

# 120 mm Tank Ammunition Advanced Case System (ACS) Phase 2

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Jeff Berg  
Project Engineer  
120mm Training Ammunition  
ATK



M1002



M865

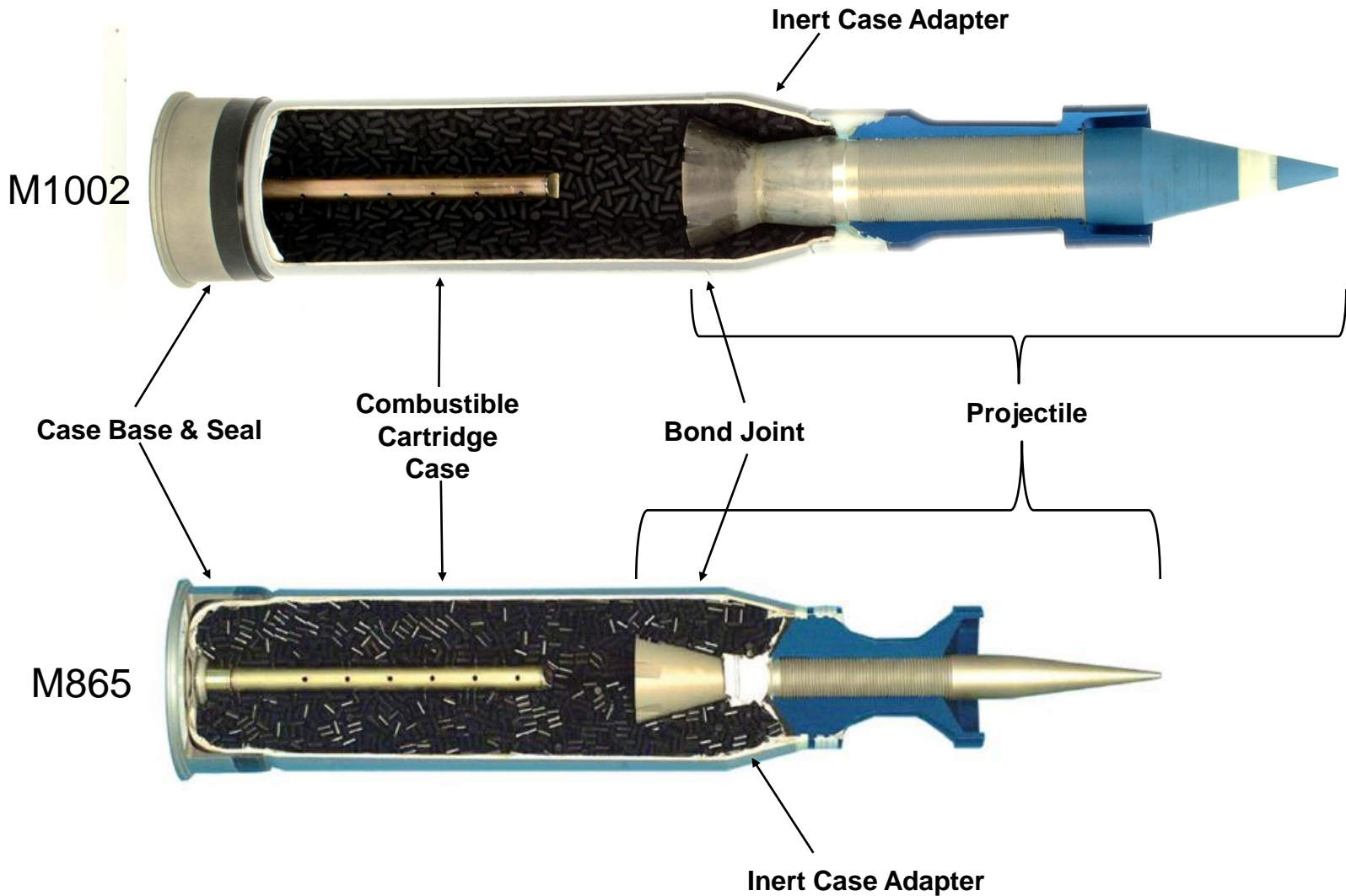
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## 120 mm Tank Ammunition Advanced Case System (ACS)

