



D20 MODERN



A d20 Modern Vehicle *low level hell*

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AH-1W SUPER COBRA ATTACK HELICOPTER, USA

Introduction

Where else would a work covering attack helicopters begin but with the granddaddy of them all, the AH-1 Cobra. Although this work's focus is on providing information on the model currently in the U.S. inventory, we will also take a detailed look back into the evolution and development of the world's first dedicated attack helicopter.

History

The snake's lineage begins in the war-torn jungles of Vietnam and the army's realization that the men on the ground were in dire need of an aircraft capable of providing on-call close air support without having to wait and rely on the Air Force to provide it.

Some of the army's UH-1 'Huey' utility helicopters had been modified to perform this role, these 'gunships', sometimes referred to as 'heavy hogs' provided the necessary fire-support but their large fuselages made inviting targets to the North Vietnamese and Viet Cong soldiers on the ground.

The idea for a light and fast, armed escort helicopter had already been around for a few years, the U. S. Army's Advance Aerial Fire Support System (AAFSS) program began in 1964 and several candidates were already in development. Lockheed had their AH-56A Cheyenne, which they unveiled in May 1967 and Bell Helicopter was working on their attack helicopter design, which wrapped a smaller fuselage around the dynamics of the Huey resulting in the Model 207 Sioux Scout.

While Lockheed and the army continued to develop the sophisticated, AAFSS-inspired Cheyenne; Bell began development of the model 209 AH-1 "Huey" Cobra. Intended as a successor to the UH-1B/UH-1C "Huey" to fill the gunship role, the 209 incorporated the best features from the UH-1C and first flew in September 1965, becoming the World's first attack helicopter.

The escalation of the conflict in Vietnam caused an urgent need for greater armed helicopter performance and the success of the 209 produced orders for prototypes and production models of the 209 as an interim attack helicopter, pending production of the AAFSS.

In March 1966 the U. S. Army ordered 1,100 AH-1G aircraft from Bell Helicopter, the first models arriving in Vietnam in September 1967. The Cobra's primary mission was to provide fire support for its troop-carrying sister, the Huey and its introduction immediately provided ground commanders with air superiority without the wait of calling in the Air Force. The Cobra was used extensively in a variety of missions ranging from armed escort and reconnaissance to fire suppression and aerial rocket artillery.

Sidebar

A highly effective technique developed in Vietnam was to pair the "Snake" with an unarmed OH-6A Cayuse "Loach", OH-58A Kiowa light observation helicopter, or a UH-1H "Nighthawk", creating a highly effective and lethal hunter / killer or "pink" team.

The narrow 38-inch wide airframe presented a much more difficult target than its derivative, the 100-inch wide UH-1 "Huey".

The AH-1G logged more than 1 million flight hours in Vietnam.

The original AH-1G prototype (Bell N209J) had fully retractable skids.

The Cobra was first employed in Vietnam with the 1st Cavalry Division (Airmobile) in August 1967.

During the early 1970s, the Army conducted a series of tests to determine the suitability of the AH-1G Cobra to operate in an antitank role in the European environment. These tests demonstrated that anti-armor helicopter teams could achieve high ratios of armored vehicles destroyed for every missile-firing helicopter lost. This paved the way for the development of the modern attack and scout helicopters and the doctrinal principles that would take Army aviation into the next century.

Written by Jim Wardrip

AH-1G weapons

- 2.75 inch (70mm) Folding Fin Aerial Rockets (FFARs) in M158 seven-tube or M200 19-tube rocket launchers.
- A chin-turret linked to the M28/M28A1 armament subsystem mounting the M134 7.62mm minigun and the M129 40mm grenade launcher.
- The M134 minigun in a fixed side-mounting M18/M18A1 gun pod.
- A port side mounted M195 20mm automatic gun on the M35 armament subsystem.
- The XM118 smoke grenade dispenser.

sidebar:

Some early model AH-1G/AH-1Q Cobras mounted either two M134 miniguns or two M129 grenade launchers in a M28A1 chin-turret (TAT-141). Because of problems with the ammunition feed systems, the twin-gun configuration was discontinued.

The AH-1G was equipped with the CONFICS (Cobra Night Fire Control System) and the SMASH (Southeast Asia Multi-Sensor Armament Subsystem for Huey Cobra) systems to provide the Cobra with the capability of detecting, identifying, and targeting ground targets during day or night operations.

AH-1J

Along with the Army, the Marines operated Huey gunships in Vietnam, and ordered their own version of the Cobra in May 1968.

