

***Weapon Systems & Technology Directorate
Benét Laboratories***



***XM324 Non-Line of Sight Cannon
NLOS-Cannon***



Chris Aiello

ARDEC



XM324 NLOS-Cannon



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



XM324 Cannon – SN001



XM324 Cannon Installed on
BAE System's Firing Platform

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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**

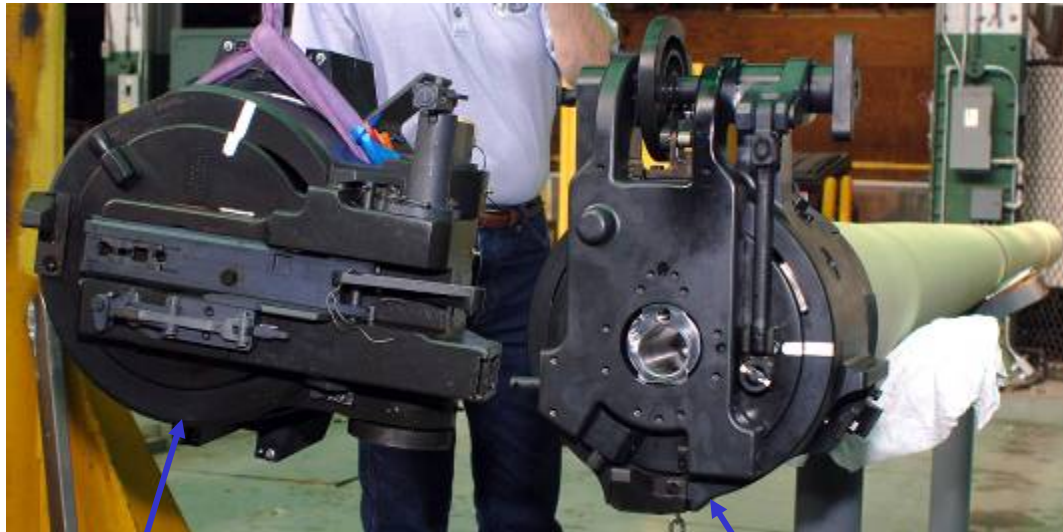
- *Thermal sensors embedded in the tube wall to monitor real time internal tube temperature*



XM324 NLOS-Cannon



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



[M776 Breech Mechanism Assembly](#)

[XM324 Breech Mechanism Assembly](#)



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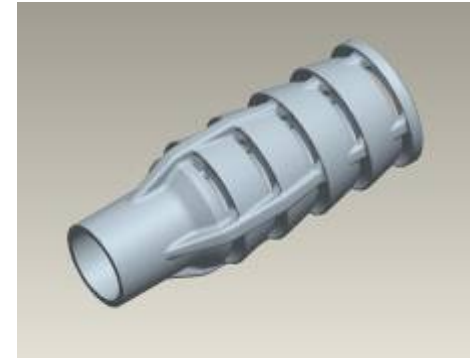
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- **Key Parameters:**
 - **Minimize System Impulse**
 - **High Efficiency Multi-Vaned Muzzle Brake**
 - **~33% Decrease in Impulse Transmitted to System**