- **Background and Program Summary**
- **M865 Qualification**
- **M865 Transition to Production**
- **M865 Refurbishment to ACS Design**
- **M1002 Qualification**
- **Technical Challenge – M1002 case-to-obturator joint**
- **M1002 Recovery Plan**
- **M1002 Transition to Production**
- **Summary - Current Program Status**
- **Questions**

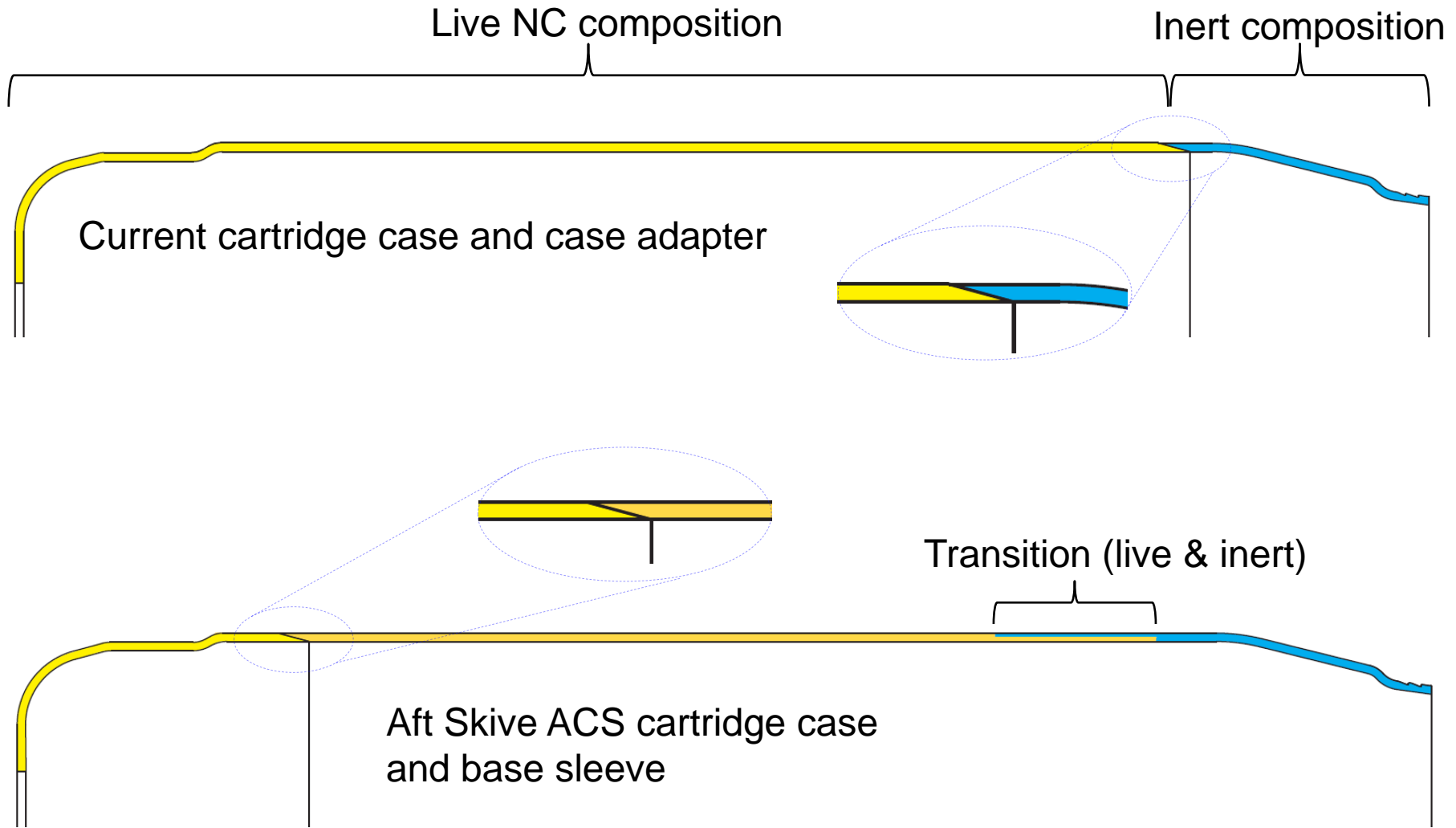
# M1002/M865 Cartridge (current case design)



