



# Sikorsky Archives News

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## America's Helicopter — The Sikorsky Black Hawk in U.S. Military Service

When Black Hawk program manager Colonel Richard Kenyon received keys to Sikorsky's first production UH-60A at Stratford on October 31, 1978, the U.S. Army got the powerful, hardened assault helicopter it wanted. Over the 40 years since, more than 4,000 S-70/H-60 helicopters have fought wars and saved lives with all the U.S. armed services, 29 allied nations, and civil law enforcement and firefighting agencies.

The Utility Tactical Transport Aircraft System (UTTAS) specified by the Army Materiel Command in 1971 spawned Special Operations, Medical Evacuation and electronic warfare helicopters for the Army; sub hunters and fleet support helicopters for the Navy; rescue helicopters for the Air Force and Coast Guard; and Presidential transports for the Marine Corps. Worldwide, the

S-70 remains the benchmark in military helicopter design and a symbol of U.S. aerospace excellence.

The UTTAS request for proposals from the Army in January 1972 drew on Bell Huey experience from Southeast Asia. The Army wanted a new assault helicopter able to carry an 11-man rifle squad and three crew at high density altitudes, one able to survive mid- or high-intensity battlefield threats.

In his history of the program, "Black Hawk-The Story of a World-Class Helicopter," Ray Leoni acknowledged, "For Sikorsky Aircraft, with its depressed state of production business at the time, winning the UTTAS program was felt to be a matter of survival." Leoni was appointed UTTAS Program Engineering Manager and led the engineering design and test activities from 1972 until Sikorsky won the production award in 1976 during which time he was awarded the Black Hawk design patent.



*After 40 years, the Black Hawk helicopter remains a powerful warfighter and lifesaver. (Sikorsky Archives)*

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Contact us at [iisha@snet.net](mailto:iisha@snet.net) 203.386.4356

Sikorsky and Boeing Vertol were chosen to build UTTAS prototypes in August 1972. The first YUH-60A flew at Stratford nearly six weeks ahead of contract schedule on October 17, 1974 and days later appeared before a Family Day crowd. Sikorsky president Gerald Tobias announced, "The advanced features incorporated in the UTTAS are the most significant technological breakthroughs in the helicopter industry since the advent of the turbine engine in the late 1950's." By March 1976, the Army had three Sikorsky YUH-60 and three Boeing YUH-61 helicopters for competitive testing. The stakes were high, and a Sikorsky News photo of Stratford's East Cafeteria showed a telling banner: "UTTAS: Never forget it has U in it."

On December 23, 1976, the Army named Sikorsky winner of the UTTAS competition with plans for more than 1,100 Black Hawk helicopters. Tobias told his workers, "I believe the Army selected our UTTAS not only for its outstanding performance and maintenance qualities, but because you, the men and women of Sikorsky Aircraft, designed and built a truly production-ready helicopter." The July 1978 Sikorsky News pictured Major General Story Stevens, head of the U.S. Army Aviation Research and Development Command, lowering the first production Black Hawk fuselage onto its final assembly fixture.

## Army Black Hawk

The UH-60A with General Electric T700-GE-700 engines achieved Initial Operational Capability with the 101st Airborne Division (Air Assault) at Fort Campbell, Kentucky in November 1979. It first flew in combat in Operation Urgent Fury, the rushed invasion of Grenada in October 1983. Redundant, ballistically-hardened controls and self-sealing fuel tanks quickly proved their value. One Black Hawk with a wounded pilot kept flying with 45 bullet holes in the airframe, two in the main rotor, and one in the tail rotor. UH-60As flew their first Dust Off medical

missions under fire in Grenada, and the first Special Operations Black Hawks inserted Navy SEALs.

Army Black Hawks went to war again in Panama during Operation Just Cause in December 1989. Twenty-five of the 53 UH-60As in the fight took battle damage, but 24 were flying again within a day.

The UH-60A was succeeded in production by the UH-60L in October 1989 with more powerful -701C engines and drivetrain and control improvements from the Navy Seahawk. International S-70A Black Hawks were based upon the UH-60L.

Special Operations Black Hawks evolved with early digital cockpits in the MH-60L and an integrated avionics system in the MH-60K. The air-refuelable MH-60K Special Operations Aircraft for long-range night/adverse weather missions rolled out 13 March, 1990. It was declared Mission Ready in October 1995 and would serve worldwide until replaced by the MH-60M in 2015.



