



*The Australian Army will receive the last of 22 EC665 Tiger Armed Reconnaissance Helicopters next year. Australia is the first export customer in the Asia Pacific region for Eurocopter's first purpose built attack helicopter © ADF*

# Helic

**Attack helicopters play a critical role supporting US-led coalition operations in Afghanistan and Iraq. New and upgraded aircraft are entering the fray**  
*by Ian Kemp*

# New Generation Attack opters

The Apache is a product of the Cold War, developed in the 1970s to provide the US Army with an attack helicopter for high intensity operations that could be used to offset the Soviet advantage in tanks on NATO's Central Front. To implement this vision the Boeing AH-64 was developed in parallel with the long range Lockheed Martin AGM-114 Hellfire anti-tank guide missile (ATGM). Apaches, equipped with the 8,000 m range Hellfire, are able to accurately engage tanks at double the range of the TOW-armed Bell AH-1 Cobras they replaced. The AH-64A Apache and its successor, the AH-64D Apache, carry an impressive weapons load: up to 16 Hellfires or four 19-round rocket pockets as well as a belly-mounted 30mm Chain Gun with 1,200 rounds of ammunition. During the 1991 and 2003 wars with Iraq the Apache demonstrated its effectiveness as tank killer. In the counterinsurgency campaigns in Afghanistan and Iraq the Apache has demonstrated its formidable capabilities as a precision strike weapon.

In September 2003, the US Army established an Aviation Task Force to examine the lessons learned from Operation Enduring Freedom and Operation Iraqi Freedom. The need to enhance 'synchronisation' between aviation elements and brigade combat teams (BCTs) was an early finding and Brigade Aviation Elements are being embedded in the headquarters of each BCT to provide commanders and staff members with aviation expertise including the employment of unmanned air vehicles. As part of its new modular structure the US Army is organising its aviation units into multifunctional Combat Aviation Brigades (CAB), consisting of company-sized 'building blocks' that can be tasked organised to support several BCTs. For the first time attack, reconnaissance, utility, medium lift and medical evacuation helicopters will all be in the same brigade. Each CAB will have two attack helicopter battalions although an attack helicopter company can be equipped with either 10 OH-58D Kiowas or eight AH-64Ds. Brigades assigned to heavy divisions will have two battalions each with 24 Apaches, a medium division will have one battalion with 30 OH-58D and 24 Apaches while and a light division will have two battalions equipped with Kiowas.

Boeing's AH-64D Apache Block III (AB3) structures test aircraft made its first flight on 23 November 2009. According to the US



*The US Army plans to increase its Apache fleet from 709 aircraft to 747 AH-64D models in Block I, II and III configurations by 2018. Low rate initial production of the Block III is now underway © Boeing*

Army, the “AB3 will add significant combat capability while addressing obsolescence issues to ensure the aircraft remains a realistic combat multiplier beyond 2025”. The AB3 upgrade will integrate: unmanned aircraft system Level III - IV control capability, improved Situational awareness, an upgraded communications suite, improved drive and propulsion systems, improved targeting capability, increased computer processing capability and speed, improved navigation systems, and improved diagnostics and maintainability. The low rate initial produc-

tion programme includes 51 aircraft for operational testing, first unit equipped and fielding to the training base. The Army plans to acquire 691 AB3 aircraft with fielding continuing beyond Fiscal Year 2026 and for much of this period of the Army intends to operate 747 AB2 and AB3 models.

The AH-64 has the distinction of being the most widely exported attack helicopter in the world. Boeing built 116 AH-64As for five international customers and 239 AH-64Ds have been bought by nine international customers. The Republic of Singapore Air

Force’s 120 Squadron operates 17 of the 20 AH-64Ds delivered in two batches between 1999 and 2001. In March 2006 the Japanese Ground Self-Defence Force received the first of 55 AH-64DJs ordered to replace its fleet of 90 AH-1S Cobras. These helicopters are being built under license by Fuji Heavy Industries. In 2007, Taiwan announced its decision to acquire 30 AH-64Ds to augment 62 AH-1Ws already in service. A contract was expected to be signed as this issue of AMR went to press.