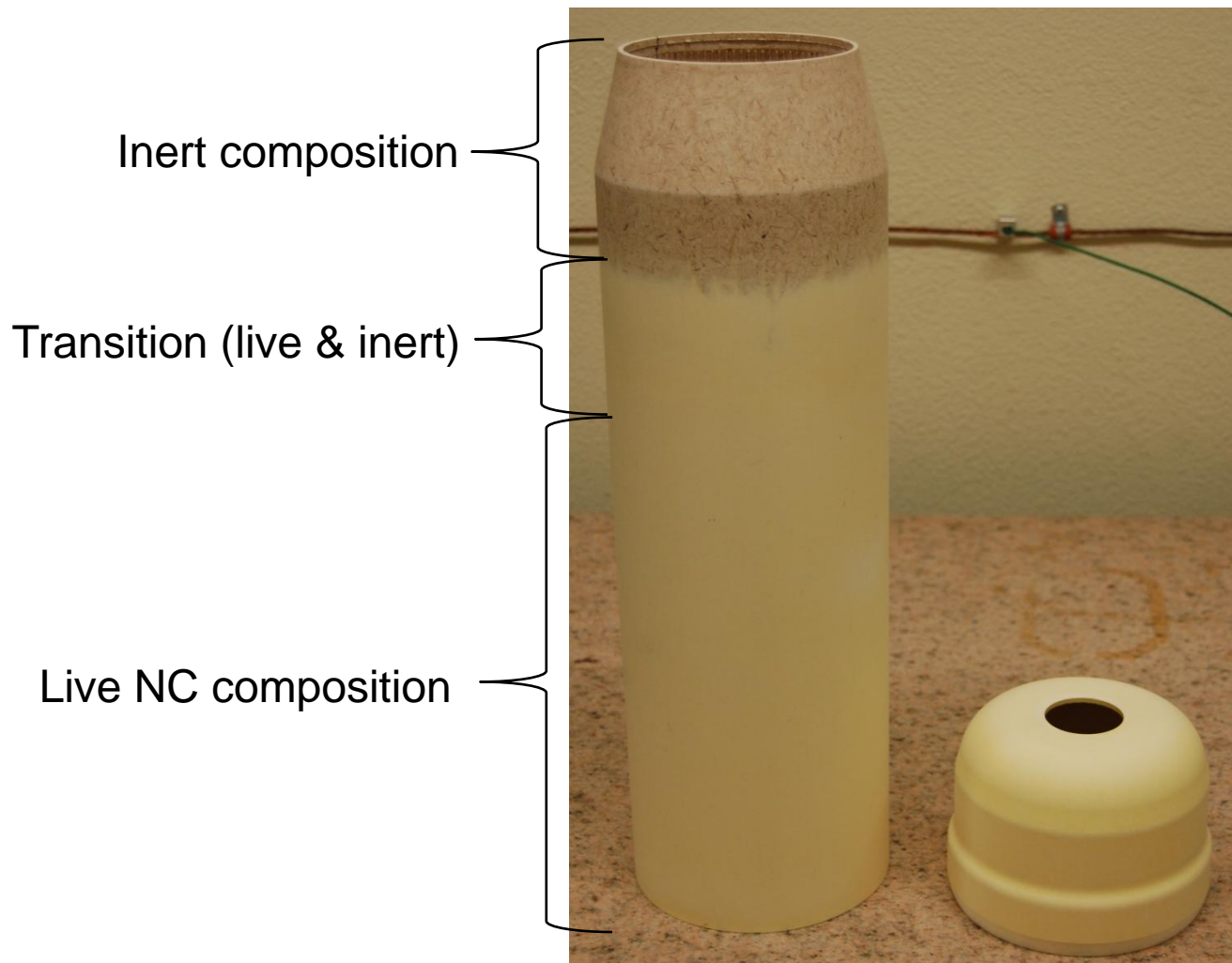
## Advanced Case System (ACS)

