SOF WARRIOR

“An Option for Helicopters”
Modern Skirmish Wargame
15mm to 54mm - 1:1 Scale

From Britton Publishers

Optional Section 1: Using Helicopters

It is recommended that a game master carefully consider the implications of play balance before incorporating helicopters into a small scale tactical skirmish. The following section lists United States Army and Russian helicopters currently or recently deployed. Typical ordnance is also presented as well as some technical data that will allow integration of this machine into your SOF Warrior gaming experience.

Kiowa Warrior

The OH-58D Kiowa Warrior is one of a number of scout or light observation helicopters (LOH) to be provided with enhanced mission capabilities by the addition of armament and sophisticated electronic subsystems. The Bell (model 406) OH-58D Kiowa Warrior performs reconnaissance, security, command and control, target acquisition/designation, and defensive air combat missions. The OH-58D's highly accurate navigation system permits precise target location that can be handed-off to other engagement systems. The OH-58D has an infrared thermal imaging capability and can display night-vision flight reference symbols. Its laser designator/laser rangefinder can provide autonomous designation for laser-guided precision weapons. Air-to-Air Stinger (ATAS) missiles provide the Kiowa Warrior with protection against threat aircraft. The OH-58D is powered by a Rolls-Royce Allison 250-C30R/1 650 SHP engine with a top cruising speed of 128mph (**63yps**).

Apache AH-64A: Armor Class D (excludes rotors/Cockpit: Class E)

The AH-64A Apache (Apache Team, AMSTA-LC-CSAA) received its production go-ahead in March 1982. The Boeing (McDonnell Douglas) AH-64A Apache is the Army's primary attack helicopter. The McDonnell Douglas Apache is regarded as the most lethal and survivable helicopter in military aviation history. It is designed to fight and survive during the day, night, and in adverse weather throughout the world. It is equipped with a Target Acquisition Designation Sight (TADS), laser range finder/designator (LRF/D), and a Pilot Night Vision Sensor (PNVS), that allow the two-man crew to navigate and attack at extended standoff ranges. The Apache has a full range of aircraft survivability equipment and has the ability to withstand hits from rounds as large 23mm in critical areas (armor class D). The Apache's primary mission is to destroy high-value targets with Hellfire anti-tank missiles. It also is capable of employing the M230 30mm chain gun (625 rpm) and Hydra 70 (70mm, 2.75-inch) rockets that are lethal against a wide variety of targets in ground support and armed escort missions. Rockets are fired from the M261 19-tube rocket launcher. The Apache has a four-bladed articulated rotor system. Both the AH-64A Apache and AH-64D Apache Longbow are powered by two General Electric T700-GE-701 1698 SHP turbo-shaft engines for a top speed of 192mph (**94yps**).

Apache AH-64D Longbow: Armor Class D (excludes rotors/Cockpit: Class E)

The AH-64D Apache Longbow (Apache Longbow Team, AMSTA-LC-CSAL) is an improved variation of the AH-64A Apache aircraft modified to integrate the mast mounted Longbow fire control radar with the Hellfire Missile System. Longbow is the result of a development and acquisition program for a millimeter wave radar air/ground targeting system capable of being used in day or night, in adverse weather and through battlefield obscurants.

In operational tests along side the AH-64A Apache at Ft. Hunter, California in 1995, it was determined that the AH-64D Apache Longbow is four times more lethal and seven times more survivable the AH-64A Apache. The U.S. Army took delivery of its first production model AH-64D at the Boeing Co. (formerly McDonnell Douglas) facility in Mesa, Arizona on 21 Mar 97.

Longbow's digitized target acquisition system can automatically locate and classify more than 128 potential targets and prioritize the 16 most dangerous targets based on an on-board computer "library". It can then hand-off targeting information to other Apache and Comanche helicopters and attack all within less than 30 seconds after initiating the radar scan. Other improvements over the AH-64A include additional power, expanded avionics bays, upgraded processors, integrated avionics, MANPRINT crew stations and improved data modems that allow secure situation and target data transfer on the digital battlefield.

Longbow will significantly enhance situational awareness of both friendly and enemy air

and ground dispositions through secure voice and digital data burst information exchanges to both air and ground assets by using the jointly developed improved data modem and the communication suite. The modernized Apache heavy attack team now will be able to provide a truly "coordinated" rapid-fire (16 separate targets within one minute) capability to the maneuver force commander on a 24-hour basis.

