

# Vying for the Indian Sun

## Helicopter types in the final run

### Attack Helicopters (22)

#### Boeing AH-64D Apache Longbow

The Apache is a twin-engined army attack helicopter developed by McDonnell Douglas (now Boeing), the AH-64D Longbow Apache being a remanufactured and upgraded version of the AH-64A Apache attack helicopter. It is fitted with the Longbow millimetre-wave Fire Control Radar (FCR) target acquisition system and the fire-and-forget Longbow Hellfire air-to-ground missile. It has updated T700-GE-701C engines and a fully-integrated cockpit. In addition, the aircraft incorporates improved survivability, communications, and navigation capabilities,



while most existing capabilities of the AH-64A Apache are retained. Lockheed Martin has developed a new targeting and night vision system called Arrowhead for the Apache, using second-generation long-wave infrared sensors with improved range and resolution.

The Apache is equipped with two turboshaft engines, each providing 1,265 kW. The American AH-64D has General Electric T700-GE-701 engines and the UK Apache fitted with RTM322 engines from Rolls-Royce/ Turbomeca. With a climb rate of 889m/min, the maximum and cruise speeds of the helicopter are 279km/h 260km/h respectively, ferry range and service ceiling of the helicopter are 1,900km and 6,400m respectively, with endurance being 3 hours 9 minutes. The helicopter weighs around 5,165kg, while the maximum take-off weight is 10,433kg.

#### Mil Mi-28 'Havoc'

The Mil Mi-28 (NATO reporting name 'Havoc') is the Russian all-weather day-night military tandem seating anti-armour dedicated attack helicopter with no intended secondary transport capability, better optimised than the Mil Mi-24 for the anti-tank role. It carries a single gun in an undernose barbette, plus external loads carried on pylons beneath stub wings. The Mi-28 has two heavily armoured cockpits, a nose fitted with electronic equipment, and a narrow-X tail rotor, powered by two 2,200 hp Isotov TV-3-117VM (t/n 014) gas turbines. The X-type tail rotor



(55 deg) has reduced noise characteristics. While the Mi-28 is not intended for use as a transport, it does have a small passenger compartment capable of carrying three people, the planned purpose being to enable rescue of downed helicopter crews.

### Heavy Lift Helicopters (15)

#### Mil Mi-26 'Halo'

The Mil Mi-26 (NATO reporting name 'Halo') is a Russian heavy transport helicopter in service both in civilian and military roles. It is the largest and most powerful helicopter ever to have gone into production. The Mi-26 was designed as a heavy-lift helicopter whose primary purpose was to move military equipment such as 13 metric ton (29,000 lb) amphibious armored personnel carriers, as well as mobile ballistic missiles to remote locations after delivery by military transport aircraft. While it is only slightly heavier than the Mil Mi-6, it can lift up to 20 metric tons (44,000 lb). The Mi-26 is the second largest and heaviest helicopter ever constructed, following the experimental Mi-12, and is in service with the IAF.



## Boeing CH-47F Chinook

The CH-47F Improved Cargo Helicopter (ICH) is a re-manufactured version of the CH-47D Chinook cargo helicopter with new 4,868-horsepower Honeywell T55-GA-714A engines, enabling it to reach speeds greater than 175 mph and transport payloads weighing more than 21,000 lbs. By October 2005, Boeing started production for the new CH-47F Chinook heavy-transport helicopter as part of the U.S. Army Cargo Helicopter modernisation programme. A new airframe has been constructed utilising advanced manufacturing techniques which reduce operating and support costs while improving structural integrity of the aircraft and extending the overall useful life of each Chinook. Structural improvements include air transportability modifications, which reduce time necessary to prepare the aircraft for cargo transport and advanced corrosion protection. In addition, the implementation of lean manufacturing processes on the factory floor and use of employee involvement teams have reduced manufacturing costs and improved production efficiency. This configuration with the Army's Common Aviation Architecture System cockpit makes the Chinook fully compliant with digital battlefield requirements. The CH-47F remains in frontline service in Afghanistan.



## Light Observation Helicopters (197)

### Eurocopter AS 550 C3 Fennec

The Fennec, military version of the Ecureuil, offers adapted solutions to a wide variety of missions. The single-engined versions are equipped with a Turbomeca Arriel 2B turbo-shaft engine, which provides improved high-altitude and high-temperature performances and excellent tactical flight capacities. This new turbine engine, with Full Authority Digital Engine Control, provides a power increase of approximately 125 shp, and also offers the advantages of more modern technology. The multi-function capabilities of the Fennec mean that it can adapt to all sorts of missions, both day and night. The AS550 C3 offers the most modern design complying with more and more demanding battlefields and missions and is already operational from the highest altitudes (6000 m/19,685 ft) to the hottest and sandy environments (+ 50°C/122°F), to perform the widest range of missions. The simple design, reliability of equipment, low fuel consumption and light maintenance makes the AS550 C3 a cost



effective mission system. In its attack configuration, the AS 550 C3 Fennec can be equipped with a gun pod or rockets.