- Program:
  - **Product Manager Large Caliber Ammunition: Program Management and Guidance**
  - **Joint Munitions Command (JMC): Executes and Manages the 120mm Multi-Year contracts**
- Members: **PM-MAS, PM-LC, JMC, ARDEC, ATK, GD-OTS, Esterline Defense Technologies (EDT), American Ordnance**
- Objective: **Redesign cartridge to eliminate a contributing cause of damaged rounds during training.**
  - **Relocate the cartridge bond joint**
  - **Qualify the modified cartridge design**
  - **Transition into production with qualified design**

# ACS Objective – Relocate Cartridge Joint



# M865 ACS Case and Base Sleeve



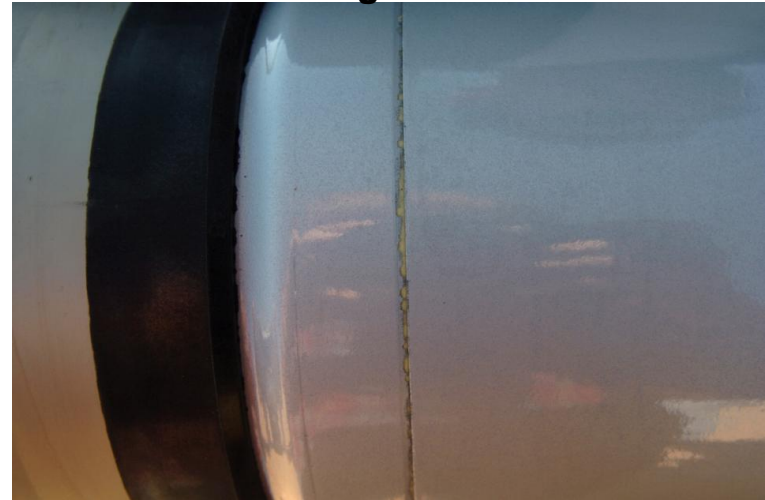
## Qualification

- M865 ACS aft skive joint has passed qualification testing.
  - All results were as good or better than the current design.