South Korea’s Defense Acquisition Program Administration (DAPA) announced in September 2009 that the Army’s plans to replace its 60 AH-1 Cobras Ss and 130

*The Boeing AH-64D Apache entered service with the Republic of Singapore Air Force in 1999 © SAF*

Hughes 500s from 2018 with up to 270 new attack helicopters could be postponed as the government sought ways to reduce defence spending. However, Seoul's suspicions that North Korea was responsible for the sinking of the South Korean corvette Cheonan on 26 March with the loss of 46 lives has given new impetus to defence spending. "Taking into account the peculiar situation of the world's only divided nation amid hostilities, we must reshape our military's capabilities," South Korean President Lee Myung-bak told a meeting of senior military leaders on 4 May. "We must especially check on our readiness against asymmetric capabilities, including special warfare." The Ministry of National Defence said attack helicopters would be among the weapons fielded to counter the threat from North Korea.

The DAPA is studying a number of options including the local production of the Korea Attack Helicopter (KAH) or buying refurbished US Army Apache helicopters. Korea Aerospace Industries has proposed adopting a foreign design for the KAH or producing an armed version of the Surion Korea Utility Helicopter, which it is developing with Eurocopter.

The US Army's Apache Program Office has given DAPA three options for the acquisition of AH-64D:

- Block I models, at a unit price of \$16 million to \$17 million, for delivery between 2012 and 2014;
- Upgraded Block II models, at a cost of \$19 million to \$20 million;
- And, Block III aircraft fitted with the Longbow fire-control radar system, at a unit cost of \$32.5 million, for delivery from 2014.

The Indian Air Force is seeking 22 twin-engine attack helicopters to replace the Mi-24s and Mi-35s. In May 2009 the Ministry of Defence issued a request for proposals (RfP) for the helicopters, worth an estimated Rs28 billion, to AgustaWestland (AW129 Mangusta), Bell (AH-1Z Viper), Boeing (AH-64D Apache), Eurocopter (EC665 Tiger) and Mil (Mi-28N). An earlier tender, issued in 2008, which specified a 50 percent offset requirement was withdrawn after the two US companies refused to bid; the new tender reduces the offset requirement to 30 per cent. The in service date has slipped to 2012 at the earliest; the 2008 RfP stipulated that the first



pair of helicopters should be delivered within 24 months of contract signature and the last within 36 months.

### Marine snakes

The US Marine Corps is upgrading its 20-year old AH-1W SuperCobra attack and UH-1N utility helicopter fleets through the H-1 Program which will see Bell Helicopter convert 168 AH-1Ws to the new AH-1Z Viper configuration and build 58 new AH-1Z as well as 113 UH-1Y Venom utility helicopters. Each of the 18 Marine Light Attack Helicopter Squadrons operates 18 AH-1Ws and nine UH-1Ns. Typically several helicopters of each type are grouped with CH-46E Sea Knight and CH-53E Super Stallion troop lift helicopters to form the composite helicopter squadron which is assigned to each embarked Marine Expeditionary Unit (MEU).

On 27 September 2006 Bell delivered the first production examples of the AH-Z and UH-1Y. The two share 84 percent common components including tail boom, engines, rotor system, drive train, avionics architecture, software, controls and displays; this is expected to reduce support costs by over \$3 billion over a 30 years. The new engines and

four-bladed rotor system improves the payload, maximum speed, vertical rate-of-climb and rotor vibration level of the aircraft. A 217 percent improvement in mission payload enables the AH-1Z to carry up to 16 Hellfires and two AIM-9L Sidewinder AAMs or AGM-122A Sidarm anti-radiation missiles. There are 750 rounds of ammunition available for the nose-mounted M197 three-barrel 20 mm gun. With a 1,232 kg payload the AH-1Z has a mission radius of 203 km. USMC AH-1Zs are powered by two T700-GE-401 engines although export customers can specify the more powerful T700-GE-701C.

