THE REVIVAL OF ARMY AVIATION

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Introduction

The Army aviation fleet continues to be the most mobile and destructive collection of weapon systems in the Army's inventory. In fact, mission demands for Army aviation weapon systems have never been greater. These systems not only continue to be a vital part of our global defense strategy, but are also a growing component of peacekeeping and humanitarian efforts, domestically and internationally.

From a strategic perspective, more than half of the Army's Active component Apache helicopter battalions were deployed outside CONUS in 2000. Regardless, the Army is accepting and executing this continuing challenge despite four troubling trends:

• Many of the individual aircraft that make up the aviation fleet are reaching the outer edges of their intended service life.

• The fleet is experiencing a continuing upward trend in downtime because of maintenance and component reliability and obsolescence problems.

• Because of the problems associated with aging, the aircraft are often more costly to maintain.

• Virtually every aviation platform needs some degree of recapitalization or modernization.

These problems are not new, nor are they unique to Army aviation. Similar trends can be found in most post-Vietnam War systems, before the development of service-life extension programs. Because of funding constraints and other equally significant considerations, current solutions are often developed in piecemeal fashion, fixing problems as they occur rather than employing a total systems methodology. The Army's challenge today is to develop solutions that are complementary, consistent, and effective. As such, the Army has identified an initiative to craft a comprehensive roadmap to address all readiness and system sustainment issues described above. This initiative is "The Recapitalization of Army Weapons Systems," and applies to 21 specifically selected Army weapon systems. Although the recapitalization initiative is still in its formative stages, it has drawn the attention of the Army Aviation and Missile Command (AMCOM) and the Program Executive Office for Aviation (PEO, Aviation) at Redstone Arsenal, AL. In particular, AMCOM and PEO, Aviation are developing systematic and programmatic processes that define how the Army aviation community will apply recapitalization theory to enhance combat readiness and sustainability of the aviation fleet.

Distinguishing Initiatives

Because terms are sometimes used synonymously for various weapon systems, which results in confusion, it is important to have a common understanding and definition of recapitalization so it is not confused with other efforts. Thus, the Army has identified the following three distinct initiatives:

• **Modernization.** The *development and/or procurement of new systems* with improved warfighting capabilities.

• **Maintenance.** The *repair or replacement* of end items, parts, assemblies, and subassemblies that wear or break.

• **Recapitalization.** The *rebuild and selected upgrade of currently fielded systems* to ensure operational readiness and a "zero-time/zero-mile" system.

There are two distinct facets of recapitalization. First, it includes *rebuild*, which restores a system to a like-new condition in appearance, performance, and life expectancy *as well as* inserting new technology to improve the system's reliability and maintainability. Second, recapitalization encompasses the application of *selected upgrades*. These upgrades are done during the rebuild of a system and add warfighting capabilities.

Why Recapitalization?

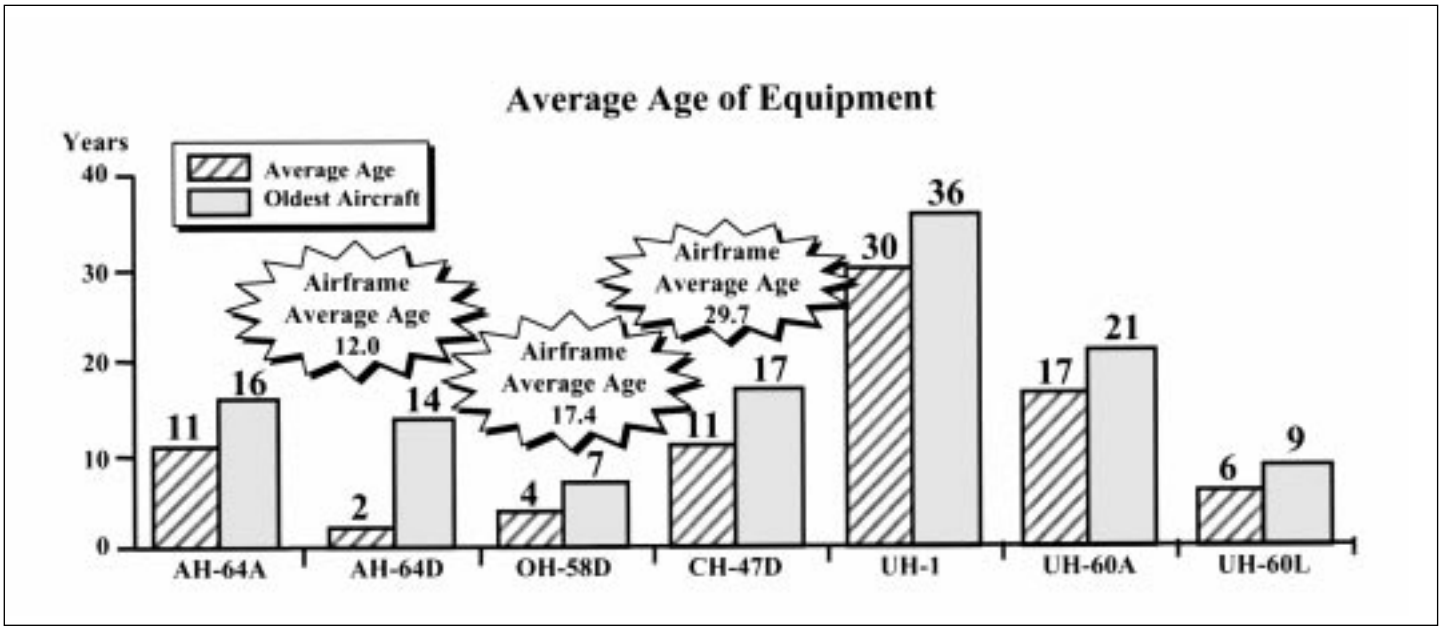
Is there conclusive proof that recapitalization is necessary? Where are the data that support the need for such a significant effort? The message contained in the chart on Page 9 is important to note because it shows the average age of some of the Army's current aircraft. Although the average age of the CH-47D model is 11 years and the oldest CH-47D aircraft is 17 years, the average age of the *actual airframe* is more than 29 years. In other words, the Army has been applying upgrades and improvements to the original Chinook, but must again address the system's airframe and its dynamic components.