Post User Handling test - Current Design



Post User Handling test - ACS Aft Skive



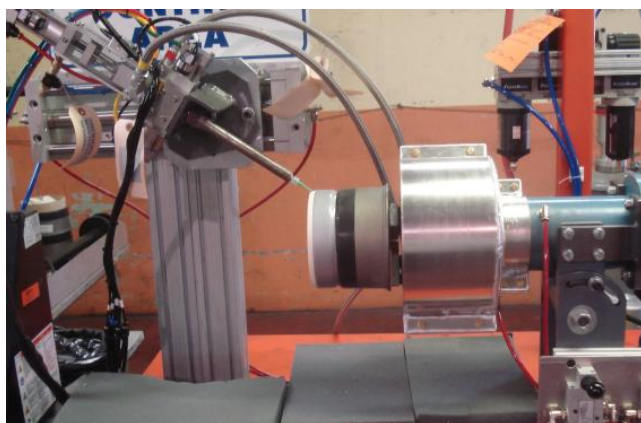
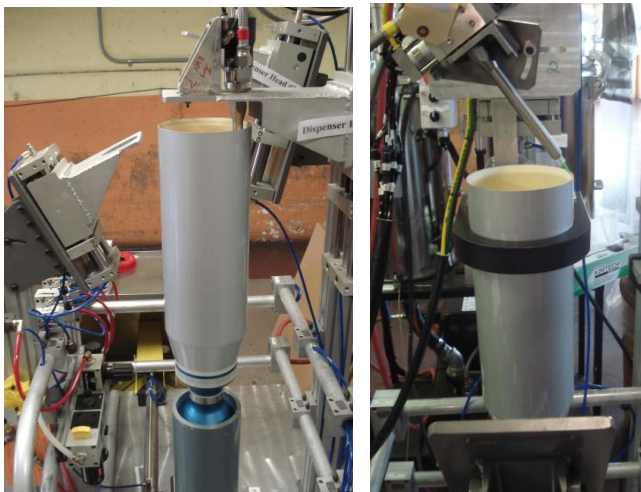


## Transition to Production

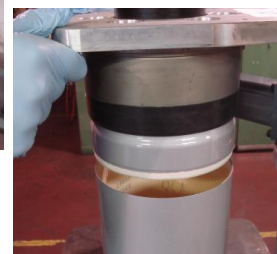
- **Production of M865s for the next production year will be ACS**
- **Facilitization efforts are underway at both American Ordnance and Esterline Defense Technologies**
  - **ATK leading the AO Facilitization efforts**