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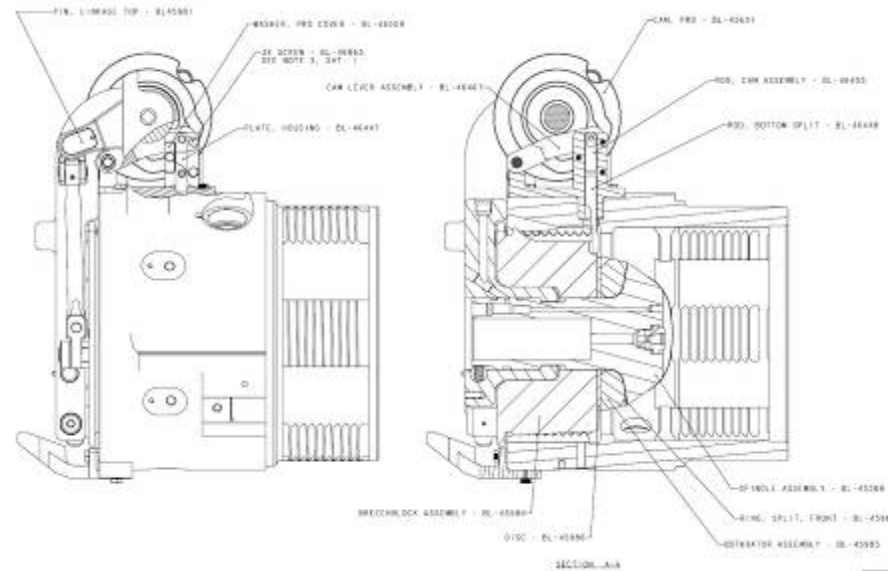
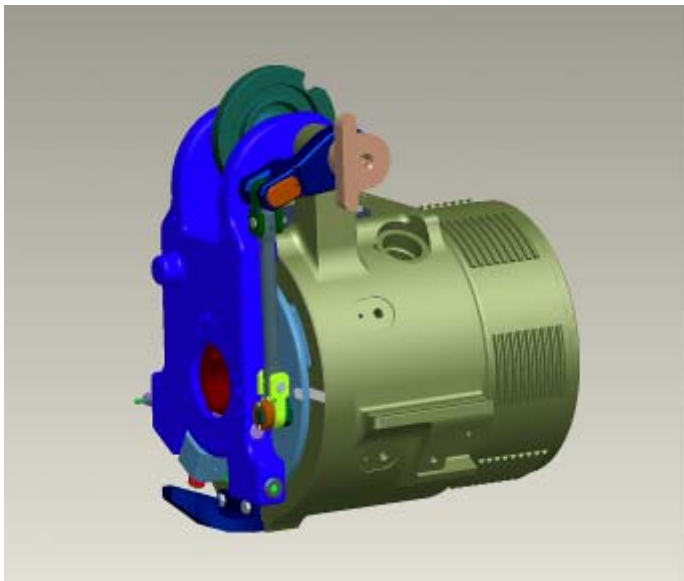
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- **Modeling and Simulation:**
 - Modeling of entire cannon performed with 3D Computer Aided Design Package
 - *Drawings parametrically linked to models and assemblies*



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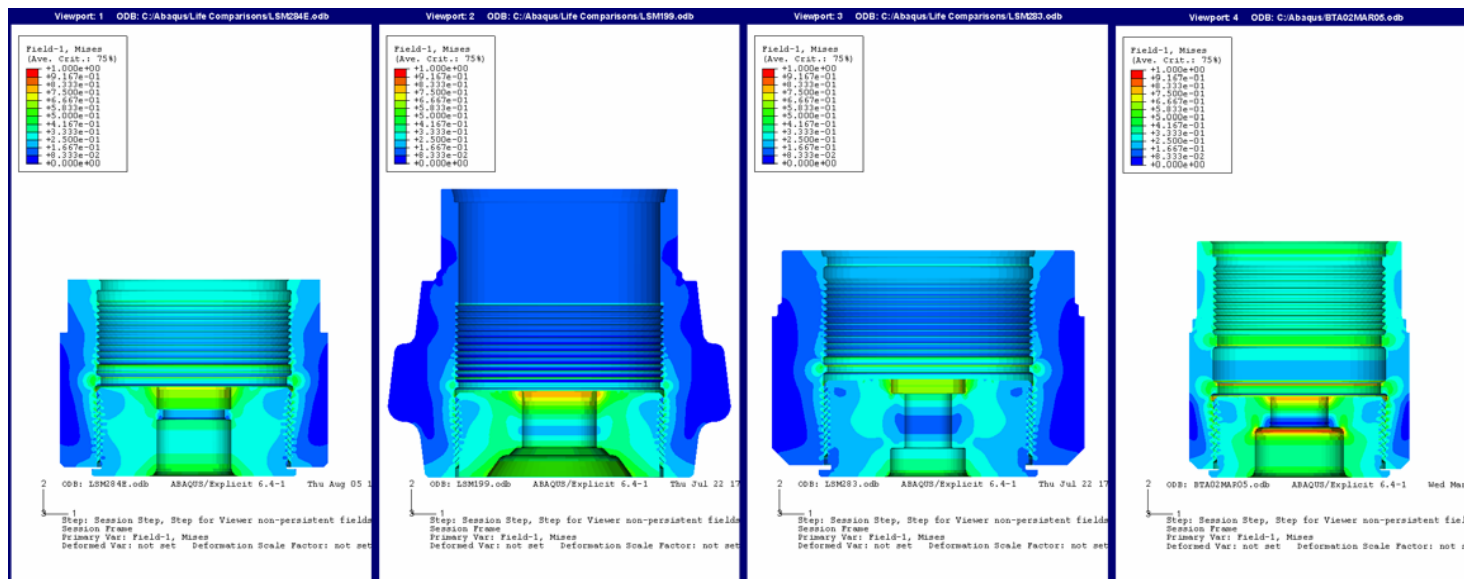
XM324 NLOS-Cannon



