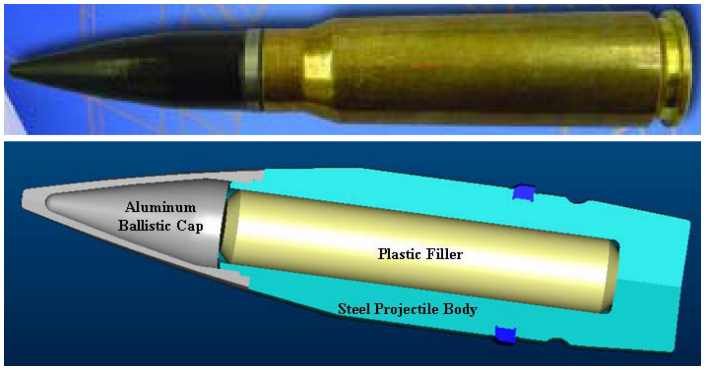
20 mm PGU-28/B Replacement Combat Round

Executive Summary
- The Air Force-conducted LFT&E Lethality program in FY07 demonstrated that the Penetrator with Enhanced Lateral Effect (PELE) 20 mm replacement combat round had significant lethality against a broad range of targets.
- Late in FY07, the Air Force's 53rd Wing completed a Force Development Evaluation (FDE) that demonstrated the PELE had acceptable weapons effects against ground and air targets.
- However, the final FDE report from the 53rd Wing stated that the PELE was not suitable due to ballistic differences between the PELE and the legacy PGU-27 that would require Aircraft Operational Flight Program adjustments and because of excessive barrel wear and an unacceptably high rate of nose cone damage.
- The Air Force is currently investigating the suitability issues and has allocated funding to modify the PELE rounds.
- The Air Force will conduct follow-on testing to assess the effectiveness and suitability of the modified PELE and the results of that testing will determine further actions.

System
- The PGU-28/B Replacement Combat Round program is intended to restore combat capability to tactical aircraft following PGU-28/B removal from service due to safety issues.
- Alliant-Techsystems (ATK) and Diehl Munitionssysteme of Germany, in a cooperative effort, developed the 20 mm PGU 28/B replacement cartridge by integrating the PELE projectile with an ATK 20 mm cartridge case.
- The PELE does not use explosives or a fuzing mechanism. Rather, it is a kinetic energy projectile that converts forward momentum into lateral fragmentation and penetration.



- The projectile case is steel, whereas the inner core is plastic. Target impact causes the plastic filler to expand in diameter with very high pressure. The rapid expansion of the plastic filler ruptures the steel case, achieving fragmentation with lateral velocities of about 300 meters per second.
- The Air Force intends the PELE cartridge to be compatible with F-15, F-16, and F-22 aircraft.

Mission
Fighter aircraft pilots will use the PELE cartridge to produce mission kills against enemy fighter and light civilian aircraft, produce mobility kills against light utility vehicles, and to inflict personnel casualties.

Prime Contractor
- Alliant-Techsystems

Activity
- The Air Combat Command (ACC) released their final report on the PELE in January 2008. That report contained both lethality and operational test and evaluation results and assessments.
- The ACC assessed the PELE as lethal and effective, but not currently suitable. As a result, the Air Force Logistics Command began an evaluation of whether to pursue procurement of an alternative combat round. Current PELE Foreign Comparative Test activities are in progress to address suitability and the results will determine further actions.

Assessment
While the PELE exhibited significant lethality, the ACC recommended and DOT&E agrees the suitability issues currently warrant a no-fielding decision.

Recommendations
- Status of Previous Recommendations. There were no previous recommendations.
- FY08 Recommendations.
  1. The Air Force, while pursuing PELE modifications to address suitability, must remain cognizant of any effect those changes may have on the underlying lethality of the projectile.
  2. The Air Force must conduct additional ballistic testing to confirm that there is no change in lethality as a result of the modifications to the round.