  - **GD-OTS leading the EDT Facilitization efforts**
- **Tooling, gages, and facility requirements are on schedule**
- **Component and cartridge level First Articles are planned for summer and fall of 2011**
- **ACS design will replace current design in M865 production effective December, 2011**
  - **Production of M865 in the current configuration will end in September, 2011**



# M865 AO Facilitization

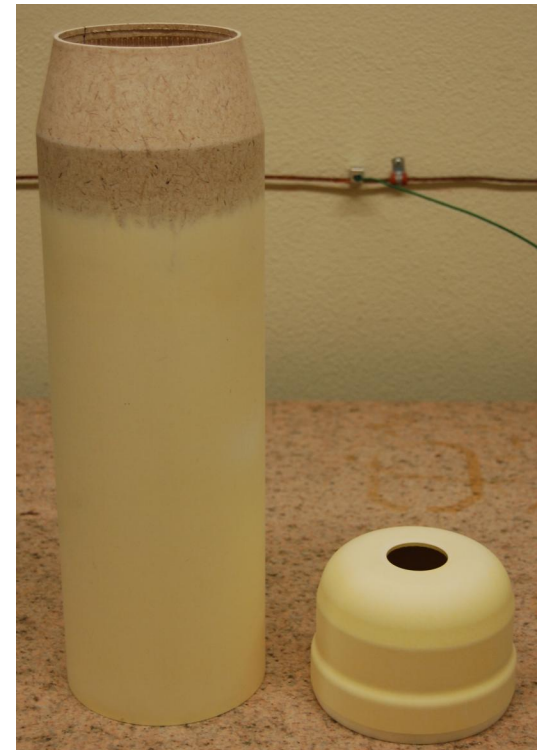
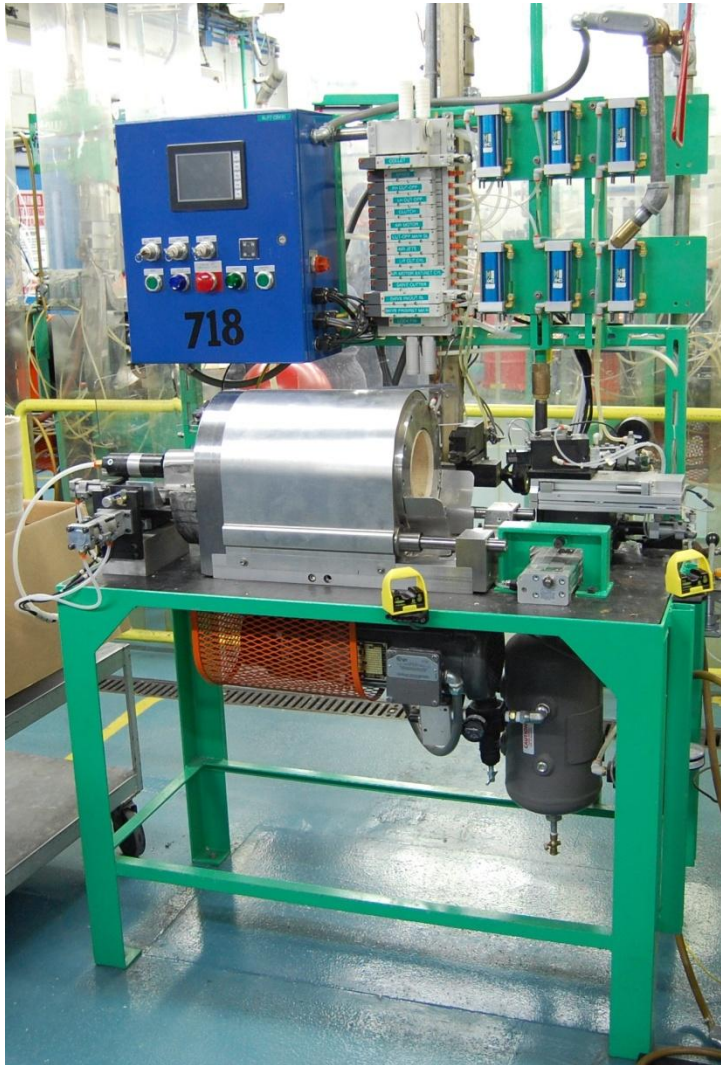


