

= Boeing Chinook (UK variants) =

The Boeing Chinook is a tandem rotor helicopter operated by the Royal Air Force (RAF) . A series of variants based on the United States Army 's Boeing CH @-@ 47 Chinook , the RAF Chinook fleet is the largest outside the United States . RAF Chinooks have seen extensive service including fighting in the Falklands War , peace @-@ keeping commitments in the Balkans , and action in the Iraq and Afghanistan wars .

The Chinook aircraft , normally based at RAF Odiham , provides heavy @-@ lift support and transport across all branches of the British armed forces , and is supported by the smaller , medium @-@ lift helicopters such as the AgustaWestland Merlin HC.3 of the Royal Navy 's Commando Helicopter Force and the RAF 's Westland Puma HC.2 , based at RNAS Yeovilton and RAF Benson .

= = Design and development = =

= = = Chinook HC Mk1 = = =

In March 1967 an order was placed for fifteen Chinook HC Mk1s , standing for Helicopter , Cargo Mark 1 , for the Royal Air Force to replace the Bristol Belvedere . This original MK1 variant was to be based on the CH @-@ 47B but the order was cancelled in a review of defence spending in November 1967 .

UK Chinook procurement ambitions were revived in 1978 with an announced requirement for a new heavy @-@ lift helicopter to replace the Westland Wessex . Thirty Chinooks were ordered at a price of US \$ 200 million . These helicopters , comparable to the CH @-@ 47C with Lycoming T55 @-@ L @-@ 11E engines , were again designated Chinook HC Mk1 , and entered service in December 1980 . Eight more Mk1s were delivered from 1984 to 1986 with the CH @-@ 47D 's Lycoming T55 @-@ L @-@ 712 turboshafts .

The replacement of the Mk1 's metal rotor blades with aluminium and glass fibre composite rotor blades saw these aircraft designated Chinook HC Mk1B . All surviving aircraft were later returned to Boeing and updated to the Chinook HC Mk2 standard for further service within the RAF .

= = = Chinook HC Mk2 = = =

The US Army 's next generation Chinook , the CH @-@ 47D , entered service in 1982 . Improvements from the CH @-@ 47C included upgraded engines , composite rotor blades , a redesigned cockpit to reduce pilot workload , redundant and improved electrical systems , an advanced flight control system (FCS) and improved avionics . The RAF returned their original Mk1s to Boeing for upgrading to CH @-@ 47D standard , the first of which returned to the UK in 1993 .

Three additional HC Mk2 Chinooks were ordered with delivery beginning in 1995 . Another six were ordered in 1995 under the Chinook HC Mk2A designation ; the main difference between these and the standard Mk2 was the strengthening of the front fuselage to allow the fitting of an aerial refuelling probe in future .

One Argentine CH @-@ 47C was captured during the Falklands War , and used by the RAF as a training aid . The rear fuselage was later used to repair a crashed RAF Chinook in 2003 .

In 2006 , the retirement dates for the Mk2 and Mk2A fleets were scheduled for 2015 and 2025 respectively , but if planned upgrades are made both types could expect to be flying until 2040 .

= = = Chinook HC Mk3 = = =

Eight Chinook HC Mk3s were ordered in 1995 as dedicated special forces helicopters , which were intended to be low @-@ cost variants of the US Army 's MH @-@ 47E . The Mk3s include improved range , night vision sensors and navigation capability . The eight aircraft were to cost £ 259 million

and the forecast in @-@ service date was November 1998 . Although delivered in 2001 , the Mk3 could not receive airworthiness certificates as it was not possible to certify the avionics software .

Unfortunately the procurement was " a profoundly inept piece of procurement " : Sir Peter Spencer , who as head of Defence Procurement inherited the project , said that : the " original requirement was ... actually impossible . I mean , there were 100 essential requirements . I read all of them . One of them said to give protection against any missile coming from any direction . " Spencer later commented : " it is always hard to imagine why people think you would be able cost effectively to buy a bespoke requirement for a very small production run . "

The avionics were unsuitable due to poor risk analysis and necessary requirements omitted from the procurement contract . The Times claimed that the Ministry of Defence planned to perform software integration itself , without Boeing 's involvement , in order to reduce costs . While lacking certification , the helicopters were only permitted to fly in visual meteorological conditions and subsequently stored in climate controlled hangars .

