

AVIATION COMBAT ELEMENT (ACE) LEGACY PLATFORM MODERNIZATION

The Marine Corps has several significant aviation modernization programs underway to restore and enhance the capabilities of its existing aircraft and systems. These modernization efforts are vital to the Service's near- to mid-term combat capabilities.

CH-46E

The CH-46E Engine Reliability Program (ERIP) is essential to maintain the CH-46E as a viable and supportable airframe until its full replacement by the MV-22 Osprey. By replacing the T58-GE-16 engine core and accessories, ERIP will arrest the downward trend in engine health, increase engine reliability, and restore operational power margins while providing a significant reduction in fleet labor and support costs. ERIP is currently in full rate initial production. It is vital that this program continue at its programmed pace through FY 2008.

CH-53E

The CH-53E Super Stallion is a three-engine, long-range, heavy-lift helicopter that supports the assault support function of Marine Aviation. The current fleet of aircraft begins to reach the end of its service life during this decade. Beyond replacing the aircraft with new, upgraded platforms, a comprehensive sustainment

program is required to effectively meet MAGTF and Joint warfighting requirements over the next fifteen years.

Current sustainment initiatives include a T-64 engine reliability improvement program, Helicopter Night Vision System modification, and engine air particle separator system enhancements. These and other sustainment efforts are designed to address engine Time on Wing difficulty, degradation of wiring, and structural issues to enhance aircrew safety and survivability while lowering operational costs and maintenance man-hours per flight hour.

Operation Iraqi Freedom highlighted Aircraft Survivability issues that are being addressed on an accelerated timeline, to include upgraded missile warning systems, missile countermeasures, small arms protections, and a self-defense weapon.

AH-1 AND UH-1

The AH-1 and UH-1 Upgrade is essential to ensuring the MAGTF possesses credible rotary-wing attack and utility support platforms for the next 20 years. In 1995, the Secretary of the Navy approved the Marine Corps program to upgrade both utility and attack helicopters. This program, known as the H-1 Upgrade, modernizes the entire fleet. It builds on the existing aircraft capabilities, and takes advantage of current upgrade efforts in the areas of communication and navigation, electronic warfare, and night thermal imaging. At the center of the upgrade is the installation of a four-bladed rotor system, a newly developed drive train, and more powerful T700 engines. The addition of an integrated glass cockpit with modern avionics systems will provide a more lethal platform as well as



enhanced joint interoperability through the digital architecture and the installation of DCS 2000 radios.

Overall, the AH-1 and UH-1 upgrade program brings all previously funded or planned modifications under one umbrella, avoiding the cost of a “new start” replacement aircraft. The program uses components that are 84% common between the two aircraft. Through use of the same major components such as drive train, cockpit, and software, logistics support and strategic lift requirements will be greatly reduced, resulting in more space available on amphibious and MPF(F) ships. Moreover, these improvements will make the Marine Corps’ attack and utility helicopter capabilities more compatible with the performance demands of all future warfighting concepts.



Operational enhancements include a dramatic increase in range, speed, payload, and lethality of both aircraft while significantly decreasing their logistic footprint. The UH-1Y will operate at nearly twice the current range with more than double the

payload. The AH-1Z will realize similar performance increases with the ability to carry twice the current mission payload of precision-guided munitions. Both aircraft will achieve cruise speeds of over 150 knots.

The H-1 upgrade program is an economical and comprehensive upgrade of both UH-1N and AH-1W helicopters that will resolve existing operational safety issues while significantly enhancing the capability and operational effectiveness of the attack and utility helicopter fleet. A key modernization effort, the H-1 upgrade will provide a bridge until the introduction of an advanced rotorcraft design.

AV-8B

The final remanufactured AV-8B Harrier was delivered in September 2003, making the AV-8B one of the youngest aircraft in service averaging eight years old. In addition, the Marine Corps’ two-seat TAV-8B trainers are undergoing an upgrade program that adds new color displays, night vision goggle compatible lighting and a more powerful and reliable Pegasus (408) engine. These improvements are increasing the training capability of the AV-8B fleet replacement squadron and increasing the abilities of our replacement pilots reporting to their Fleet squadrons. The enhancements to the Harrier are a critical link for providing continued support to the MAGTF until TacAir Integration implementation and JSF transition are complete.

Further improving the AV-8B’s capability is the Open Systems Core Avionics Requirement (OSCAR), which is updating obsolete software and computer equipment. OSCAR allows the AV-8B to maintain its relevancy until the Joint Strike Fighter



enters Marine Corps service by giving the Harrier new capabilities such as the ability to employ JDAM for all-weather strike and CAS capability.