Operational evaluation of the AH-1Z began in early 2006 although initial operational capability (IOC) has been pushed back to Fiscal Year 2011 (FY11) as the USMC is giving priority to fielding the UH-1Y to maintain the current high operational tempo. The AH-1Z is expected to complete its operational evaluation in July, leading to a decision for full-rate production later this year. USMC Colonel Harry Hewson, H-1 program manager, told reporters at the Navy League's Sea-Air-Space Exposition on 4 May that a number of upgrades are planned for the AH-1Z including the installation of a digital moving map display from later this year, the introduction of a blue-force tracking capability 2011 and 2013, the introduction of the Advanced Precision Kill Weapon System and the Joint Air-Ground Missile between 2012 and 2015, and, if funding is available, the introduction of the AIM-9X Sidewinder in 2014-2016.

Hewson said the AH-1Z will be available

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for foreign military sales in 2012. The Pakistan Army which now operates 25 single engine AH-1Fs is thought to be a likely export customer for the AH-1Z.

## Tiger enters service

Since July 2009, the French Army has deployed three EC665 Tiger HAP helicopters from the 5th Combat Helicopter Regiment (5e RHC) in Afghanistan as part of the composite French Helicopter Battalion. The detachment logged 520 flight hours during the first six months and achieved an availability level of 95 percent.

Later this year, the Australian Army will receive the last of 22 Eurocopter Tiger helicopters bought in December 2001 for A\$1.3 billion to meet its Air 87 Requirement for an Armed Reconnaissance Helicopter (ARH) version. The first four Tiger were built at Eurocopter's Marignane, France plant with the remaining aircraft assembled at the Brisbane facility of Australian Aerospace, Eurocopter's local subsidiary.

Tiger is a key element of Australia's emerging Hardened and Networked Army. It will equip the two flying squadrons - 161st

and 162nd - of the 1st Aviation Regiment based in Darwin, Northern Territory. The helicopters will replace the army's obsolete, Vietnam-era Bell UH-1H gunships and Bell 206 Kiowa reconnaissance helicopters.

The French and German armies agreed in 1984 to launch a joint combat helicopter project and the first Tiger prototype flew in 1991. Spending cuts by both governments following the end of the Cold War delayed the project and reduced the original combine requirement from 427 to 160 helicopters, evenly split between the two armies, although follow on orders are expected. The German Army changed its requirement from a dedicated anti-tank configuration to the UHT (Unterstützungshubschrauber) support helicopter configuration. A mast-mounted TV/forward looking infrared/laser range finder is fitted for the gunner. The UHT's four outboard weapon stations can be armed with eight anti-tank missiles or two pods of 19 rockets or four Stinger air-to-air missiles (AAMs) and two .50 calibre gun pods. The service became the launch customer for the PARS 3 LR (previously known as the TRI-GAT-Long Range) missile in June 2006 when

it awarded MBDA a \$380 million contract to deliver 680 missiles for use on the Tiger by 2014. The German Army may install a Rheinmetall RMK30 cannon in a chin turret during a mid-life upgrade.

The first 40 Tigers for the French Army, of which more than 20 have been delivered, are in the HAP (Helicoptere d'Appui Protection or Support and Escort Helicopter) configuration with a chin-mounted Giat 30 mm gun turret. Typical armament could consist of up to 450 30 mm rounds, two pods each with 22 unguided 68 mm rockets and four Mistral AAMs. There is no provision for an AT missile. The remaining 40 Tigers, scheduled for delivery from 2008, will be in the multi-role Helicoptere d'Appui Destruction (HAD) configuration which was originally selected by the Spanish Army. Similar to the HAP version the HAD has updated MTR390-E engines which provide 14 percent more power and incorporates better ballistic protection. It can carry four Mistrals or four 68 mm/70 mm rocket pods or four ATGWs. The Spanish Army has selected the Rafael Advanced Defense Systems Spike-Long Range ATGW to equip its 22 Tigers. Common to the HAP and HAD configurations is a roof-mounted sight with TV, FLIR and laser-range finder.

The Australian Army was the first to select the Hellfire to arm its Tigers and in late

**A US Marine Corps Bell AH-1W Super Cobra helicopter lifts off to support coalition ground forces during Operation Moshtarak in Afghanistan in February. The AH-1W will remain in USMC service at least until the end of the decade © USMC**





**The US Marine Corps plans to acquire 226 AH-1Z Viper attack helicopters and 113 UH-1Y Venom utility helicopters from Bell Helicopter. The US government will release the AH-1Z to Foreign Military Sales customers in 2012 © Bell**

2005 six missiles, four with inert warheads and two missiles with live AGM-114M BF warheads, were launched from Australian aircraft to complete the Hellfire integration process. For reconnaissance missions the Tiger will typically carry two Hellfires and two 19 round rocket pods.