*The UH-60A achieved Initial Operational Capability with the U.S. Army in 1979. (Sikorsky Archives)*



*The UH-60L entered production in 1989.  
(Sikorsky Archives)*

The Army had more than 1,000 Black Hawks by 1990 when UH-60s were rushed to Operation Desert Shield in Southwest Asia. In the fast-moving Desert Storm of 1991, Black Hawks hauled troops, equipment, and supplies throughout the combat theater. EH-60A Quick Fix Special Electronic Mission Aircraft flew in Desert Shield and Desert Storm to intercept, jam, and locate Iraqi communications.



*EH-60A Quick Fix Special Electronic Mission Aircraft could intercept enemy communications. (Sikorsky)*

The Army Medical Service Corps deployed 60 UH-60As for Dust-Off missions in Desert Shield and Desert Storm, and lessons learned led to an optimized air ambulance.

A single YUH-60A(Q)1 proof-of-principle aircraft with clinical cabin and MEDEVAC avionics was converted from a Tennessee National Guard Black Hawk in 1992. A production UH-60Q was approved in 1994, and subsequent Dust Off developments gave the Active Army its first MEDEVAC HH-60L in 2001. The HH-60M gave Dust-Off pilots an even more powerful air ambulance with fully integrated avionics. C Company of the 3rd Battalion, 126th Aviation Regiment received the first HH-60M off the Sikorsky line in September 2008.

In war and non-combat contingency operations, the Black Hawk performed with equal valor. Black Hawks were part of the relief forces in Operation Provide Comfort after Desert Storm, and they went on to support relief and peacekeeping operations in Somalia during Operation Restore Hope in 1992 and 1993. Fifty Army Black Hawks were part of the initial peacekeeping contingent for Operation Joint Endeavor in Bosnia in 1995. When Operation Uphold Democracy pressured Haiti's dictator to step down in 1995, 33 Black Hawks of the 82nd Aviation Brigade self-deployed 400 miles over water in preparation for the invasion. Fifty more UH-60s flew from the carrier USS Eisenhower to deploy the spearhead of the 10th Mountain Division.



*The YUH-60A(Q)1 evolved into today's HH-60L/M Dust-Off Helicopters. (Sikorsky)*



*The MH-60K Special Operations Aircraft joined the 160th Special Operations Aviation Regiment in 1995 (Sikorsky)*

The Army National Guard took delivery of the 2,500th Black Hawk – a UH-60L – in 2002. However, Operations Enduring Freedom in Afghanistan in 2001 and Iraqi Freedom in Iraq in 2003 underscored the limits of Black Hawk performance at high density altitudes, and need for integrated cockpits to manage crew workload. The UH-60M updated the crashworthy, ballistically-tolerant Black Hawk with a high-lift all-composite main rotor, a digital automatic flight control system, more powerful and durable -701D engines, and an integrated cockpit with digital connec-



*The first UH-60M was a conversion of an analog Black Hawk. (Sikorsky)*

tivity. The Army Aviation and Missile Command gave Sikorsky a contract in May 2001 to convert one UH-60A, one UH-60L and one Medevac UH-60A into UH/MH-60M configuration, and to build one new M-model Black Hawk from scratch.

UH-60M remanufacturing plans soon gave way to new production. Sikorsky presented Army leadership with the first production UH-60M on August 3, 2006. The new Black Hawk went to war in Iraq in 2008. When the 1,000th H-60M was delivered in October 2016, Sikorsky president Dan Schultz said, “We are honored to provide our country’s men and women in uniform with a proven multi-role aircraft they can count on to perform their missions every day.”

U.S. Army plans call for 956 Mike-model utility and 419 Medevac aircraft delivered through 2029. Another 760 UH-60Ls will become UH-60Vs with digital cockpits. Special Operations Command received the first of 72 new-build MH-60Ms with YT706 engines and the Common Avionics Architecture System in 2009 and fielded the first MH-60M company in November 2011.

Foreign Military Sales and Direct Commercial Sales have delivered S-70M/UH-60M Black Hawks to International operators Simultaneous with Stratford production, the S-70i Black Hawk is made by Sikorsky Mielec in Poland for the global market.



*The MH-60M Special Operations Black Hawk was fielded in 2011. (US Army)*



*The SH-60B Seahawk gave the Navy its Light Airborne Multipurpose System. (U.S. Navy)*

## Navy Seahawk

In May 1975, before the Army UTTAS decision, Sikorsky unveiled a full-scale mockup of the S-70B Seahawk Light Airborne Multi-Purpose System (LAMPS Mk. III) for the U.S. Navy. LAMPS III made the helicopter an extension of the ship with Anti-Submarine and Anti-Surface Warfare (ASW and ASuW) sensors datalinked to frigates, cruisers, and destroyers. IBM Systems Integration Division (today Sikorsky Systems Integration) was awarded a Full Scale Development contract in 1978 to integrate the system. In the competition for the air vehicle, the “marinized” Black Hawk beat a proposed version of Boeing’s YUH-61.