Directly related to the aging issue is cost per flight hour—another indicator of troubling trends. Depot level repairable (DLR) costs to field units have generally declined since 1996, but the amount of aviation maintenance support required from civilian contractors has risen dramatically during the past 10 years. Some analyses have shown that almost $200 million is being spent annually on contract maintenance support. A good deal of that support is focused on local special DLR authorizations for selected major components. Such costs can add as much as $1,000 per flight hour to the Apache.

Aviation safety of flight (SOF) messages for Army systems are also increasing. (SOF messages are advisories issued to alert the aviation community of potential problems on particular aircraft.) There were nine SOF messages in 1995. Thirty-four SOF messages have been issued so far in FY00 (at the time this article was written), an increase of 89 percent since FY99.

Component-related SOF restrictions can be costly to the Army in areas other than system readiness. During the past 9 months, Corpus Christi Army Depot (CCAD) expended more than 110,000 man-hours rectifying SOF problems associated with the Apache and Chinook. SOFs place an unprogrammed workload on soldiers and remove operational aircraft from the tactical fleet at a time when the Army can least afford it.

The Army's ability to sustain the aviation fleet has slowly but steadily declined during the past 9 years. Additionally, AMCOM's responsiveness to field requisitions for



components has steadily declined during the past 8 years. AMCOM's goal is to fill parts requisitions within 24 hours, 85 percent of the time, the first time. Presently, this goal is simply not being achieved.

Recapitalization of the total end item and its components will address those safety, readiness, and sustainment issues and, if structured correctly, will maximize the limited fiscal resources. The key issue that system managers face today is creating a recapitalization strategy that complements investment in new technology with equal consideration given to sustainment needs.

Service Half-Life

A goal of the Army and the aviation recapitalization effort is to identify specific maintenance tasks necessary to achieve the service half-life metric of all weapon systems by 2010. The maximum service life of the Apache, BLACK HAWK, and Chinook helicopters is 20 years, making their half-life 10 years. Therefore, the goal of aviation recapitalization is to achieve an average age for the entire fleet that never exceeds 10 years.

How will this be accomplished? When aircraft are inducted into depot maintenance programs at CCAD or assigned to commercial sources, rebuild programs will be designed to ensure each airframe operates safely and reliably for another 20 years. Dynamic and finite life components (those that are in constant motion during aircraft operation, such as engines, gear boxes, rotor blades, and hydraulic pumps) will be replaced with zero-time-since-overhaul components or new components. New technical standards will require a full overhaul. The "inspect and repair only as necessary" standard will not exist. Once an aircraft is rebuilt to the recapitalization standard, it will be equal to a new production item in terms of reliability, performance, and sustainability.

The half-life metric recognizes a positive correlation between the cost to sustain an aviation system and its age. Without recapitalization, three out of four aviation systems will exceed the half-life metric in 5 years. By 2017, more than 60 percent of the fleet will be beyond intended service life. With recapitalization, the curve shifts in a positive direction, with all systems ultimately achieving an average age at or below their half-life.

Disciplined Approach

Recapitalization is not a quick design fix; it must be a disciplined approach consisting of data collection and analysis, testing solutions, and implementing corrective actions—particularly with respect to component overhaul and replacement. All three aviation systems selected for recapitalization are in the early stages of a recapitalization program. The BLACK HAWK UH-60A and Chinook CH-47D are now in a data collection stage to define component changes that must be incorporated into depot maintenance programs performed by CCAD. Beginning in FY02, units will receive UH-60A and CH-47D aircraft with a zero-time life and new technology.

Users will also begin seeing the same recapitalization benefits for the UH-60L, UH-60M, CH-47F, and Apache AH-64A and AH-64D. In addition, these platforms will have greater lethality.

Conclusion

Aviation recapitalization is an initiative designed to improve system reliability, maintainability, and lethality. To accomplish this, a true partnership is being forged among the sustainment community, the science and technology sector, the program management community, and the industrial base comprised of both commercial and organic (government-owned and operated) sources. All are sharing the common objective of ensuring that the Army's aviation fleet continues to be the best in the world.

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