After protracted negotiations to allow them to enter service , Air Forces Monthly reported in November 2006 that the Defence Aviation Repair Agency would likely receive a contract to install the Thales " TopDeck " avionics system on the Chinook HC Mk3s . However , the Ministry of Defence announced in March 2007 that this so @-@ called " Fix to Field " programme would be cancelled , and instead it would revert the helicopters ' avionics to Chinook Mk2 / 2A specification . The programme was estimated to cost £ 50 ? 60 million . In June 2008 , the National Audit Office issued a scathing report on the MoD 's handling of the affair , stating that the whole programme was likely to cost £ 500 million by the time the helicopters enter service . On 6 July 2009 the first of the eight modified Chinook HC Mk3s made its first test flight at MoD Boscombe Down as part of the flight testing and evaluation phase of the HC Mk3 " reversion " program .

= = = Chinook HC Mk4 / Mk5 / Mk6 = = =

A programme to upgrade 46 Chinook Mk2 / 2A and Mk3 helicopters was initiated in December 2008 . Called Project Julius , it includes new digital flight deck avionics based on the Thales TopDeck avionics suite , comprising new multifunction displays , a digital moving map display and an electronic flight bag , installation of a nose @-@ mounted FLIR detector , and upgrading the engines to the more powerful T55 @-@ 714 standard . Upgraded Mk2 / 2A and Mk3 aircraft will be redesignated Mk4 from Mk2 / 2a , and Mk5 from Mk3 . Deliveries are expected to commence in 2011 . The first conversion , a Chinook HC Mk4 , first flew on 9 December 2010 . Initial operating capability status was reached in June 2012 with seven aircraft delivered .

The Chinook HC Mk6 designation has been assigned to the 24 (later reduced to 14) CH @-@ 47F @-@ derived Chinooks ordered in 2009 . These have digital flight @-@ control systems and have all now been delivered

= = Operational history = =

= = = Overview = = =

RAF Chinooks have been widely deployed in support of British military engagements , serving their first wartime role in Operation Corporate , the Falklands War , in 1982 . Chinooks were used in Operation Granby in the 1991 Gulf War , attached to large peace @-@ keeping commitments in the Balkans , the continued British presence in Afghanistan , and in Operation Telic in the 2003 Iraq War . They provide routine supply and support missions to the British military , notably in Operation Banner in Northern Ireland . The helicopter has also been of use in military humanitarian missions and the extraction of civilians from warzones , such as the evacuation of Sierra Leone in 2000 , and the evacuation from Lebanon in 2006 .

One Chinook in particular , known by its original squadron code Bravo November , has come to widespread public recognition due to its remarkable service record . It has seen action in every

major operation involving the RAF in the helicopter 's 25 @-@ year service life , including the Falkland Islands , Lebanon , Germany , Northern Ireland , Iraq , and Afghanistan .

= = = Falklands War = = =

During the Falklands War , Chinooks were deployed by both the British and Argentinian forces . In April 1982 , five Chinooks were loaded aboard the container ship MV Atlantic Conveyor bound for the Falkland Islands , to support the British operations . On 25 May 1982 , the Chinook Bravo November was sent to pick up freight from HMS Glasgow . While the helicopter was airborne , the Atlantic Conveyor was attacked by an Argentine Navy Dassault Super Étendard with an Exocet sea @-@ skimming missile . Bravo November avoided the ship 's destruction , assisted in the evacuation of the ship , and later landed on the aircraft carrier HMS Hermes , gaining the nickname " The Survivor " . Owing to the rapid spread of fire and smoke aboard the Atlantic Conveyor after the Exocet strike , it was not possible to fly any of the helicopters that remained on the ship 's deck .

One Argentine Army Chinook was captured intact by British Army forces after the surrender . RAF Chinooks were part of an estimated force of 40 helicopters in the British task force , alongside Westland Sea King and Westland Wessex helicopters . Post @-@ war , two Chinooks were operated by No. 78 Squadron as part of the Falklands Garrison ; this was reduced to a single helicopter in the mid @-@ 1990s and the type was eventually withdrawn from the Falklands in 2006 in order to free up resources and craft for operations in Afghanistan .