The SH-60B incorporated power-folding main and tail rotors, small-deck landing gear, and a deck haul-down system. It carried sonobuoys, radar, and Electronic Support Measures (ESM). The first Seahawk flew in December 1979, and Sikorsky received the production contract in September 1981.

The first SH-60B squadron, HSL-41, received its first helicopter in September 1983 and made its first operational deployment late that year aboard the frigate USS Crommelin in the Pacific. When U.S. forces clashed with Libya in the Gulf of Sidra in early 1986, Seahawks were invaluable sources of data for the air-sea battle. When the crossfire between Iran and Iraq drew US forces to the Persian Gulf in 1987 for Operation Earnest

Will, Seahawks helped protect US Navy ships and reflagged Kuwaiti oil tankers from fast gunboats, floating mines, and shore-based missiles.

A government-to-government sale delivered the first international Seahawks (S-70B-1s) in 1988. That same year, the production line introduced more powerful T700-GE-401C engines and dynamic improvements. The Iraqi invasion of Kuwait in 1990 sent US Navy Seahawks back to the Gulf for Operation Desert Shield and Desert Storm, again to identify surface contacts in busy shipping lanes. Penguin anti-ship missile capability reached the fleet in 1993, and the SH-60B Block Upgrade 1 added new sensors and aircraft survivability equipment. SH-60B deliveries concluded in May 1996 with the 181st aircraft. The hard-flown LAMPS III helicopters were retired in 2015.

The U.S. Navy chose a different Sikorsky Seahawk to replace the sonar-dipping S-61 (SH-3) Sea King in the noisy inner zone around aircraft carriers. The S-70B-4 (SH-60F) CV Helo first flew at the Stratford plant in March 1987 and entered service with squadron HS-10 at North Island in June 1989. HS-2 on the Atlantic Coast made the first operational deployment in 1990. The SH-60F replaced the last active duty ASW Sea King by 1993. CV Helo deliveries concluded with the 82nd helicopter in December 1994. The SH-60F served the U.S. Navy until 2016, and it started a line of international Naval Hawks.



*The S-70B-4 or SH-60F CV Helo was the carrier-based ASW helicopter of the U.S. Navy. (Sikorsky)*

# S-70/H-60 Lineage – U.S. Military



**U.S. AIR FORCE**



SH-60B



SH-60F



HH-60J



HH-60H



MH-60R



MH-60S



VH-60N



UH-60A / HH-60A



UH-60L / HH-60L



UH-60M / HH-60M



EH-60A



MH-60K



MH-60M



UH-60Q



MH-60G / HH-60D



HH-60G



HH-60W

## US, Military Helicopter Designation Codes:

- EH — Electronic Warfare
- HH — Rescue
- MH — Multipurpose
- SH — Antisubmarine Warfare
- UH — Utility
- VH — Executive Transport

An 'austere' version of the SH-60F – the S-70B-5 or HH-60H - was ordered by the U.S. Navy to fly both Strike Rescue and Special Warfare Support missions. The first HH-60H was delivered to reserve squadron HCS-5 at Point Mugu, California in August 1989. HCS-4 at Norfolk, Virginia followed in February 1990 and provided aircraft and crews for Desert Shield and Desert Storm. As the SH-60F replaced the Sea King in the carrier antisubmarine warfare community, carrier-based squadrons mixed SH-60Fs with HH-60Hs for CSAR and Plane Guard rescues and utility missions. The last of 42 HH-60Hs was delivered in 1996.

In 2002, a new "marinized" Black Hawk began to replace the Boeing Sea Knight in the Vertical Replenishment mission, sling-lifting cargo pallets from supply ships to surface combatants underway. The MH-60S Knight Hawk with its digital avionics architecture subsequently integrated Airborne Mine Countermeasures and armament for CSAR and surface warfare missions. Knight Hawks also flew air ambulance missions in southwest Asia. The last MH-60S off the Stratford production line completed a run of 275 helicopters in 2016.