For sea duty, the USMC required a twin-engine version of the AH-1G; thus, the SEA COBRA (AH-1J) was born. The twin Pratt and Whitney Twinpac T400 engines provided an overall increase in power and the Sea Cobra also included a new nose turret gun housing the three barrel XM-197 20mm cannon. While development and production of the first 49 AH-1J's ordered were under way, the Marines received 38 AH-1Gs from the Army. The USMC Cobras became operational in April 1969 and began fielding the J models in February 1971.

marine requirements

The Marines utilize attack helicopters to provide close-in fire support coordination. Such support is required during amphibious ship-to-shore movements and subsequent shore operations within the objective area. Some of these duties include:

- Armed escort for helicopters carrying personnel and cargo
- Landing zone fire suppression support
- Visual armed reconnaissance
- Target marking and direction for high-performance attack aircraft
- Convoy escort and fire suppression for ground units
- Operations from air capable ships
- Point target attack of threatening armor

- Self-defense and protection of helicopters carrying personnel and cargo from threatening air-to-air weapon-equipped helicopters

AH-1Q

Following the termination of the AH-56 Cheyenne program in August 1972 an Improved Cobra Armament Program (ICAP) was initiated to fill the operational gap that was left. The ICAP resulted in the anti-armor version of the snake, the AH-1Q. It fielded an M28A1E1 turret, XM65 TOW/Cobra missile subsystem, infrared sight, and XM128 helmet sight subsystem (HSS). The AH-1Q was equipped to fire eight Hughes BGM-71 130mm TOW anti-tank missiles mounted in a pair of two-round pods on the outboard pylons. M200 19-tube 2.75-inch rocket launchers were carried on the inboard pylons. The AH-1Q was deployed to Vietnam in 1973, but was unable to carry a full weapon load in that environment, leading to development of the AH-1S Cobra. The AH-1Q was the first Cobra to feature the snub-nosed Telescopic Sight Unit (TSU).

AH-1S

The AH-1S was a three-step program initiated to upgrade all existing AH-1G, AH-1Q, and AH-1R Cobras to the advanced Modernized version. All AH-1S Cobras were redesignated by the US Army as AH-1P, AH-1E, or AH-1F Modernized Cobras. All Modernized Cobras used the M73 reflex sight for optical sighting and fire control and the Telescopic Sight Unit (TSU). None of the four armament subsystems used with the four AH-1S variants (Modified, Production, Upgunned, and Modernized) were interchangeable without considerable modification or conversion of the AH-1S aircraft.

modified AH-1S

This designation refers to all existing Cobras modified to Production AH-1S standard beginning in 1976. With the addition of the XM65 TOW/Cobra missile subsystem, the Cobra's primary mission changed to the anti-tank role, but retained the direct aerial fire support, armed escort, and reconnaissance missions. The new armament subsystem was redesignated M28A2.

The Modified AH-1S could be identified by the snub-nosed mounting of the Telescopic Sight Unit (TSU) and had the traditional rounded crew canopy, instead of the new semi-flat canopy that became standard with the new production AH-1S. Some AH-1S Cobras received the C-NITE upgrade, which allowed the gunner to designate and acquire targets during night or adverse operating conditions.

production AH-1S

The first step of the program took place from March 1977 to September 1978 and involved 100 aircraft. These models featured a semi flat crew canopy, an improved instrument and control panel layout arranged to enhance nape-of-the-earth

(NOE) flight, and new composite rotor blades. Equipped to fire the XM65 airborne TOW/Cobra anti-tank missile system using the M128 helmet sight subsystem (HSS), the Production AH-1S also fielded an upgraded engine, gearbox, and transmission. The Production AH-1S also mounted the M28A3 armament subsystem with M134 minigun and M129 grenade launcher and retained the 2.75 inch rocket system. This new version was first fielded in August 1977 and could be identified by the new flat panel canopy.

upgunned AH-1S

Step 2 of the modernization program involved 98 new production aircraft and took place between September 1978 and October 1979. This model featured a new 20mm/30mm universal gun turret fitted with the three-barrel M197 20mm automatic gun and retained the M65 TOW/Cobra missile system but lacked the rocket management system (RMS) standard on all other model Cobras so it could not use the 2.75 inch rocket system. The Upgunned AH-1S could be identified by the tapered tips on the new fiberglass main rotor blades.