= = = First Gulf War = = =

The Chinook became a vital transit tool during the 1991 Gulf War in Iraq . They were used for moving troops into the region at the start of the conflict ; a Chinook was used on 22 January 1991 to transport a Special Air Service (SAS) patrol on the infamous Bravo Two Zero mission . In the aftermath of the conflict as many as nine British Chinooks delivered food and supplies to thousands of Kurdish refugees from Iraq .

= = = Kosovo = = =

On 6 June 1999 , two Chinooks of No. 27 Squadron left base at RAF Odiham in Hampshire , carrying paratroopers to join NATO forces serving in the Balkans ; six more arrived the following week in Kosovo to support operations such as casualty evacuations and transporting vital supplies . On 12 June 1999 , waves of Chinooks , escorted by Westland Lynx and American AH @-@ 64 Apache attack helicopters , were used to rapidly deploy British infantry forces into Kosovo as a part of NATO 's first phase of deployment . On 10 August 1999 hundreds of Chinooks around the world , including those used by the British armed forces , were grounded due to cracking discovered in the landing gear of a British helicopter during routine inspection .

= = = Sierra Leone = = =

In May 2000 , several Chinook helicopters airlifted British and European Union citizens out of Freetown in Sierra Leone in an evacuation due to regional instability . In September 2000 Chinooks were being used to evacuate casualties from fighting in Freetown to RFA Sir Percivale , a support ship docked there .

= = = Lebanon = = =

In July 2006 , 3 Chinook helicopters of No. 27 Squadron deployed to RAF Akrotiri in Cyprus to evacuate British citizens from Lebanon ; the squadron also flew the EU foreign affairs representative Javier Solana to Beirut at the start of the crisis . Members of the SAS and Special Boat Service (SBS) units were deployed via Chinooks into Lebanon to locate and make contact with British

citizens .

== Afghanistan ==

Chinook helicopters have been relied upon heavily to support the British forces in Afghanistan continuously since the start of the war in Afghanistan in 2001 ; Operation Snipe saw the helicopters used to assist the 1 @, @ 000 British Commandos sweeping a region of southeathern Afghanistan . Due to the threat of improvised explosive devices (IEDs) scattered throughout the terrain by insurgents , transport helicopters have become highly valued and demanded units in this style of warfare . By April 2006 six Chinooks had been deployed by C @-@ 17 transport planes to Kandahar in Southern Afghanistan , in support of Operation Herrick . Two RAF Chinooks were lost in August 2009 during combat operations with the Taliban , one of which was brought down by enemy fire , in spite of warnings months before of Taliban plans to attack the helicopters .

The continued operation of the fleet was made more cost effective when maintaince and support regimes were altered in 2006 ? 7 . On 15 December 2009 the British government announced its Future Helicopter Strategy including the purchase of 24 new build Chinooks , 22 to expand the force and two to replace losses in Afghanistan , to be delivered to the Royal Air Force from 2012 . The number of additional Chinooks was cut to 12 with the October 2010 defence review , however . This will bring the total fleet size to 60 aircraft ; as of 2009 , the RAF had 48 Chinooks in inventory .

== Variants ==

Chinook HC Mk1

New @-@ build aircraft for the RAF based on the CH @-@ 47C , 41 built .

Chinook HC Mk1B

Modification of the 41 Mk1s with metal rotor blades , survivors converted to Mk2 .

Chinook HC Mk2

Conversion by Boeing of 32 surviving Mk1Bs to CH @-@ 47D standard , and 3 new build @-@ aircraft

Chinook HC Mk2A

Similar to the HC2 with strengthened fuselage using milled structure manufacturing techniques , 6 built .

Chinook HC Mk3

Special forces variant based on the CH @-@ 47SD , 8 built .

Chinook HC Mk4

Mk2 / 2A aircraft with upgraded engines and avionics under Project Julius . 46 conversions planned

Chinook HC Mk5

Mk3 aircraft with upgraded avionics under Project Julius .

Chinook HC Mk6

New @-@ build Chinooks announced in 2009 , expected to be delivered beginning in 2014 . Originally 24 aircraft , later reduced to 14 (12 helicopters plus 2 attrition replacements) .

== Operators ==

RAF Odiham

7 Squadron - Joint Special Forces Aviation Wing

18 (B) Squadron

27 Squadron

RAF Benson

28 (R) Squadron - Joint Chinook and Puma HC.2 OCU

There is a suggestion that 78 Squadron , which previously operated the Merlin HC.3 from RAF Benson , could reform as a new Chinook squadron when new HC.6 aircraft on order from Boeing

are delivered .