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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



M284/M776

M199

XM283

XM324

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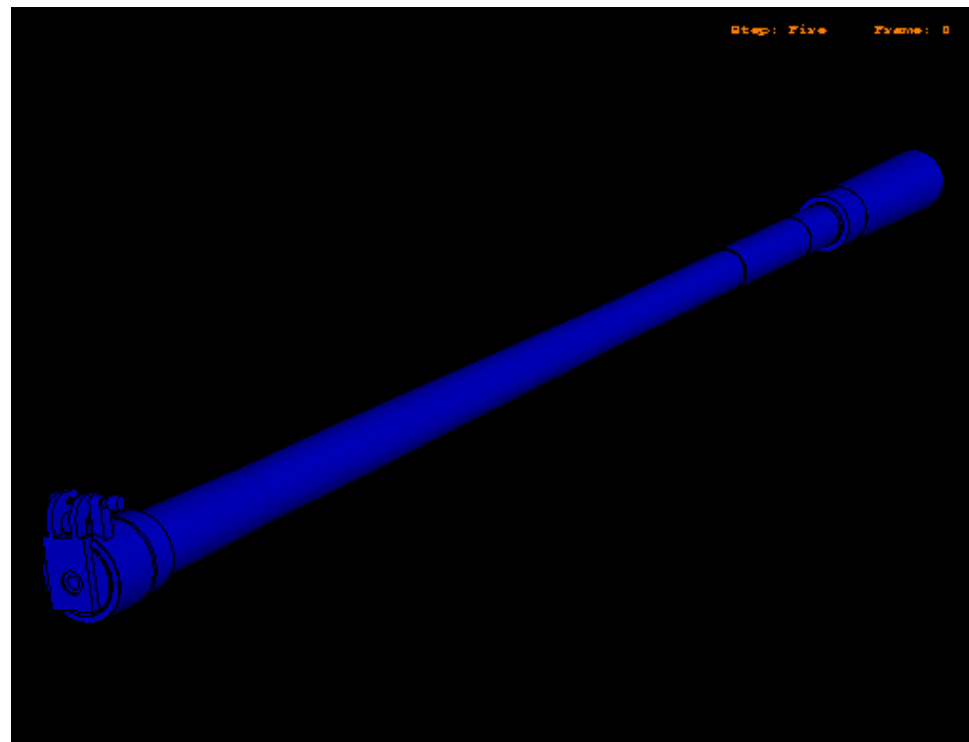


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- **Modeling and Simulation:**
 - *Finite Element Methods – Dynamic Load Analysis*