AH-1E enhanced

This model was identical to the Upgunned AH-1S (ECAS) with the addition of the M130 flare and chaff dispenser and utilized a different armament subsystem.

AH-1S modernized cobra

The final stage of the program involved 530 aircraft and took place from November 1979 to June 1981. Of 530 Modernized Cobras, 387 were converted for old AG-1G Cobras and 143 were from new Production aircraft. The Modernized Cobra featured a new fire control system that included a pilot's Head-Up Display (HUD), Helmet Sight Subsystem (HSS), laser rangefinder and tracker, and a new Fire Control Computer (FCC). The modernization program also added an M143 Air Data Subsystem (ADS). The installation of the M147 Rocket Management Subsystem (RMS) permitted use of the standard 2.75 inch rocket system, in addition to the M65 TOW/Cobra missile system, and the M197 20mm gun on the new M97A2 universal turret. The Modernized AH-1S could mount M158 seven-tube, M200 19-tube, M260 seven-tube, or M261 19-tube rocket launchers. The Modernized AH-1S Cobra had an infrared jammer mounted on the top of the engine fairing and a hot metal plus plume infrared suppressor extending from the back of the engine. The Modernized AH-1S could be identified by the air data sensor mounted above the right side of the canopy.

AH-1P production cobra

This model was identical to the new Production AH-1S with the addition of the M130 flare and chaff dispenser and utilized a different armament subsystem. The AH-1P could be identified by the flat panel canopy.

AH-1F

The AH-1F Modernized Cobra is identical to the AH-1S Modernized Cobra, and can be identified by the air data sensor mounted above the right side of the canopy. Armament consists of the three-barrel M197 20mm automatic gun mounted in the chin turret, eight TOW anti-tank missiles, and the Hydra 70 2.75 inch rocket system. The Cobra can also disperse chaff and infrared jamming flares using the M130 general purpose dispenser. Some AH-1F Cobras have received the C-NITE upgrade, which allows the gunner to designate and acquire targets during night or adverse operating conditions.

AH-1T

To address the U.S. Marine Corps requirement for a greater armament capacity, the AH-1T upgrade was initiated. An upgraded engine and transmission package was installed along with extending the tailboom and fuselage. Other improvements enhanced the combat capabilities of the AH-1T, making it fully capable of performing its attack mission in all weather conditions and adding direct air support, antitank, armed escort, and air-to-air combat to its repotay. The updated TOW missile sight includes a laser augmented tracking capability, thermal sights and a FLIR to allow for acquisition, launch, and tracking of all types of TOW missiles in all weather conditions.

AH-1W super cobra

In 1983, the USMC ordered a fully navalized helicopter to replenish their inventory, the upgraded AH-1T, designated the AH-1W was received in 1986. The upgraded 'Whiskey' includes the Tactical Navigation System (TNS), a component of the larger NTS/Canopy/Cockpit Modification (CCM) that replaces the existing canopy, nose faring, and copilot/gunner instrument panel to make provisions for the NTS (see below) and adds the TNS to the front cockpit. Additionally, a communication and navigation upgrade incorporated a newer radio and a Global Positioning System / Inertial Navigation System.

The Night Targeting System (NTS) upgrade is a modification of the existing M-65 TOW Missile System that offers a fire control system providing the flight crew with the ability to detect, acquire, track, lock-on, range, and designate targets under day, night, and adverse weather conditions. This modification has also resulted in increased efficiency in the front cockpit and helps divide cockpit workload between the front and rear cockpits.

Some additions are:

- Multi-Function Display (MFD) in the front cockpit; and addition of the ANVIS HUD system with control heads in both cockpits.
- The Night Targeting System (NTS) adds a FLIR, CCD TV camera and Laser Designator / Rangefinding System (LDRS) to the AH-1W.
- Electronic Warfare (EW) Suite reduces aircraft vulner-

ability with electronic countermeasures. The suite is designed to alert and protect the aircraft from surface-to-air and air-to-air missiles. The Missile Warning System (MWS) provides a visual and aural warning to flight crews of missile detection, while at the same time the MWS will initiate countermeasures by sending a signal to the Countermeasures Dispenser Set (CDS). The Laser Warning Receiver detects pulsed laser light (such as a rangefinder) directed at the helicopter and warns the crew of this activity. It provides an audio alert and identifies the threat by its type and location relative to the helicopter. The Radar Detection System is a passive omni-directional detection system which receives and displays information to the pilot concerning the radar environment surrounding the helicopter.

during operation desert storm

the AH-1W comprised less than 20% of the attack helicopter force deployed, yet flew more than 50% of the total attack force flight-hours.