The day @-@ to @-@ day maintenance of Nos. 18 and 27 Squadron aircraft is carried out by 18 / 27 (Engineering) Squadron , a separate Squadron using the innovative ' fight by flight ' structure to provide the efficiencies of combined engineering whilst maintaining aircrew / ground crew relationships when deployed .

When deployed , the detachment of Nos. 18 and 27 Squadron aircrew and 18 / 27 (Engineering) Squadron groundcrew is known as No. 1310 Flight . The RAF has a total of 48 Chinooks in inventory as of late August 2009 .

= = Notable incidents and accidents = =

On 13 May 1986 , Chinook HC Mk1 ZA715 crashed in bad weather in the Falkland Islands . The helicopter , with four crew and 12 troops , crashed into a hill 4 miles from its destination . With rescuers hampered by blizzards , the personnel were recovered but one crew member had died shortly after the crash , and the co @-@ pilot and a soldier died on the way to hospital . The board of enquiry concluded that the crew had become disorientated due to " white @-@ out " conditions .

On 27 February 1987 , Chinook HC Mk1 ZA721 crashed in the Falkland Islands on a test flight following servicing . After leaving RAF Mount Pleasant , the helicopter was at a normal cruising speed and an altitude of between 300 and 700 feet when it nosed down and crashed into the ground about 6 kilometres south @-@ east of the airfield ; it was destroyed by a subsequent fire . The board of enquiry was unable to determine the exact cause but it may have been the forward @-@ swivelling upper boost actuator jamming . All seven on board , three crew and four technicians , were killed .

On 6 May 1988 , Chinook HC Mk1 ZA672 hit a pier at Hannover Airport while taxiing into position in a confined space . Its front rotor struck the underside of Pier 10 , causing the helicopter to rear up vertically and then fall on its side . A fire started at the rear of the fuselage and soon spread . Three crew members were killed and one had major injuries ; the Chinook was destroyed .

On 2 June 1994 , Chinook HC Mk2 ZD576 crashed on the Mull of Kintyre , Scotland , killing all 25 passengers and all four crew members ; the cause is disputed .

On 19 August 2009 , Chinook HC Mk2 ZA709 the Ministry of Defence announced that a Chinook made an emergency landing following an RPG strike and subsequent engine fire after a cargo drop @-@ off just north of Sangin in Helmand Province , Afghanistan . The Chinook flew two kilometres to a safe area before landing . None of the crew sustained any injuries and all evacuated the aircraft before they were rescued by a second Chinook on the same sortie . The damaged aircraft was then destroyed by coalition air strikes to prevent it falling into the hands of the Taliban .

On 30 August 2009 , Chinook HC Mk2 ZA673 the loss of another Chinook was announced . The helicopter made a hard landing while on operations near Sangin , Helmand province . It suffered damage to the undercarriage , nose and front rotor , but the crew and 15 soldiers on board were unharmed . According to the Ministry of Defence due to the location of the crash it was not possible to safely recover the aircraft and it was destroyed with explosives deliberately . The cause of the hard landing is being investigated , although it is not thought to have been shot down .

= = Specifications (Chinook) = =

Data from Royal Air Force .

General characteristics

Crew : 3 ? 4 (pilot , copilot , one or two air loadmasters depending on aircraft role)

Capacity : 55 soldiers and equipment

Length : 30 @. @ 1 m (98 ft 9 in)

Rotor diameter : 18 @. @ 3 m (60 ft 0 in)

Height : 5 @. @ 7 m (18 ft 8 in)

Empty weight : 10 @, @ 185 kg (22 @, @ 450 lb)

Loaded weight : 12 @, @ 100 kg (26 @, @ 680 lb)

Max. takeoff weight : 22 @, @ 680 kg (50 @, @ 000 lb)

Powerplant : 2 × Honeywell T55 @-@ GA @-@ 712 turboshaft , 2 @, @ 800 kW (3 @, @ 750 hp)
each

Performance

Maximum speed : 295 km / h (183 mph ; 159 kn)

Service ceiling : 5 @, @ 600 m (18 @, @ 500 ft)

Rate of climb : 10 @. @ 1 m / s (1 @, @ 980 ft / min)

Armament

2 × M134 Miniguns and 1 × M60 machine gun