AH-1G “Huey” Cobra

The development of the Bell AH-1G "Huey" Cobra dates back to the 1960's when the need was recognized for a light fast armed escort helicopter designed specifically to carry weapons and be able to target them very accurately. Bell Helicopter-Textron began design of the model 209 AH-1 "Huey" Cobra in 1965 as a successor to its UH-1B/UH-1C "Huey" in the gun ship role. The result, incorporating the best features from the UH-1C "Huey", and many parts in common with the UH-1D, was the world's first attack helicopter. The Cobra was first deployed to Vietnam in September 1967. The narrow 38 inch wide airframe presented a much more difficult target than its derivative, the 100 inch wide UH-1 "Huey". During the Vietnam War, the AH-1G Cobra was used extensively in a variety of missions ranging from armed escort and reconnaissance to fire suppression and aerial rocket artillery. The Cobra, or "Snake", was often used effectively when paired with an unarmed OH-6A Cayuse "Loach" or OH-58A Kiowa light observation helicopter or a UH-1H "Nighthawk".

AH-1F Cobra has a top speed of 172mph (**84yps**) and is equipped with the Allied Signal Engines (ASE) T53-L-703 1800 SHP turbo-shaft engine, gearbox, and transmission introduced to the Production AH-1S Cobra. Armament consists of the three-barrel M197 20mm automatic gun mounted on the M97A4 armament subsystem. The Modernized AH-1F is equipped to fire eight TOW (Tube-Launched, Optically Tracked, Wire Command-Link Guided) 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.

RAH-66 COMANCHE ARMED RECONNAISSANCE HELICOPTER (Prototype)

The Boeing-Sikorsky RAH-66 Comanche is the Army's next generation armed reconnaissance helicopter. It also is the first helicopter developed specifically for this role. The Comanche will provide Army Aviation the opportunity to move into the 21st century with a weapon system of unsurpassed war-fighting capabilities crucial to the Army's future strategic vision.

The first Boeing-Sikorsky RAH-66 Comanche prototype was rolled-out at Sikorsky Aircraft, Stratford, Connecticut May 25, 1995. The prototype's first flight was made on 4 Jan 96. The second prototype was scheduled to fly in late March 1999. Six early operational capability aircraft were scheduled to be delivered 2002 to participate in an Army field exercise in 2002-2003, or possibly later in "Corps 04". The Comanche is powered by two Light Helicopter Turbine Engine Co. (LHTEC) T800-801 engines. Its advanced engines will enable it to maintain sufficient speed to keep up with the more

powerful AH-64 series Apache. The Comanche has a cruising speed of 185mph (**90yps**) and a dash speed of 198mph (**97yps**).

The RAH-66 Comanche helicopter's primary role will be to seek out enemy forces and designate targets for the Army's AH-64 Series Apache Attack helicopter at night, in adverse weather, and in battlefield obscurants, using advanced infrared sensors. The helmet has FLIR images and overlaid symbols that can be used as a heads up display in nap-of-the-earth (NOE) flight.

The aircraft has been designed to emit a low-radar signature (stealth features). The Comanche will perform the attack mission itself for the Army's light divisions. The RAH-66 will be used as a scout and attack helicopter to include an air-to-ground and air-to-air combat capability. The Comanche is slated to replace the AH-1 Series Cobra light attack helicopter, the OH-6A Cayuse, and the OH-58A/OH-58C Kiowa light observation helicopters.

The Comanche mission equipment package consists of a turret-mounted cannon, night-vision system, helmet-mounted display, electro-optical target acquisition and designation system, aided target recognition and integrated communication, navigation, identification avionics system. Targeting includes a second generation forward-looking infrared (FLIR) sensor, a low-light-level television, a laser range finder and designator, and the Apache Longbow millimeter wave radar system. Digital sensors, computers and software will enable the aircraft to track and recognize adversaries long before they are aware of the Comanche's presence, a key advantage in both the reconnaissance and attack roles.

Aided target detection and classification software will automatically scan the battlefield, identifying and prioritizing targets. The target acquisition and communications system will allow burst transmissions of data to other aircraft and command and control systems. Digital communications links will enable the crew unparalleled situational awareness, making the Comanche an integral component of the digital battlefield.