Super Cobras flew more than three times the number of hours per aircraft per month than any other attack helicopter.

its reliability and 92% mission readiness rate were superior to all other attack helicopters by as much as 24%...

Marine Corps crews and their AH-1Ws destroyed 97 tanks, 104 armored personnel carriers and vehicles, 16 bunkers and two antiaircraft artillery sites.

Future Upgrades include provisions for an Inflatable Body And Head Restraint System (IBAHRS). The IBAHRS itself will be incorporated upon receipt of the system. An operational requirement has been identified for a Wing Tip Armament Station modification and retrofit. Upon approval, this upgrade will be incorporated into the AH-1W airframe and will include as a minimum provisions for integration of up to six (6) universal weapons stations. The Cockpit Integration Requirement identified in the Operational Requirements Document for the AH-1W Mid Life Upgrade will be targeted by the 4 Bladed program which is being studied as another future AH-1W weapon system enhancement.

The future of the snake, the 'Zulu'

The snake is currently the subject of a major upgrade program that will bring with it the 'Z' designation. The program involves replacing the existing rotor system with an advanced 4-blade configuration. The new rotor system offers a vast improvement in the snake's flight characteristics increasing the aircraft's flight envelope, maximum speed, vertical rate-of-climb, payload, and rotor vibration level.

Also part of the 'Z' transformation is a longer-range Hawkeye target sight system that includes a FLIR sight, CCD TV, and an

eye-safe laser rangefinder / designator. To utilize the Hawkeye TSS the pilot is equipped with the Top Owl helmet-mounted display system which has a Gen IV image intensifier and can fully utilize the capabilities of the Hawkeye.

The Cobra Radar System is based on the Longbow radar that equips the AH-64D Apache. The system is located within a pod that can be mounted on one of the wingtips or in a stores position. The CRS can automatically search, detect, classify and prioritize multiple moving and stationary targets.

weapons

The snake's primary role is as a tank-killer. To perform this mission it can be equipped with the TOW or Hellfire anti-armor missiles and is being qualified to carry the Maverick missile. Utilizing the LAU-7 rail launcher, the Super Cobra can also be equipped with the Sidewinder air-to-air missile and the Sidarm anti-radiation missile, giving the snake some very capable fangs for the air-to-air role as well.

For ground targets with a softer hide, the Super Cobra can fire the Advanced Precision Kill Weapon System (APKWS), formerly known as Hydra, family of guided and unguided 70mm rockets or the larger 127mm Zuni rocket bombs. And for the close-in work, the snake carries a three-barrel 20mm With the gun in a fixed-forward position, the pilot can aim by maneuvering the helicopter. Either crew member can slave the turret to the helmet-mounted sight, and aim the gun by looking at the target.

The snake is a deadly predator both day and night, the night targeting system (NTS) integrates a forward-looking infrared (FLIR), which provides automatic target tracking with a laser designator/rangefinder and video recorder.

countermeasures

The H1 Super Cobra upgrade includes provision of a new electronic warfare suite, which includes a new radar warning system, a missile warning system, a laser warning receiver, an infrared countermeasures system, and a chaff and infrared flare dispenser.

AH-1W SUPER COBRA

The AH-1W Super Cobra is a day/night marginal weather Marine Corps attack helicopter that provides enroute escort for our assault helicopters and their embarked forces. The AH-1W is a two-place, tandem-seat, twin-engine helicopter capable of land- or sea-based operations. The AH-1W provides fire support and fire support coordination to the landing force during amphibious assaults and subsequent operations ashore.

Game notes

The AH-1W provides 3/4 cover for Crew and is 12 squares long, 10 squares wide (rotor diameter).

The snake receives a +4 Defense bonus due to its very narrow fuselage configuration (38" wide).

Chaff (CHF): +4 Gear Bonus to Defense when attacked by radar-guided weapons. This system has 4 charges and must be activated by the pilot.

Flares (FLR): +4 Gear Bonus to Defense when attacked by heat-seeking weapons. This system has 4 charges and must be activated by the pilot.

Electronic Warfare Suite (EWS): Identifies when the aircraft is illuminated by radar or laser surveillance systems and detects missile lock.

Helicopter Infrared Night Vision System (HIRNS): This system provides the pilot and gunner with enhanced day/night viewing capabilities. The pilot and gunner may ignore concealment penalties associated with darkness and smoke when maneuvering the aircraft or firing the weapon systems.