The Litening advanced targeting pod is also providing the AV-8B with a significant improvement in its lethality and survivability. This third-generation forward-looking infrared set, dual field-of-view TV seeker, and infrared marker provides improved target recognition and identification, while the laser designator and laser spot tracker provides precision targeting capability. A few Litening pods have also been equipped with a Pioneer Transmitter allowing real-time video to be sent to ground-based commanders and forward air controllers, thus facilitating time-sensitive targeting and reducing the chance of fratricide and collateral damage.

F/A-18

The F/A-18A Upgrade (Engineering Change Proposal 583) consists primarily of avionics and hardware upgrades that allow the F/A-18A Hornet to process and use updated versions of F/A-18C software and accessories. A large portion of this modification enhances commonality between the “A” and “C” aircraft, reducing logistics footprint, pilot and maintenance training requirements, as well as mitigating obso-

lescence issues. The modified “A” aircraft is compatible with a Lot XVII F/A-18C aircraft – an aircraft eight years younger. This upgrade also enables the “A” aircraft to employ all current and programmed future weapons.

Seventy-six aircraft are scheduled to receive the upgrade, enabling the upgraded “A” model aircraft to remain in the active inventory until the 2015+ timeframe. These additional, relevant F/A-18 airframes are instrumental in supporting the Navy-Marine Corps TacAir Integration plan.

The F/A-18D Advanced Tactical Airborne Reconnaissance System (ATARS) provides manned airborne tactical reconnaissance capability to the MAGTF. ATARS incorporates multiple sensor capabilities including electro-optical, infrared, and synthetic aperture radar. ATARS-equipped aircraft carry all sensor capabilities simultaneously, enabling imagery that is selectable by the aircrew in flight. Another significant capability of ATARS is its ability to digitally transmit collected data in near real time to ground receiving stations. This imagery can be data-linked to various intelligence systems for national exploitation via the Joint Service Imagery Processing System-Tactical Exploitation Group (JSIPS-TEG).



Eighteen ATARS sensor suites are now operational in all six Marine Corps F/A-18D squadrons. Digital solid-state recording systems and data link capabilities are still being developed and fielded.

The Litening precision targeting pod incorporates a 3rd generation targeting FLIR along with the additional capabilities of a Laser Spot Tracker, Laser Designator/Rangefinder, Infra-Red Pointer, two charged coupled device (CCD) TV cameras, and onboard video recording capability for improved Battle Damage Assessment. Litening pod capabilities meet or exceed all USMC requirements.

Based upon Litening pod's proven combat value during recent operations, the Marine Corps has initiated an effort to modify its F/A-18D aircraft with an IOC during 2004. The Litening pod is a proven capability, available today, to better enable Marine Aviation to support the MAGTF and Joint Force Commanders.

KC-130

The KC-130 legacy platform modernization and upgrade consists primarily of an Avionics Modernization Program (AMP) for the reserve component, and Aircraft Survivability Equipment (ASE) upgrades for both the active and reserve component inventory. The Marine Corps' KC-130T AMP provides an upgrade for 28 aircraft. The program facilitates solutions to avionics obsolescence issues, upgrades avionics suites to meet mandated communications-navigation and surveillance/air traffic management compliance, electrical systems upgrades, full night vision lighting capability, upgraded defensive electronic countermeasure (DECM) provisions, as well as configuration, support, and training commonality issues within the fleet.

ASE modernization of 12 active duty component aircraft (KC-130F and R series), identified as "core" aircraft, is currently underway. The upgraded DECM suite includes the APR-39V2 upgraded radar

detecting set, the AAR-47, the ALQ-157, and the ALE-39. The APR-39V2 upgrade program is on schedule to be completed by September 2004. Core legacy aircraft are scheduled to remain in the inventory at a decreasing rate until the KC-130J is fully fielded throughout the active component by 2013. ASE upgrade to the reserve KC-130T fleet is scheduled for completion by 2016.

EA-6B

EA-6B upgrades maintain Marine Prowlers as an essential combat-proven part of the MAGTF and the joint force. The cornerstone of the modification, and upgrade plan is the Improved Capabilities

III (ICAP III) weapon system for both Marine and Navy EA-6B squadrons.

The core of ICAP III is the ALQ-218 digital receiver system. This is the first receiver upgrade to the EA-6B since its fleet introduction over 30 years ago. The improved receivers will enable more precise jamming while also improving aircrew situational awareness and reducing life cycle costs.

ICAP III is scheduled for fleet introduction in FY 2006. As the EA-6B fleet begins to reach the end of its airframe service life, ongoing re-winging and upgrades will also be critical to maintaining the aircraft's viability through 2015.

UNMANNED AERIAL VEHICLES

Unmanned aerial vehicles (UAVs) have grown in importance since the successful deployment of UAV units operating the Pioneer UAV during Operation Iraqi Freedom. The Vertical Unmanned Aerial Vehicle (VUAV) is intended to be a new start program to replace the Pioneer UAV systems. The VUAV will be a transformational UAV, interoperable with the Common Aviation Command and Control System and MAGTF Unit Operations Center.

