech to begin cycling MAY 07
      – Second planned SEP 07
      – Interim Safe Fatigue Life DEC 07
    • First Tube planned FEB 08
      – Interim Safe Fatigue Life FEB 09
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Questions?