The armament subsystems consist of the XM301 20mm cannon and up to 14 Hellfire anti-tank missiles, 28 Air-to-Air Stinger (ATAS) anti-aircraft missiles, or 56 2.75 inch Hydra 70 air-to-ground rockets carried internally and externally. Up to four Hellfire and two Air-to-Air Stinger (ATAS) missiles can be stowed in fully-retractable weapons bays and the gun can be rotated to a stowed position when not in use. This design feature reduces both drag and radar signature.

UH-60A Black Hawk Combat Assault Helicopter: Armor Class D (excludes rotors/Cockpit: Class E)

The Sikorsky UH-60A Black Hawk, first flown in October 1974, is a light transport helicopter used for air assault, air cavalry, and aero-medical evacuation units. The UH-60A was developed as result of the Utility Tactical Transport Aircraft System (UTTAS) program. The Black Hawk is the primary division-level transport helicopter, providing dramatic improvements in troop capacity and cargo lift capability compared to the UH-1

Series Huey it replaces. The UH-60A, with a crew of three, can lift an entire 11-man fully-equipped infantry squad in most weather conditions. It can be configured to carry four litters, by removing eight troop seats. Both the pilot and co-pilot are provided with armor-protective seats. Protective armor on the Black Hawk can withstand hits from 23mm shells (armor class D). The Black Hawk has a cargo hook for external lift missions. The Black Hawk has provisions for door mounting of two M60D 7.62mm machine guns on the M144 armament subsystem, and can disperse chaff and infrared jamming flares using the M130 general purpose dispenser. The Black Hawk has a composite, titanium and fiberglass four-bladed main rotor, is powered by two General Electric T700-GE-700 1622 SHP turbo-shaft engines and has a maximum cruising speed of 184mph (**90yps**).

CH-47 series Chinook Cargo Helicopter

Development of the medium lift Boeing Vertol (models 114 and 414) CH-47 series Chinook began in 1956. Since then, the effectiveness of the Chinook has been continually upgraded by successive product improvements, the CH-47A, CH-47B, CH-47C, and CH-47D. CH-47A, first delivered for use in Vietnam in 1962, is a tandem-rotor medium transport helicopter. The Chinook's primary mission is moving artillery, ammunition, personnel, and supplies on the battlefield. It also performs rescue, MedEvac, parachuting, and aircraft recovery.

CH-47D was the result of a June 1976 contract for a modernized Chinook. Three airframes, CH-47A, CH-47B and a CH-47C were stripped-down to their basic airframes and then rebuilt with improved systems to provide three CH-47D prototypes. Improvements included upgraded power plants, rotor transmissions, integral lubrication and cooling for the transmission systems, and fiberglass rotor blades. Other improvements included a redesigned cockpit to reduce pilot workload, redundant and improved electrical systems, modularized hydraulic systems, an advanced flight control system and improved avionics. The Chinook has two tandem three-bladed counter-rotating fiberglass rotors. The CH-47D is powered by two Allied Signal Engines T55-L-712 3750 SHP turbo-shaft engines and has a maximum speed of 195mph (**95yps**).

The CH-47D was rolled-out in March 1979. The CH-47D carries twice the load of a CH-47A and has improved performance. The CH-47D can operate at night and in nearly all weather conditions. The Chinook can accommodate a wide variety of internal payloads, including vehicles, artillery pieces, 33 to 44 troops, or 24 litters plus two medical attendants. The Chinook can be equipped with two door mounting M60D 7.62mm machine guns on the M24 armament subsystem and a ramp mounting M60D using the M41 armament subsystem.

OH-6A Cayuse light observation helicopter

The Boeing (McDonnell Douglas) (formerly Hughes model 369A) OH-6A, was designed for use as a military scout during the Vietnam war to meet the U.S. Army's need for an extremely maneuverable light observation helicopter (LOH program). The Hughes OH-6A Cayuse was quite effective when teamed with the AH-1G Cobra attack helicopter as part of what were known as Pink Teams. The OH-6A Loach would find targets by flying

low, "trolling" for fire and lead in a Cobra or Snake to attack. The OH-6A could be armed with the M27 armament subsystem, the M134 six-barrel 7.62mm mini-gun or the M129 40mm grenade launcher on the XM8 armament subsystem. It has a top speed of 172mph (**84yps**).

Bell HU-1 Huey

The most widely used military helicopter, the Bell UH-1 series Iroquois, better known as the Huey, began arriving in Vietnam in 1963. Before the end of the conflict, more than 5,000 of these versatile aircraft were introduced into Southeast Asia. The Huey was used for MedEvac, command and control and air assault; to transport personnel and materiel and as gun ships. The AH-1G Huey Cobra arrived in Vietnam in August 1967 to replace the UH-1B/UH-1C Huey in its gun ship role.