U.S. Navy air wings today mix MH-60S Seahawks for strike rescue and utility missions with multi-sensor MH-60Rs for ASW and ASuW. The first Romeo Seahawk, a re-built SH-60B, flew in July



*The U.S. Navy HH-60H was equipped for Strike Rescue and Special Warfare Support. (U.S. Navy)*



*The MH-60S Knight Hawk started as the U.S. Navy's new Vertical Replenishment helicopter.. (Sikorsky)*

2001, and MH-60R plans shifted from remanufacturing to new-build production. The Romeo with advanced dipping sonar, sonobuoys, radar, ESM, and electro-optics ultimately assumed the roles of both the SH-60B and SH-60F. It shares an integrated Common Cockpit with the Sierra Seahawk and has powerful processors for autonomous operations. Helicopter Maritime Strike squadron HSM-71 deployed with the MH-60R for the first time in 2009. Like the Sierra, the Romeo can be armed with Hellfire missiles, laser-guided rockets, and guns for surface strike missions.

Sierra and Romeo Seahawks deploy to small-deck ships within Carrier Strike Groups. In 2016, the Eisenhower group returned from a seven-month deployment around the Middle East and eastern Mediterranean including combat operations off Iraq and Syria. HSM-74 deployed 11 MH-60Rs aboard four ships in the group and flew surface surveillance, Anti-Submarine Warfare, electronic surveillance, maritime interdiction, low-speed air intercepts, and logistic support missions. On the same deployment, Helicopter Sea Combat squadron HSC-7 deployed eight MH-60S Knight Hawks to fly Plane Guard, logistics and Anti-Surface Warfare missions. HSC-7 also provided over-water and overland strike rescue capability.



*The MH-60R Multi-Mission Naval Helicopter replaced the SH-60B and SH-60F in the U.S. Navy (Sikorsky)*

The U.S. Navy took delivery of its 251st and final MH-60R in 2018 and expects Romeo and Sierra Seahawks in service to 2040. International Naval Hawks remain in production at Stratford.

## Coast Guard Jayhawk

At the same time the US Navy specified an HCS helicopter, the U.S. Coast Guard issued a requirement for a Medium Range Recovery (MRR) helicopter to replace the Sikorsky S-61R (HH-3F Pelican). The first HH-60J Jayhawk with search radar and other Coast Guard equipment was officially delivered in March 1990.

On the night of 28 October, 1991, a Jayhawk from Elizabeth City flew into Hurricane Grace responding to a distress call from the sailing vessel Anne Kristina about 300 nm east of Cape Henry, Virginia. The Jayhawk crew refueled on the aircraft carrier USS America conducting sea trials 100 nm offshore and arrived on the rescue scene to execute an automatic precision approach to coupled hover. They located the sinking schooner with night vision goggles, dropped a rescue swimmer in 40 ft seas, and hovered in 60 kt winds and driving rain to hoist nine sailors from the Atlantic. The HH-60J returned to the USS America with 13 people aboard.

With external fuel, Jayhawks have six to seven hours endurance. On December 12 1993, and HH-60J from Elizabeth City, North Carolina hovered in gale winds at night to rescue three sailors from a boat foundering in the Atlantic 400 nm of the coast. The helicopter then continued on to Bermuda and landed with 50 minutes fuel reserve 620 nm from home. In December 2000, two Jayhawk crews rescued 34 sailors from a sinking cruise ship 225 miles off the Virginia coast. One HH-60J completed the return trip through the violent Atlantic storm with 26 survivors and four crew aboard.

Sikorsky delivered the last of 42 HH-60Js to the Coast Guard in 1996. Jayhawks acquired night visionics, health-and-usage monitoring systems, and other improvements in service. Aging airframes, obsolescent avionics, and a new Airborne Use of Force (AUF) mission after 9/11 led the Coast Guard Aviation Logistics Center (ALC) at Elizabeth City, North Carolina, to rebuild the HH-60J fleet to MH-60T standards with “glass” cockpits built around the Common Avionics Architecture System.



*The Coast Guard HH-60J Jayhawk has been updated to the digital MH-60T. (Sikorsky)*



MH-60Ts rescued 14 crewmembers of the sinking HMS Bounty replica in superstorm Sandy in 2012. The Coast Guard completed upgrades to 45 MRR helicopters in August 2016 and has acquired 31 SH-60Fs and 12 HH-60Hs from the Navy with plans to convert at least 40 of the retired aircraft to MH-60Ts and sustain the fleet into the mid-2030s.

