

WHILE 11th Air Assault Division tests and combat operations have proved the soundness of the Army's airmobile concepts, they also have revealed weaknesses that must be corrected. One is the immediate need for an aerial weapons platform offering capabilities significantly greater than those of the UH-1B.

As this need became evident, industry responded with several proposals—the armed CH-47A among them. Four of these medium transport helicopters have been retrofitted into armed and armored configurations for Army evaluation.

Development of the CH-47 as an aerial weapons platform is divided into two major areas: armament and armor. Working as a team, the Army and Vertol came up with a wide choice of weapons. These offer a 360° fire capability and about 2,000 pounds of armor plate to protect the CH-47's vital components and its 8-man crew against heavy caliber ground fire.

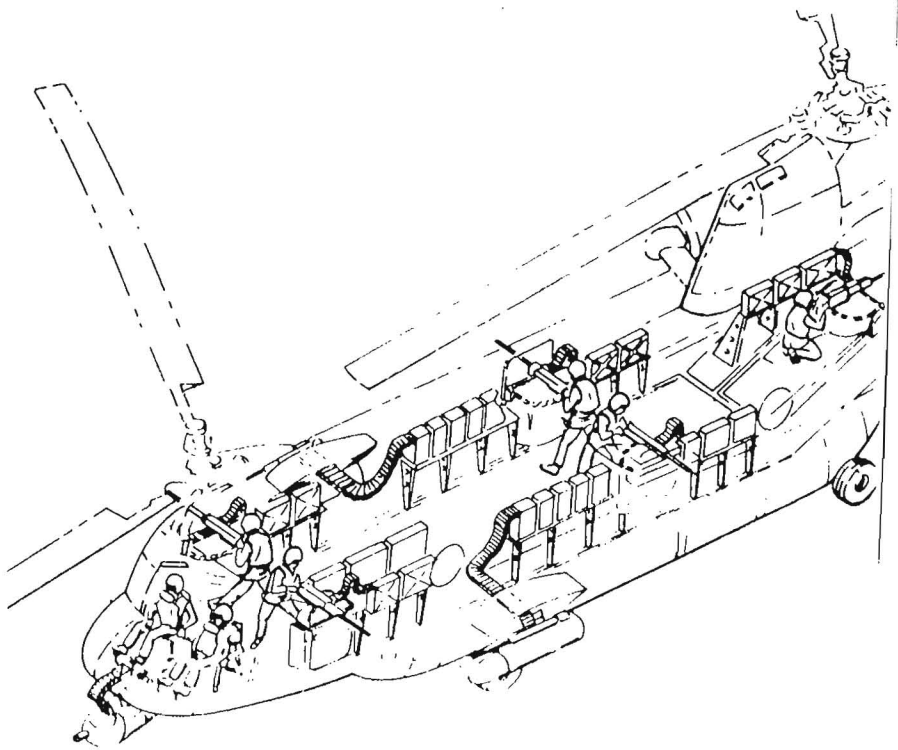
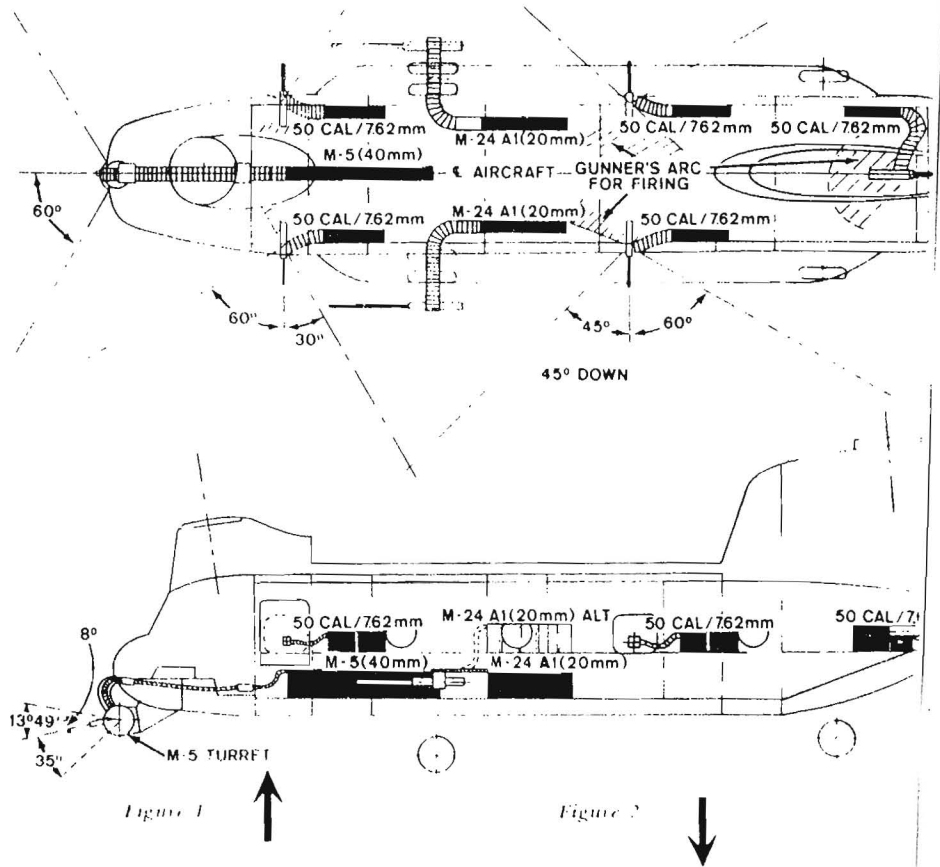
### Armament

