

Recapitalizing the Apache Fleet

Lt. Col. Anthony W. Potts, USA

The recapitalization of the Apache fleet has begun—or in actuality, it has been ongoing since 1996 when we rolled the first Longbow Apache (a.k.a. production vehicle D-001) out of the remanufacturing line at Mesa, Ariz.

So what does recapitalization mean? It is the Department of Defense's way of getting the greatest return on its original capital investment. Instead of retiring the fleet of AH-64 Apache aircraft, some of which have been in service almost 20 years, the DoD invests additional capital dollars into that system to improve its performance and extend its serviceable life. One of the most widely known examples of this type of effort is the B-52, Stratofortress, which began its service life in 1954 and was still a vital strategic asset in Desert Storm, Operation Enduring Freedom, and Operation Iraqi Freedom.

The Apache was a perfect candidate for this program. It has been in service as the Army's main heavy attack helicopter since 1986. To date, nothing can rival its capabilities anywhere in the world. The mission equipment package and weapons systems have performed superbly in combat operations, and its survivability is unprecedented in attack helicopters.

With such a viable attack asset, the logical thing to do was to give it an overhaul that would extend its serviceable life, improve its capabilities, increase safety and reliability, and reduce field maintenance requirements. Such an overhaul comes at only a fraction of the cost of designing, qualifying, and procuring a new attack helicopter platform. On April 10, 2002, the vice chief of staff of the Army approved the Apache recapitalization program. The program will be accomplished in production (remanufacturing) through field retrofit and spares. The goals are to:

- Remanufacture 597 Apache A model aircraft into D models, incorporating the installation of fire control radar, multi-purpose displays, mission data computer, data transfer cartridge, digital map, etc; Task Force Hawk initiatives including the modernized-target acquisition designation sight/pilot night vision sensor (M-TADS/PNVS); reliability and safety improvements; and selected component overhaul
- Recapitalize 107 AH-64As with M-TADS/PNVS, internal auxiliary fuel tanks, reliability and safety improvements,

and selected component overhaul; these aircraft will retain the A model designation

- Upgrade all operator and maintainer training systems to the recapitalized configuration.

At the macro level, the goals of the program are fairly simple: to maximize marginal return on recapped components; to increase unscheduled mean time between removal (MTBR) for selected recapitalized components by 20 percent; and to reduce average fleet life to 10 years by 2010.

Focusing the Effort

The program incorporates nonrecurring engineering and the Sandia National Laboratory analysis of components to ensure that resources are focused on the highest pay-off components. The Apache project manager initially established an integrated product team to provide close oversight to the program and to ensure that all initiatives are integrated to ensure the best possible effort. Along with key members of the PM office, the team was co-chaired and comprised representatives from the Aviation and Missile Command, Integrated Material Management Center, and the Boeing Company.

We completed the first retrofit of the lead-the-fleet Apache (D Model), at Fort Rucker, Ala., in January 2004. We will use the data gathered on this aircraft to forecast the effects of the recapitalization program throughout the fleet.

The first Apache attack battalion to undergo recapitalization was 2-101st, at Fort Campbell, Ky. The unit was outfitted with the enhanced logbook automation system, and we began collecting data in 2001. ELAS, in conjunction with contact memory buttons, provides automated data collection on all aspects of the airframe and airframe components. Data are stored in a centralized database to establish the program baseline metrics.

Recapitalization of the 2-101st Apache fleet began in February 2004 and was completed in September 2004. Along with the recapitalization of the 2-101st aircraft, we restructured the program to begin the retrofit of the 1-101st aircraft as well. We began deliveries of four recapitalization kits per month in February and March 2004 and ramped up to eight kits beginning in April. Two of the eight kits each month were sent to Fort Hood, Texas, for the 3-101st Longbow unit fielding training program in January 2005.

Potts is product manager for Apache modernization and recapitalization.

Combining Efforts to Achieve Synergy

Timing is everything. With the return of the first units from operations Iraqi Freedom and Enduring Freedom in 2003, the Army began its program to RESET equipment to pre-deployment status. RESET combines the intense Phase IV inspection with additional requirements to repair battle damage and clean desert sand and debris from the aircraft.

We saw this as an opportunity to combine programs, achieve synergies, and produce cost savings. We aligned the deliveries of the recapitalization kits with the reset induction schedule at Fort Campbell, enabling us to reduce the operational down time on each aircraft by as much as two weeks. Additionally, the recapitalization program injects hundreds of new or like-new components into an overtaxed supply system. As each aircraft is disassembled, the recapitalization components are separated and tagged. Then a one-for-one exchange is made, returning the removed component for a new or overhauled recapitalized asset. The component removed from the aircraft is sent back to be overhauled to the recapitalization standard. These overhauls are to a newer depot maintenance work record (DMWR) or national maintenance work record (NMWR) standard that is designed to increase the MTBR by 20 percent on average. When the effort is complete, the recap/reset aircraft is ready for use whenever needed.

Another synergy is the extension to the full life of recapitalized parts. For instance, a transmission pulled from an aircraft that is to be recapitalized is sent back to Boeing for overhaul to the new DMWR standard. However, many of the units have hours of serviceable life left on their time before overhaul (TBO). Instead of routing the component directly to overhaul, we exchange it for an unserviceable or close-to-TBO component removed from another aircraft—if we pull a transmission that has 300 hours of serviceable life from a recap aircraft but find another transmission on a reset aircraft that had 10 hours' TBO remaining, we swap components and effectively achieve an additional 290 hours of useful transmission life. With approximately 30 recap components in the kits and the delivery of eight kits a month, the synergies of this effort alone translate into millions of dollars saved.

Program Challenges

In the fourth month of the program (scheduled to run from fiscal 2004 to fiscal 2010), we experienced shortages in some of our major components: main transmissions, tail rotor gear boxes, intermediate gear boxes, and main rotor swash plates. The shortages actually demonstrated how well the system works. When we designed the program, we were to procure 24 sets of new components to begin the retrofits. However, just prior to the deliveries of these components, Operation Iraqi Freedom kicked off in full force. In order to support our soldiers in the fight, the DoD



issued urgent orders for these same components in quantities. The higher priority to support the war effort redirected the components to meet more critical needs.

The delayed delivery of the new components forced us to overhaul items earlier in the recapitalization program than previously planned. As a result of high demand for these dynamic components, there was an extensive effort to get unserviceable but repairable units to overhaul and return them to the field as recapitalized parts. To support continued overhauls, we have been working with our suppliers to accelerate their deliveries of both mandatory and non-mandatory replacement parts in accordance with the appropriate DMWR/NMWR standards. We also worked with industry to develop processes to repair corrosion on magnesium housings that heretofore would simply be scrapped. This effort alone will save hundreds of thousands of dollars in recovered gearbox housings. After intense program reviews and several process improvements, the program is back on track. We are delivering all of our kits on schedule with 100 percent of the required components.

What has come to light in this program is that we, as a government and industry team, are behind in our focus on sustainment and support versus production and manufacturing. We have had to develop repairs and material recovery activities to support a cost- and time-effective method of aircraft sustainability. The challenge now goes out to industry to understand that sustainment activity, not new production, is the wave of the future. To stay competitive, each contractor and subcontractor has to place emphasis on developing engineering solutions to sustain an aging fleet.

This program is designed to support the warfighter without delaying delivery of the aircraft. It is intended to reduce the maintenance and logistics burden on soldiers in the field and extend the service life of the Apache, while maintaining the lethal capabilities of this vital weapon system in the global war on terrorism and any conflicts that may arise in the future.

The author welcomes comments and questions. He can be contacted at anthony.potts1@us.army.mil.