Bell (model 205) UH-1D (1962) had a longer fuselage than previous models, increased rotor diameter, increased range, and more powerful Lycoming T53-L-9A or T53-L-11D 1100 SHP engines with growth potential to the Allied Signal Engines (ASE) T53-L-13B 1400 SHP engine. The "towel rack" FM antenna and pilot were located on top of the cabin on the UH-1D. The UH-1D also featured a larger double windowed sliding door, and small single window hinged door just behind the pilot's door. The UH-1D, redesigned to carry up to 13 troops with a crew of two, reached Vietnam in 1963. The MedEvac version UH-1V could carry six stretchers and one medical attendant. The UH-1D has a range of 293 miles (467km) and a speed of 127mph (**62yps**). UH-1Ds were built under license in Germany. The primary armament subsystem used with the UH-1D/UH-1H Huey is two door mounting M60D 7.62mm machine guns on the M23 armament subsystem.

Mi-28 Havoc

The Mi-28 Havoc is a new-generation attack helicopter that functions as an air-to-air and air-to-ground partner for the Mi-24 Hind and Ka-50 Hokum. The five-blade main rotor is mounted above the body midsection, and short, wide, tapered, weapon-carrying wings are mounted to the rear of body midsection. Two turbo-shaft engines in pods are mounted alongside the top of the fuselage with down turned exhausts. The fuselage is slender and tapers to the tail boom and nose. It features a tandem, stepped-up cockpits and cannon mounted beneath the belly with fixed landing gear. The tapering tail boom with a swept-back fin has a flat high-mounted on the fin and a rotor mounted on right.

The Mi-28N and Kamov Ka-50 are competing to fulfill the Russian Army Aviation requirement for a night-capable anti-tank helicopter, a replacement to the Mi-24 created 25 years ago. The Mi-28N is based on the Mi-28A, a daylight helicopter first flown in December 1982. In comparison with the AH-64D Longbow Apache, the 10.5-ton Mi-28N is some 2.5 tons heavier, partly due to its more powerful cannon. In general, the two helicopters have similar flight performance. Two Klimov TV-3-117 engines of 2,200 hp each allow the Russian aircraft to show a maximum level speed of 186mph (**91yps**) and maximum climb at sea-level of 13.6 meters per second.

Mi-24 Hind: Armor Class D (excludes rotors/Cockpit: Class E)

The Mi-24, first helicopter to enter service with the Russian Air Force as an assault transport and gunship, was developed on the basis of the Mi-8's propulsion system. Additional missions include direct air support, antitank, armed escort, and air to air combat. The helicopter was used extensively in the Afghanistan War, becoming the "signature" weapon of the conflict. The Mi-24 is a close counterpart to the American AH-64 Apache, but unlike this and other Western assault helicopters it is also capable of transporting up to eight troops. The Russians have deployed significant numbers of HINDs in Europe and have exported the HIND to many third world countries.

The five-blade main rotor is mounted on top of fuselage midsection, while short, stubby, weapon-carrying wings are mounted at the fuselage midsection. Two turbo-shaft engines are mounted above body midsection with two round air intakes located just above the cockpit and exhaust ports on the sides of engines. The Hind A fuselage consists of a large, oval-shaped body with a glassed-in cockpit, tapering at the rear to the tail boom. The Hind D fuselage features nose modification with tandem bubble canopies, and a chin-mounted turret. The swept-back tapered tail fin features a rotor on the right on some models, with tapered flats on a boom just forward of the fin.

External stores are mounted on underwing external stores points. Each wing has three hard-points for a total of six stations. A representative mix when targeting armor formations would be eight AT-6 ATGMs, 750 x 30mm rounds, and two 57mm rocket pods. The aircraft can store an additional ammunition basic load in the cargo compartment in lieu of carrying troops. The armored cockpits and titanium rotor head are able to withstand 20mm cannon hits. Every aircraft has an over-pressurization system for operation in a NBC environment.

The HIND’s wings provide 22% to 28% of its lift in forward flight. In a steep banking turn at slower airspeeds, the low wing can lose lift while it is maintained on the upper wing, resulting in an excessive roll. This is countered by increasing forward airspeed to increase lift on the lower wing. Because of this characteristic, and the aircraft’s size and weight, it is not easily maneuverable. Therefore, this helicopter is not capable of evading a Stinger missile strike.