The ARH achieved initial operational capability in September 2009, a delay of 27 months which was primarily caused by the protracted certification process in France. The forecast for full operational capability has slipped by 42 months from the original plan until December 2012.

Major General Tony Fraser, head of the Army's Helicopter Systems Division, told the parliamentary defence committee last year that the ARH had, "reached a level of maturity that I would regard as off the shelf". Fraser cited the successful integration of the Hellfire missile as paving the way for the missile's adoption on French Army Tigers.

The Defence Capability Plan 2009 states that the AIR 87 project is 'likely' to include, "a new phase (or phases) to maintain the effectiveness of the capability. This project is expected to provide system upgrades to

the ARH consistent with the parent Franco/German Tiger helicopter program. These upgrades may include weapons, engines, software, aircraft mission management system and ground support system upgrades. This is likely to be an ACAT [Acquisition] Category III project and

Defence will commence work on developing this phase for Government consideration after 2016."

### Contenders for Armed Aerial Scout

US Army's Armed Aerial Scout (AAS) programme emerged following the termination of the Bell ARH-70 Armed Reconnaissance Helicopter in October 2008. At least three manufacturers are expected to compete for the project to replace the Army's long-serving OH-58D Kiowa scout helicopters. Their contenders are also touted as suitable for forces which do not require the sophistication, or expense, of a dedicated attack helicopter such as the Apache or who wish to field a 'high/low' mix of helicopters.

Boeing is offering the AH-6i Light Attack/Reconnaissance helicopter, based on the company's AH-6 Little Bird in service with the US Army's 160th Special Operations Aviation Regiment, made its first flight on 16 September. The AH-6i's cockpit shares 83 percent software commonality with the Boeing's AH-64D Apache Block III and was described by Winn as "the most advanced cockpit flying today". Boeing believes the aircraft will have considerable appeal on the export market for customers, including 'several' in the Middle East, who do not require the sophistication, or expense, of the Apache or who wish to use the aircraft in a 'high/low' mix along

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with the Apache. Boeing plans a family of aircraft which will also include the AH-6U utility (which will form the basis of its AAS proposal) and a stretched AH-6S which will incorporate a 15 inch plug. The AH-6 is already qualified with a variety of weapons including laser-guided rockets, missiles and three different .50 calibre heavy machine guns. Jordan became the launch customer for the AH-6i when it signed a Letter of Intent with Boeing during the 2010 Special Operations Forum and Exhibition (SOFEX) in mid-May.

EADS North America is offering the Army the Armed Scout 645, a derivative of the UH-72A Light Utility Helicopter which itself is based on the civil EC-135; 345 UH-72As have been ordered for the US Army and Army National Guard (ARNG) will a strong contender for the Army's scout helicopter requirement. The Armed Scout 645 demonstrator, displayed at AUSA 2009, has flown 'high-hot' tests with a simulated 2,300 pound Mission Equipment Package (MEP). Lockheed Martin will be responsible for MEP integration. EADS is building three AAS-72X demonstrators, the first of which is scheduled to fly before the end of the year.

The most radical proposal is Sikorsky's Light Tactical Helicopter (LTH) which is based on the X2 technology demonstrator. According to Sikorsky officials the counter-rotating coaxial design and auxiliary propulsion system would offer significant improvements in 'high-hot' performance, speed and survivability. The X2 demonstrator is expected to achieve its target speed of 250 knots during company-funded flight tests in mid-2010.

During the first phase of the analysis of alternatives (AoA) for the programme AAS, which was completed earlier this year, the army considered whether its needs could best be met by a manned or unmanned solution, or a combination of the two. During the second phase, scheduled for completion in 2011, the Army will decide whether to develop a new aircraft, such as the X2, or procure a helicopter which is already in production such as the Boeing and Eurocopter proposals. [AMR](#)