5.56mm 30 Round Magazine Improvement Programs

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5.56mm 30 Round Magazine Improvement Programs

- **OBJECTIVE**
  - Enhance the performance, reliability, durability, and manufacturability of the current 5.56mm 30 round magazine
    - **Short Term Solution**
      - Improved follower and spring for current 30rd magazine
    - **Long Term Solution**
      - Redesigned composite magazine
    - **Inspection Tool**
      - Magazine feed lips inspection tool

Improved Follower and Spring

Improved Follower and Spring

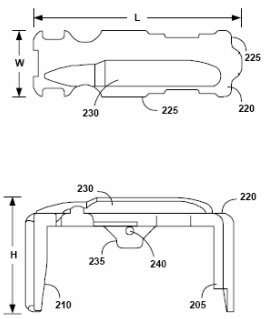
- **Design Description**
  - Improved follower – modified leg characteristics and improved interface with magazine housing profile to create a stabilized flow of follower/cartridges
  - Improved Spring – wider coil base creates uniform force distribution and prevents follower jamming
  - Drop in replacement – economical and logistically supportable

Improved Follower and Spring

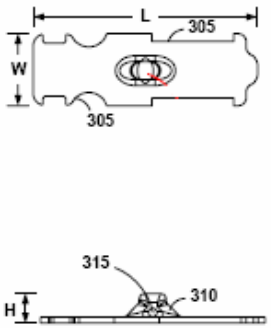
- **Program Summary:**
  - Redesign **3Q04**
  - Prototype Delivery **1Q05**
  - Prototype Evaluation **1Q05**
  - Prototype Test **2Q05**
  - Safety Release **2Q05**
  - User Evaluation **3Q05 (Ft. Benning)**
    - DCO 2-47 identified bad magazines from BRM training week
      - Replaced springs/followers from bad magazines with improved springs/followers - **No malfunctions**
  - Technical Test **1Q06 - 3Q06 (Aberdeen Proving Ground)**
  - Complete and Staff ECP **1Q07**
  - Available in Supply **3Q07**

Improved Follower and Spring

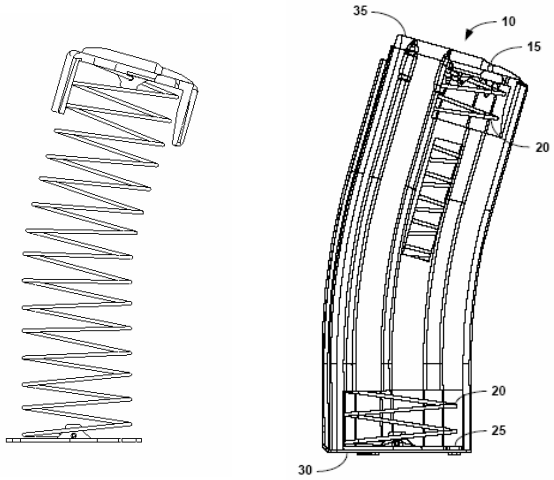
- **Impact/Benefits**
  - Higher reliability and improved mean time between essential function failures, increased mission readiness
  - Fewer demands for replacements
  - Easier assembly/disassembly
  - Estimated 5 year ROI – 16.0, and 10 year ROI – 32.2



- Follower



- Spring Plate

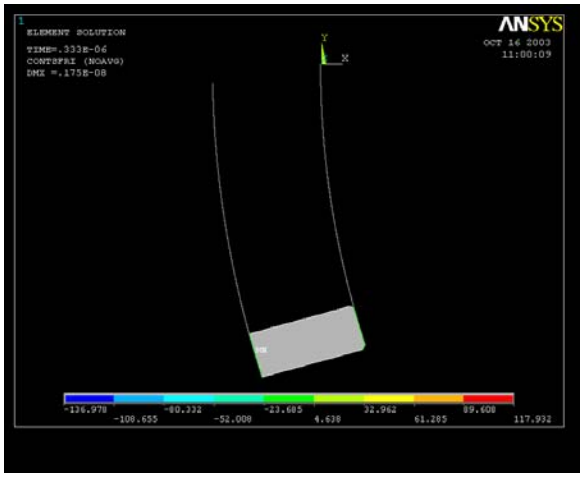


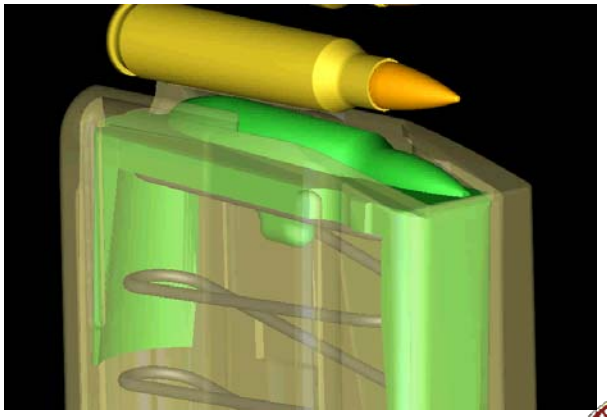
- Assembly

30 Round Composite Magazine

30 Round Composite Magazine

- **Design Description**
  - Redesigned magazine box profile, follower, spring, and implementation of a new housing material (Injection molded)
  - Improved Profile – continuous radius/smoother profile to create uniform flow path
  - Improved Spring – wider coil base creates uniform force distribution and prevents follower jamming