KA-50 Hokum: Armor Class D (excluding rotors/Cockpit: Class E)

The KA-50 is a state-of-the-art and powerful battle helicopter which is in limited service with the Russian Air Force. This aircraft is not fielded. Only a handful of prototypes exist, and it has not yet been approved for full-scale production. There are two versions of the Hokum. The Ka-50 Hokum-A is a single seat close support helicopter and the Ka-52 Hokum-B two seat trainer and combat version. The Mi-28N and Kamov Ka-50 are competing to fulfill the Russian Army Aviation requirement for a night-capable anti-tank helicopter, a replacement to the Mi-24 created 25 years ago.

The coaxial, contra-rotating, three-blade main rotors are widely separated with swept-back tips, and there is no tail rotor. The equally tapered, short, stubby, weapon-carrying wings with end plates are mounted on the streamlined fuselage, which tapers to the front and rear. The fuselage, which is flat-bottomed except for the underbelly gun pod and sensor, features a flat plated glassed-in canopy. The tail is thick with a tapering tail boom and back-tapered tail fin with a square tip. The tail flats are high-mounted on the tail boom with end plates, and located forward of the fin. Twin turbo-shaft engines are mounted high on the fuselage above the stubby wings, with semicircular air intakes and exhausts that are turned outward. The helicopter has a number of unique characteristics including a single seat to increase combat and flight characteristics and reduce operational costs. It was designed for remote operations and not to need ground maintenance facilities for 2 weeks. The airframe is 35% composite materials with a structural central 1m 2 keel beam of kevlar/ nomex that protects critical systems and ammunition. The fully armored pilot's cabin can withstand 23mm gunfire and the cockpit glass 12.7mm MG gunfire. The Zvezda K-37-800 pilot ejection system functions at any altitude, and enables a successful ejection at low altitude and maximum speed.

External stores are mounted on under-wing external hard points. Each wing has two hard points for a total of four stations. A typical mix for targeting armor formations is 12 x AT-16 ATGMs, 500 x 30mm cannon rounds and 2 x 20-round pods of 80mm folding fin unguided rockets. The 30mm cannon is the same as on the BMP-2. It also carries guided air-to-air missiles IGLA-V (Needle C), already extensively tested and sold to buyers abroad. The Shark's avionics is largely in line with what is the norm for one-seat fighters and ground attack jets. It's most remarkable feature is a remote targeting system with a capability to provide for a sudden deadly attack from a distance that rules out direct visual contact with the target. The firing computer will turn the aircraft to keep the gun on target. It is equipped with downlink to provide information from the battlefield. The targeting and control system and weaponry enable accurate target engagement at ranges of up to 10km.

The KA-50 features unique maneuverability and operating characteristics due to the contra-rotating co-axial rotors. The coaxial counter-rotating rotor system negates the need for a tail rotor and its drive system. Because of this, this aircraft is unaffected by wind strength and direction, has an unlimited hovering turn rate and gives a smaller profile and acoustic signature, while allowing a 10-15% greater power margin. The HOKUM is fully aerobatic. It can perform loops, roll, and “the funnel”, where the aircraft will maintain a concentrated point of fire while flying circles of varying altitude, elevation, and airspeed around the target. It has a top speed of 211mph (**103yps**).

U.S. Helicopter Armament Subsystems indexed by Aircraft Model Number/Armament System