### Kamov Ka-226 Sergei

The Kamov Ka-226 'Sergei' is a small, twin-engined utility helicopter. The Ka-226 unusually features an interchangeable mission module, rather than a conventional cabin, allowing various accommodation or equipment configurations. The Ka-226 entered service in 2002. The design is a refinement of the proven Ka-26, featuring interchangeable mission modules. The aircraft is fitted with a new rotor system, increased visibility nose, and new passenger cabin design. The Ka-226 also features a new transmission system and is made largely from composite materials. The aircraft is fitted with trademark Kamov coaxial rotors, of advanced composite design, making the Ka-226 highly maneuverable and eliminating the need for a tail rotor. It is powered by two Rolls-Royce Allison 250-C20R (SR) turbo-shafts of 335 kW (450 hp) each.



## Shipborne ASW helicopters (60)

### Sikorsky S-70B Sea Hawk

The S-70B Seahawk naval helicopter is manufactured by Sikorsky Aircraft in Stratford, Connecticut, and is a development of the UH60A Black Hawk US Army Helicopter. The Seahawk is equipped with two General Electric T700-GE-401C turboshaft engines developing 3,400shp. The Seahawk can travel up to



100nm from the host ship and remain on station for several hours. The helicopter carries out all-weather surveillance, search and rescue, missile targeting, anti-surface and anti-submarine warfare and strike-warfare. The Seahawk is flown by a crew of four: the pilot, co-pilot and the sensor and weapons systems operators. The Seahawk's navigation suite includes the AN/APS-124 search radar supplied by Raytheon (formerly Texas Instruments), AN/ARN-118(V) Tacan supplied by Rockwell Collins, AN/APN-127 Doppler radar from Teledyne Ryan, AN/ARA-50 UHF direction finding system from Rockwell Collins and the AN/APR-194 (V) radar altimeter from Honeywell.

The helicopter is equipped with a Sikorsky sonobuoy launcher on port side of the cabin, an ARR-84 receiver, an UYS-1 acoustic processing unit and an ARN-146 on top position indicator that indicates the position over a submerged submarine. The towed magnetic anomaly detector is the AN/ASQ-81 (V)2 supplied by Raytheon. The helicopter carries two Mk46 torpedoes or Mk50 ALT advanced lightweight torpedoes from Honeywell. The Seahawk's anti-ship missile is the AGM-119B Penguin from Kongsberg of Norway, and also carries the Hellfire air-to-surface missile to engage fast attack craft and small, armed ships. Target acquisition is carried out using the AAS-44 thermal imaging unit with a laser designator.

### NH Industries NH90

The NH90 is a medium sized, twin-engine, multi-role military helicopter manufactured by NHIndustries. The two initial versions are the NH90 NFH (NATO Frigate Helicopter) for autonomous anti-submarine warfare and anti-ship roles, and the NH90 TTH (Tactical Transport Helicopter) for assault transport, rescue, electronic warfare and VIP transport duties). The NH90 Naval Frigate Helicopter variant is primarily designed for autonomous Anti-Submarine Warfare (ASW) and Anti Surface



Warfare (ASuW) missions. Comprehensive mission equipment packages allow a wide range of additional missions to be performed including Search and Rescue (SAR), maritime patrol, vertical replenishment, troop transport, medical evacuation and amphibious support roles. The helicopter is designed for day and night operations in adverse weather conditions from the decks of ships. In framework of the NH90 programme, AgustaWestland is responsible for production of the main transmission, tail drive shafts, hydraulic system, automatic flight control system, rear ramp, rear fuselage, the T700/6E1 engine solution installation and on-board computers. AgustaWestland is also responsible for overall integration of the NH90 naval mission system for all NFH variants.

### Sikorsky / Lockheed Martin MH-60R

The MH-60R multi mission helicopter ("Romeo") has been designed to replace existing SH-60B and SH-60F helicopters in the US Navy. The helicopter is equipped for a range of missions including anti-submarine warfare (ASW), anti-surface warfare (ASuW), search and rescue (SAR), naval gunfire support (NGFS), surveillance, communications relay, logistics support, personnel transfer and vertical replenishment (VERTREP). For vertical replenishment missions the helicopter is fitted with a 2,721.55kg (6,000lb) cargo hook. Lockheed Martin, Owego, is the mission systems integrator. The helicopter operates from various warships and is suitable for intense littoral warfare



operations, for handling numerous contacts in confined spaces and for open-water operations. The MH-60 helicopter is fitted with dual controls and accommodates the pilot and co-pilot / tactical mission officer. The MH-60R helicopter shares the same MH-60 multi-function digital glass cockpit as the MH-60S helicopter. For anti-surface warfare missions, the helicopter can be equipped with a range of weapons on the four weapons stations, including Lockheed Martin AGM-114 Hellfire anti-surface missiles. For anti-submarine warfare, the MH-60R can carry up to three ATK Mk50 or Mk46 active / passive lightweight torpedoes. For self-defence, a pintle-mounted 7.62mm machine gun is fitted. For anti-submarine warfare missions the helicopter is equipped with a sonobuoy launcher and a Raytheon AN/AQS-22 advanced airborne low-frequency (ALFS) dipping sonar. The helicopter is powered by two General Electric T700-GE-401C turboshaft engines rated at 1,342 kW.