30 Round Composite Magazine

• Program Summary:

- Housing Profile Design — **4Q04**
- Material Evaluation — **4Q04 (150+ materials considered, 4 selected for evaluation)**
- Redesigned Follower/Spring — **1Q05**
- 2nd Generation Prototype — **2Q05**
- Material Evaluation — **2Q05 (Down select to 2 materials)**
- Final Design Changes — **3Q05 (Modified mold for material correction, Improved bottom plate interface, Removed reflective finish)**
- Prototype Test — **4Q05 (Function Test, Drop Test)**

  Material 1 (Black)
  Ambient: 8 drops – no failures
  (-50F): 8 drops – no failures

  Material 2 (Transparent)
  Ambient: 8 drops – no failures
  (-50F): 8 drops – hairline crack on 6th drop, magazine fired, no stoppages

- Technical Test — **1Q06 - 3Q06 (Aberdeen Proving Ground)**
- Available in Supply — **4Q07**

Composite Magazine

- **Impact/Benefits**
  - Higher reliability, improved mean time between essential function failures, increased mission readiness
  - Commercially available materials, eliminate need for coatings
  - Manufacturability / Cost
  - Easier assembly/disassembly method
  - Improved interface with magazine well
  - Transparent material will allow for round count identification

• Transparent (Smoke Tint)

• Black

Composite Magazine

• 1st Generation Composite Magazine

• Standard Aluminum Magazine

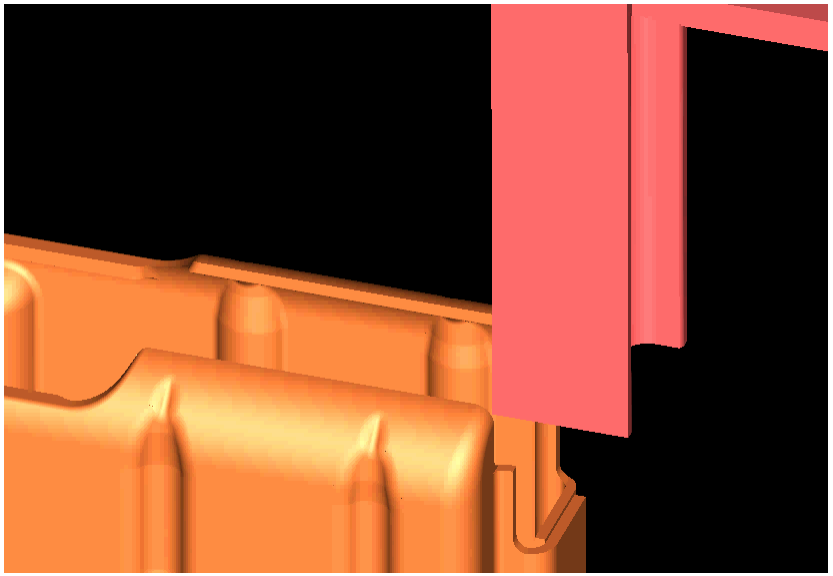
30 Round Composite Magazine

- **Technical Test (APG)**
  - **Tests to be Completed:**
    - Initial Inspection
    - Reliability/Durability (M16/M4/M249)
    - High/Low Temperature
    - Salt/Fog
    - Rough Handling
    - Sand/Dust/Mud
    - Chemical Compatibility
    - Immersion
    - Ammunition Compatibility
    - Accessory Compatibility
    - 28 Day Storage
    - Solar Radiation
    - Temperature Shock
    - Trans. Vibration

Magazine Feed Lips Inspection Tool

Magazine Feed Lips Inspection Tool

- **Design Description**
  - Designed to check Max/Min tolerance associated with 30 round magazine feed lips
  - T-shaped GO/NO-GO tool
  - Initiated by sliding tool against magazine groove contour



Magazine Feed Lips Inspection Tool

- **Impact/Benefits**
  - Currently no method to inspect feed lips other than visual
  - Prevent use of malfunction prone magazines
  - Increase reliability of associated weapon and soldier survivability
  - Incorporate into existing annual gauging