Aircraft Model No.	Armament Subsystems	Weapons
OH-13 Sioux or OH-23 Raven	XM1 armt subsystem or M2 armt subsystem	M37C .30 cal. machine guns M60C 7.62mm machine guns
UH-1 "Huey"	M3 armt subsystem M5 armt subsystem M6 armt subsystem XM11 missile launcher XM14 gun pod XM15 dispenser M16 armt subsystem XM18 dispenser XM19 dispenser M21 armt subsystem M22 missile launcher M23 armt subsystem XM26 missile launcher XM29 armt subsystem XM30 armt subsystem XM31 armt subsystem XM47 mine dispenser XM50 armt subsystem XM52 smoke generator M59 armt subsystem XM93 armt subsystem XM94 armt subsystem M156 armt subsystem XM165 grenade dispenser MINI-TAT turret Sagami mount	24-tube rocket launchers M75 40mm grenade launcher quad M60C 7.62mm machine guns SS-11B anti-tank missiles M3 .50 cal. machine gun XM170 flares quad M60C 7.62mm machine guns and 7-tube XM157 or M158 launchers flares or munitions MK45 flares M134 7.62mm "miniguns" and 7-tube XM157 or M158 launchers AGM-22B anti-tank missiles M60D 7.62mm machine guns TOW anti-tank missiles M60D 7.62mm machine guns XM140 30mm gun M24A1 20mm cannon XM2 anti-personnel mines M5 40mm grenade launcher M134 7.62mm "minigun" 7-tube rocket launcher atomized fog M60D 7.62mm machine gun or M213 .50 Cal. machine gun or XM175 40mm grenade launcher M134 7.62mm "minigun" M129 40mm grenade launcher 7-tube M158/M158A1 or 19-tube XM159/ M200 launchers CS smoke grenades in XM15 cluster M134 7.62mm "minigun" M60D 7.62mm machine guns
ACH-47A "Guns-A-Go-Go"	M5 armt subsystem XM32 armt subsystem XM33 armt subsystem XM34 armt subsystem M18 gun pod or 2.75 inch rocket system	M75 40mm grenade launcher M2 .50 Cal. machine guns or M60D 7.62mm machine guns M2 .50 Cal. machine gun or M60D 7.62mm machine gun M24A1 20mm cannon M134 7.62mm "minigun" or XM159 19-tube rocket launchers
CH-47D Chinook	M24 armt subsystem M41 armt subsystem	M60D 7.62mm machine guns M60D 7.62mm machine gun
OH-6A Cayuse or OH-58A Kiowa	XM8 armt subsystem or M27 armt subsystem MINI-TAT turret	M129 40mm grenade launcher M134 7.62mm "minigun" M134 7.62mm "minigun"

AH-1G Cobra	M18 gun pod M28 series armt subsystem M35 armt subsystem XM64 armt subsystem XM118 grenade dispenser XM120 armt subsystem M156 armt subsystem	M134 7.62mm "minigun" M129 40mm grenade launcher and M134 7.62mm "minigun" turret M195 20mm automatic gun M134 7.62mm "minigun" smoke grenades XM140 30mm gun 7-tube M158/M158A1 or 19-tube XM159/ M200 launchers
AH-1G SMASH	M28A1 armt subsystem M35 armt subsystem M156 armt subsystem	M129 40mm grenade launcher and M134 7.62mm "minigun" turret M195 20mm automatic gun 7-tube M158/M158A1 or 19-tube XM159/ M200 launchers
AH-1F Modernized Cobra	M97A4 universal turret Hydra 70 rocket system M65 TOW missile system	M197 20mm automatic gun M260 7-tube rocket launchers TOW missile launchers
UH-60A Black Hawk	M144 armt subsystem	M60D 7.62mm machine guns
OH-58D Kiowa Warrior	Multi-mission Hydra 70 rocket system Air-to-Air Stinger Hellfire missile system	XM296 .50 cal. machine gun M260 7-tube rocket launchers ATAS missile launchers Hellfire missile launchers
AH-64A Apache or AH-64D Apache Longbow	Area Weapon Subsystem Hydra 70 rocket system Air-to-Air Stinger Hellfire missile system	M230 30mm automatic gun (625rpm) M261 19-tube rocket launchers ATAS missile launchers Hellfire missile launchers
RAH-66 Comanche (Prototype)	Multi-mission Hydra 70 rocket system Air-to-Air Stinger Hellfire missile system	XM301 20mm automatic gun 2.75 inch rocket launchers ATAS missile launchers Hellfire missile launchers

Optional Section 2: Rules for Play

The following rules are designed to allow helicopters to participate in your game. As mentioned earlier, care should be taken not to permit this machine to dominate the battlefield.

Movement

The pilot must be activated before he can operate the helicopter. However, the speed with which this machine moves will permit it to go almost anywhere on the table in one second of combat time. This assumes it is moving at full speed. The player may move at a slower rate if desired. A helicopter can rotate 180° in one action while moving forward, backwards or sideways. Lift off and touch down should not happen instantly. The game master should require at least 2-seconds for such a maneuver.

Passengers

A door-gunner attempting to fire on a target is confronted with a number of modifiers that will inhibit his ability to fire accurately. Use the small arms *To Hit* procedure. You may simply require a roll of (d20) "1" or penalize the gunner -10 for "attacker is evading." Then apply all other relevant modifiers. Some helicopters can carry a full squad of infantry. Should the helicopter suffer penetration, there is a chance that a passenger will become a casualty. Use the casualty procedure outlined in section 9.