## Air Force Pave Hawk

The Secretary of the Air Force approved a Mission Need Statement in November 1980 for a combat rescue version of the Sikorsky S-70/UH-60A. Sikorsky received a contract in late 1982 to convert two Black Hawks into HH-60D Night Hawks. The sophisticated HH-60D flew in February 1984 but was abandoned with budget cuts. However, 11 UH-60As delivered to the Air Force for pilot and maintainer familiarization in 1982 started an evolution that continues today with the HH-60W Combat Rescue Helicopter. The Air Force upgraded the 11 Black Hawks to



*The Air Force HH-60D Night Hawk was to provide a Combat Search and Rescue helicopter. (Sikorsky)*

MH-60G Special Operations helicopters with refueling probes in 1984, folding stabilators in 1985, and some special mission avionics in 1986. In 1989, work began on a 'glass cockpit'

for what was then the Pave Hawk. MH-60Gs flew Special Operations in Panama in 1989, and provided CSAR capability in and around Iraq in Operation Desert Storm in 1991. HH-60Gs with the engines, drivetrain, and flight controls of the UH-60L entered Rescue Squadrons starting in 1990. Air Force Special Operations Command ultimately transferred all Pave Hawks to Air Combat Command rescue squadrons.

Full-spectrum Personnel Recovery as flown by active duty Air Force, Air National Guard, and Air Force Reserve squadrons with HH-60Gs ranges from Combat Search and Rescue for shot-down aircrew to Casualty Evacuation in natural disasters. During Operation Allied Force over Serbia in 1999, Pave Hawks of the 41st RQS recovered two Air Force pilots down behind enemy lines. HH-60Gs evacuated wounded during Operation Anaconda in Afghanistan in 2001, and they remained high-demand Medevac assets in Operations Enduring Freedom and Iraqi Freedom. After Hurricane Katrina in September 2005, more than 20 active-duty, Reserve, and National Guard Pave Hawks flew round-the-clock for nearly a month to save more than 4,300 Americans.



*The Night Hawk mission is today flown by the HH-60G Pave Hawk. (USAF)*

Operational attrition reduced the size of the MH-60G fleet. In June 2017, the Air Force accepted the first of 21 Pave Hawk Operational Loss Replacement aircraft converted from UH-60Ls to HH-60Gs for Air National Guard squadrons. The new Sikorsky HH-60W Combat Rescue Helicopter (CRH) is based on the Army UH-60M. First flight of the CRH is scheduled for the fourth quarter of 2018. Full Rate Production should start in early 2021 against plans for 120 HH-60Ws to replace well-worn HH-60G Pave Hawks.

## Marine White Hawk

The primary mission of pioneering Marine Corps test squadron HMX-1 at Quantico, Virginia is transporting America's Chief Executive. The Marine One call sign is used by any United States Marine Corps aircraft carrying the President of the United States. Pending delivery of the new Sikorsky VH-92A Presidential helicopter, the squadron continues to fly 11 VH-3Ds delivered in 1974 and eight VH-60N White Hawks introduced in 1988.

The VH-60N is a modified UH-60L airframe with Seahawk dynamics and engines and a modified SH-60B Automatic Flight Control System. The

polished, upholstered executive transport with its Presidential communications suite is also hardened against electromagnetic pulse and has a folding Seahawk stabilator for air transportability.

A VH-60N mid-life upgrade completed in 2002 updated avionics and repaired structures. A communications upgrade in 2009 added secure satellite communications. The VH-60N cockpit upgrade completed in 2012 gave the White Hawks Common Avionics Architecture System with hardware and software shared by the Coast Guard MH-60T. White Hawks also acquired GE-T700-401C engines now in Navy Seahawks. Plans call for 21 VH-92As to replace VH-60Ns and VH-3Ds between Fiscal 2019 and Fiscal 2023.

The capabilities and missions of Sikorsky's S-70 Black Hawk continue to evolve. International S-70Ms and S-70is are now available with integrated armament. U.S. Navy MH-60Rs are operational with Automatic Radar Periscope Detection and Discrimination. The U.S. Army continues development of technologies to see and fly in Degraded Visual Environments. In its latest iterations, America's Black Hawk is more ready than ever to fight wars and save lives.



*The Presidential VH-60N remains in service with Marine squadron HMX-1.  
(U.S. Navy)*

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*The Archives has been temporarily consolidated into the old Reception Center, awaiting the renovation of the Barrett House*



Prepared by Frank Colucci and John Bulakowski with graphic art and layout by Jodi Buckley.



“We, the designers and builders of airplanes, would be building something useless if it were not for the skill and courage of our airmen whose exploits could fill not merely a volume, but could fill libraries, and would be just as fascinating to read as any brilliant human exploits”

Igor Sikorsky – Igor Sikorsky, His Three Careers in Aviation

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