Dynamic System Axial Response



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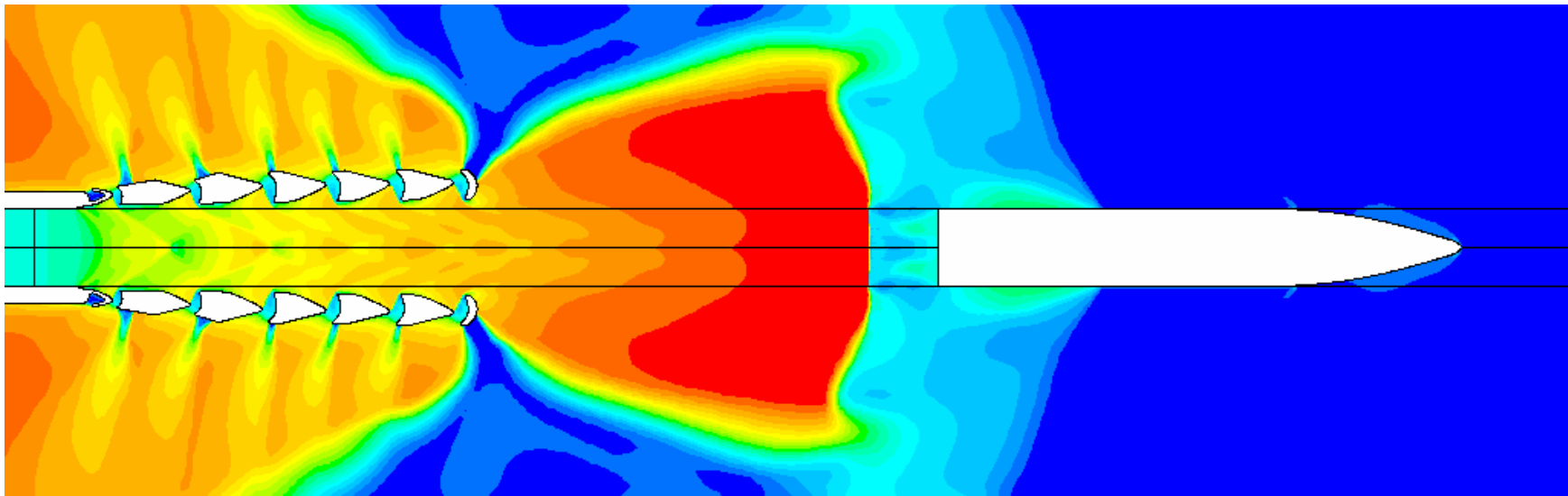


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- **Modeling and Simulation:**
 - **Computational Fluid Dynamics – Muzzle Brake Optimization**

CFD of Brake During Firing

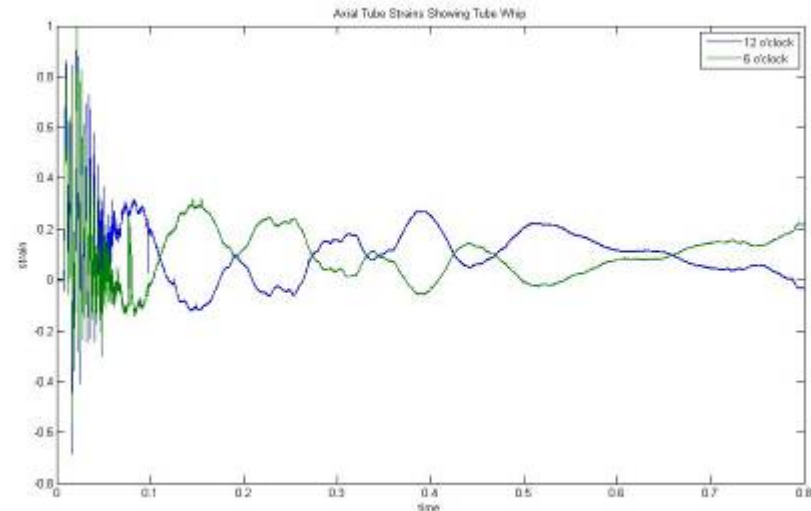




XM324 NLOS-Cannon



- **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?



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