Fire Control Systems

Modern attack helicopters are equipped with sophisticated fire control systems. The Target Acquisition Designation Sight, TADS (AN/ASQ-170), and the Pilot Night Vision Sensor, PNVS (AN/AAQ-11) of the Apache, were developed by Lockheed Martin. The turret-mounted TADS provides direct-view optics, television and three-fields-of-view forward-looking infrared (FLIR) to carry out search, detection and recognition, and Litton laser rangefinder/designator. PNVS consists of a FLIR in a rotating turret located on the nose above the TADS. The image from the PNVS is displayed in the monocular eyepiece of the Honeywell Integrated Helmet and Display Sighting System, IHADSS, worn by the pilot and copilot/gunner. Consequently, acquisition and combat should be calculated using the AFV procedure. Once a target is acquired, the pilot's skill will be the basis for determining hit probability. Should the pilot score a hit against an infantry target, place the machine gun template over the area and apply the CZ equally to all soldiers within that zone. Any hits should include the damage factor of the projectile along with the d100 damage roll. Be sure to use the high explosive procedure when firing rockets and missiles. When an acquisition attempt is made from a moving helicopter without the benefit of the fire control system, use a -4 modifier (moving vehicle). If the helicopter is hovering, do not penalize the observer for moving.

Helicopter Receiving Fire

Infantry may fire at a helicopter with small arms, rocket propelled grenades and in some instances, stinger missiles. Attack helicopters such as the Apache will be impervious to anything smaller than a 20mm cannon. Use "target is a large vehicle +8" when calculating the To Hit number for a rocket propelled grenade and +10% for vehicle mounted cannons. Because of its loud engine rotors, it is not necessary to acquire a helicopter in flight. When the helicopter is hit, consult Table 11.17 and combine the casualty percentage of the appropriate caliber with the critical hit percentage on the location table below for each penetrating projectile. This will yield either a percentage chance for casualties or that the helicopter is shot down.

Helicopter Hit Location Table

Die Roll %	Hit Location	Critical Hit %	Die Roll	Hit Location	Critical Hit %
1	Tail Boom	5	**63-72**	Transmission	5
2-3	Landing Skids	N/A	**73-79**	Hydraulic System	5
4-19	Engine	10	**80-85**	Tail Rotor	10
20-42	Cockpit	5	**86-90**	Driver Shaft	5
43-46	Main Rotor	10	**91-95**	Passenger*	N/A
47-62	Fuselage	5	**96-100**	Wing*	5

*Count as a fuselage hit if the helicopter does not have this.

FIM-92A Stinger Weapons System: RMP & Basic

The Stinger missile, a full-dimensional protection weapon, is the Army's system for short-range air defense that provides the ground maneuver commander force protection against low-altitude airborne targets such as fixed-wing aircraft, helicopters, unmanned aerial vehicles and cruise missiles. The Stinger is launched from a number of platforms: Bradley Stinger Fighting Vehicle, Bradley Linebacker, Avenger (HMMWV), and helicopters as well as Man Portable Air Defense (MANPADS).

The Stinger is a man-portable, shoulder-fired guided missile system which enables the Marine to effectively engage low-altitude jet, propeller-driven and helicopter aircraft. Developed by the United States Army Missile Command, the Stinger was the successor to the Redeye Weapon System. The system is a "fire-and-forget" weapon employing a passive infrared seeker and proportional navigation system. It is five feet long and weighs 34.5 pounds fully loaded. It is operated by a two man crew and may be reloaded according to the AFV rate of fire chart. It has a maximum range of 8 kilometers and uses a high explosive warhead with an impact fuse. To fire the weapon, the gunner must maintain a target lock for two consecutive actions. He can accomplish this by making (d100) two successful attack rolls using Table 11.5. Once the missile is fired, the pilot of the target helicopter may release chaff with an active chit and perform an evasive maneuver. Once launched, the Stinger missile has a 100% chance to hit the helicopter. Chaff will reduce the chance by 10% plus another 5% for each pilot skill level. Therefore, an activated pilot equipped with chaff and a skill of six may reduce the Stinger’s hit chance by 40%. A Stinger will destroy any helicopter that it manages to hit. All weapons which operate on this premise may use these rules.