Integrated Helmet and Display Sighting System (IHADS): This system positions a monocular over the pilot's eye and displays the view presented by the HIRNS. The system provides automatic weapon aiming which can be used by day or night.

weapons

The AH-1W is armed with a 20mm three-barrel Gatling-type turreted cannon with 750 rounds of ammunition mounted under the nose.

In addition, the AH-1W has 4 hardpoints, each hardpoint can mount one of the following:

- (1) Sidewinder Air-to-Air missile
- 1) Sidearm Anti-Radiation missile
- (1) ATGM quad pack (a maximum of 2 quad packs can be mounted on the aircraft)
- (1) 19 round 70mm rocket pack
- (1) 7 round 12.7cm Zuni rocket pack

AIM-9C Sidewinder missile

The AIM-9 Sidewinder is a close-range, infrared homing, air-to-air missile 9.5 feet in length and weighting 186 pounds. It is the mostly widely used AAM in service with western forces, with 28 nations counting it in their inventory. Full range increment penalties to the attack roll are in effect, but any defense bonus gained by the target aircraft's speed is negated by the sidewinder's Mach 2.5 speed.

AGM-122A sidearm missile

The AGM-122 Sidearm is a close-range anti radiation missile, carried for self defense against anti aircraft gun and SAM radars and is essentially a AIM-9C Sidewinder with a semi-active radar homing guidance system. Although vulnerable to countermeasures and rather limited compared to more robust anti-radar missiles such as the HARM, it does provide a useful self-defense capability against low-level anti-helicopter threats such

as the ZSU-23 or SA-8.

M-220 Tube-launched, optically-tracked, wire-guided missile (TOW)

The TOW anti-tank missile was originally brought into service with the US Army in 1970. Current versions are capable of penetrating more than 30 inches of armor at a maximum range of more than 3,000 meters. It is a command to line of sight, wire-guided weapon with a primary mission of engaging and destroying enemy armored vehicles, primarily tanks. Its secondary mission is to destroy other point targets such as non-armored vehicles, crew-served weapons and launchers. The TOW ignores the first 15 Hardness of an object, and against live targets have a blast radius of 15 feet.

AGM-114K Hellfire II missile

The Hellfire Air-to-Ground Missile System (AGMS) provides a heavy anti-armor capability and is designed to defeat reactive armor and overcome defensive countermeasures. It has a conical shaped-charge, high explosive, antitank warhead that is effective against various types of armor including appliqué and reactive. It can also be employed against concrete bunkers and similar fortifications. The Hellfire receives a +2 to hit bonus against ground targets, but receives a -4 to hit penalty against airborne targets. The Hellfire ignores the first 20 Hardness of an object attacked. Against organic ground targets, this weapon has a blast radius of 20 feet.

70mm Rocket

The 2.75 inch Folding-Fin Aerial Rocket (FFAR) was originally developed by the U.S. Navy for use as a free-flight aerial rocket in the late 1940s and is now used in the air-to-ground, ground-to-air, and ground-to-ground roles.

MK 71 12.7cm Zuni Rocket

Basically a 5-inch version of the Folding-Fin Aerial Rocket with improved range and a more potent warhead, It was widely used by U.S. Navy and Marine Corps aircraft in Vietnam. The rocket was also the cause of the worst accident on a modern USN aircraft carrier, when a Zuni motor was inadvertently ignited on the flight deck of USS Forrestal in July 1967.

Name	Crew	Pass	Cargo	Init	Man.	Top Speed	Def	Hard	HP	Size	Purchase DC	Restriction
AH-1W	2	0	0	-2	-2	330 (33)	12	10	45	G	40	Mil.

Weapon	Damage	Critical	Type	Range	ROF	Magazine	Size	Weight	Purchase DC	Restriction
20 mm Cannon	4d10	20	Ballistic	150	A	750	Huge	*	*	*
70 mm Rockets	6d12	20	Ballistic	100	S	7 or 19	Huge	*	*	*
Hellfire Missile	10d12	20	Ballistic	150	S	4	Huge	*	*	*
Sidewinder Missile	6d12	20	Ballistic	150	S	1	Huge	*	*	*
Sidearm Missile	6d12	20	Ballistic	150	S	1	Huge	*	*	*
TOW2 Missile	8d12	20	Ballistic	150	1	4	Huge	*	*	*
127mm Zuni Rocket	8d12	20	Ballistic	125	S	7	Huge	*	*	*

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