Adhesive Application



Cartridge Bonding

## Case Trimmer



## M865 Refurbishment

- **Significant inventory of M865s with the current design**
- **Design allows for removal of current case / adapter and replacing with the ACS case / base sleeve.**
- **Process has been developed and proven.**
- **Refurbished M865s have been provided for evaluation in a gunnery exercise.**
- **Plan is to refurbish M865 existing inventory starting in calendar year 2013.**

## Qualification

- **M1002 qualification testing has been suspended prior to completion.**
- **User handling tests resulted in failure of saw-tooth joint between ACS case and projectile obturator.**
  - **Inert material failed internally on the ACS cases.**
  - **Control M1002 cartridges (current design) had zero failures.**



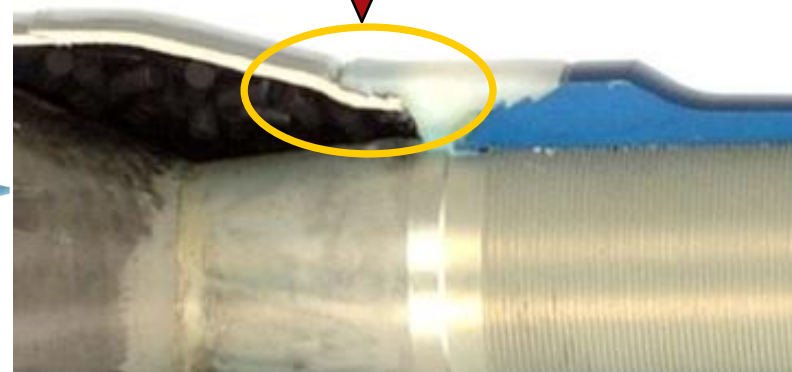
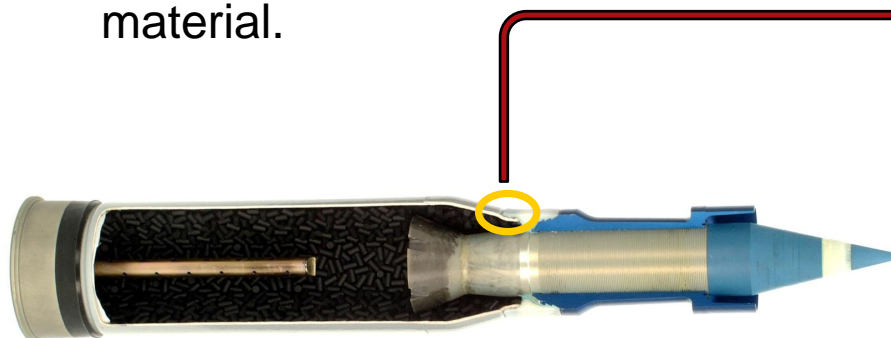
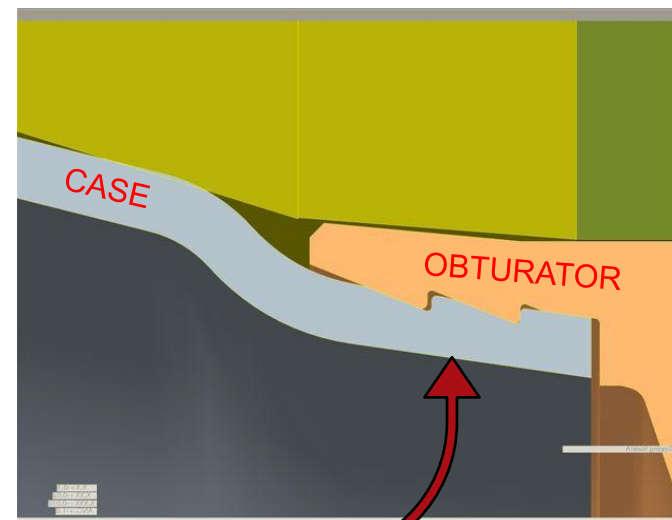


## M1002 Sawtooth Joint:

- ACS Case: Inert wood pulp material.
- Obturator: Extruded Nylon

## Failure Investigation:

- Focused on mechanical properties of case.
- Process adjustments and refinements.
- Increased mechanical properties in inert material.



## M1002 Recovery Plan:

- **Demonstrate improved mechanical properties based on lab testing.**
- **Build test samples to validate results.**
- **Build cartridges – full scale simulated handling and comparative testing.**
- **Build qualification cartridges**
  - **Repeat qualification tests to complete qualification**

## Transition to Production – Current Plan

- **Production of M1002 for next production year will be current design (Sep 2011 through Dec 2011)**
- **Comparable facilitization efforts required at both American Ordnance and Esterline Defense Technologies.**
  - **Anticipate ATK leading the AO Facilitization efforts.**
  - **Anticipate GD-OTS leading the EDT Facilitization efforts.**
- **Planning for component and cartridge level First Articles during spring of 2012.**
- **ACS design will replace current design in M1002 production effective in the fall 2012.**
  - **Production of M1002 in the current configuration will end in December, 2011.**



## M865 ACS:

- ACS Qualification complete.
- Last M865 with the current design: Sept 2011
- Facilitization and First Articles are on schedule
- First M865 with the ACS design: Dec 2011
- Refurbishment of inventory to ACS planned for 2013

## M1002 ACS:

- ACS Qualification – interrupted to resolve joint strength.
- Complete recovery plan / re-qualification testing: Apr 2012
- Last M1002 with the current design: Dec 2011
- First M1002 with the ACS design: Fall 2012

# **QUESTIONS???**

**Jeff Berg**

**Project Engineer – 120mm Tank Training Ammunition**

**Alliant Techsystems – Advanced Weapons Division**

**763-744-5523**

**[jeff.berg@atk.com](mailto:jeff.berg@atk.com)**