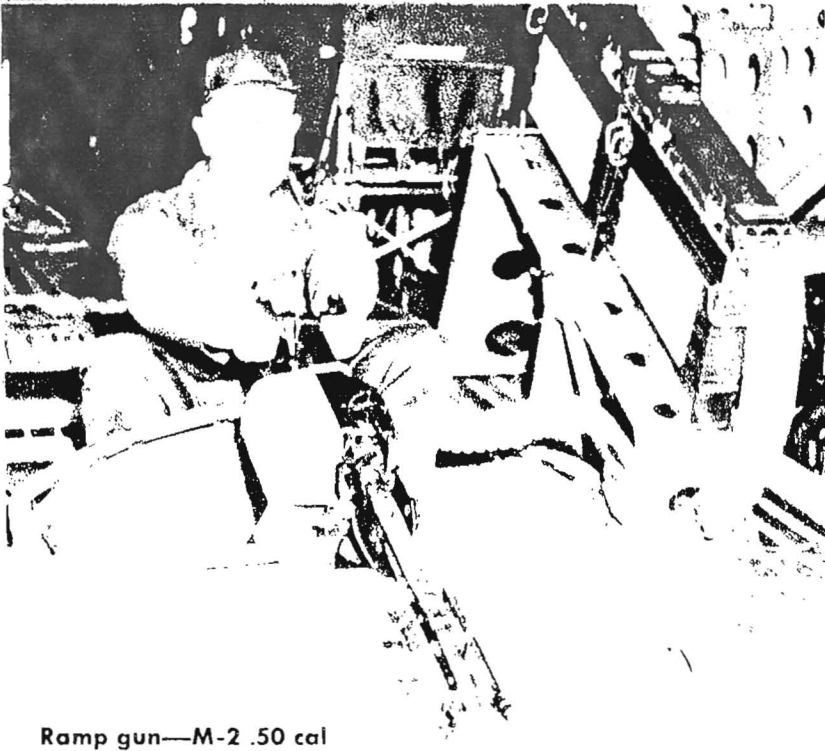
The armed Chinook's mission is to escort troop-carrying helicopters, protecting them en route and when they land in assault areas. Weapons to accomplish this were chosen on a basis of fragmentation and round lethality, range, and availability.

To obtain a 360° firing capability (fig. 1), the aircraft is mounted with

- one M-5 automatic 40 mm grenade launcher mounted below the nose section (see DIGEST, May 1965, p. 11),
- one M-24A 20 mm gun and either the XM-18 7.62 mm (Gatling) machinegun or the XM-159 rocket pod (holding 19 2.75"

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Ramp gun—M-2 .50 cal

**ARMED CH-47A CHINOOK**

Weapons	Total Rds Per Gun	Rate of Fire (SPM)	Muz Vel Ft/Sec	Max Range in Meters
M-5 (40 mm)	500	230	830	1,500 @ 13°
M-2 (.50 cal)	700	700	2,800	6,500 @ 35°
M-60D (7.62 mm)	3,000	600	2,700	3,500 @ 35°
XM-159 (2.75" FFAR)	19	6 pair per sec	2,100	1,500
XM-18 (7.62 mm)	1,500	3,000	2,700	3,500 @ 35°
M-24 (20 mm)	800	800	2,700	5,200 @ 35°

folding fin aerial rockets) on each side of the aircraft.

• any combination of M-2 .50 cal or M-60D 7.62 mm machine-guns totaling five—two on each side and one on the aft ramp.

Figure 2 shows location of guns and ammo storage containers.

The M-5 is aimed with the M-5 sight and fired by the copilot, who is able to cover an extensive area on either side of the flight path. Ammunition is fed from a container in the forward section of the cabin.

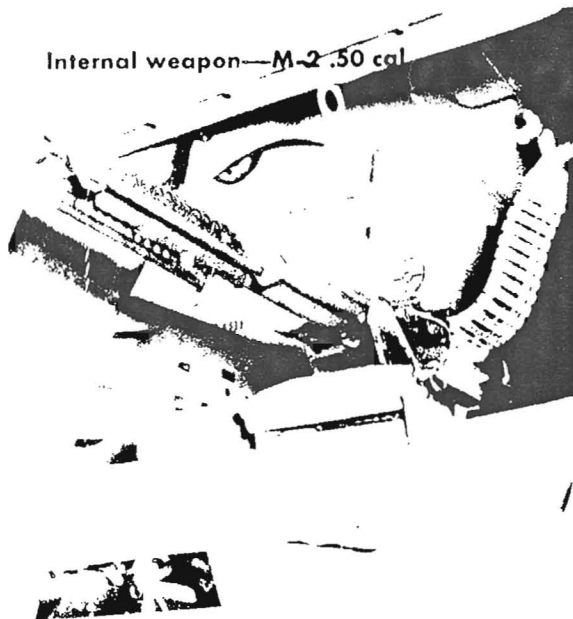
Forward firing is supplemented by the pylon mounted weapons which are located outboard of the forward landing gears. These weapons are fired by the pilot, who maneuvers the aircraft into firing position and uses a fixed sight for aiming. The pilot also can jettison the XM-159 inflight and can use an electric charger to clear jammed rounds from the M-24.

Flank and aft firing is provided by five cabin guns—one mounted at the forward escape hatch, one at the main cabin door, one each on reworked windows in the aft section of the cabin and one on

External weapons—M-24A 20 mm gun and 2.75" rockets



Internal weapon—M-2 .50 cal





*The CH-47 can carry the load. Now the Army wants to see if it can pack the punch*

the aft ramp which is in the closed position with the extension retracted. The .50 caliber M-2 is the main weapon and the M-60D was selected as the alternate because it has a large number of rounds per payload. Either of the guns can be quickly mounted or dismounted at any of the five cabin stations.

Ramp gunners wear a safety restraining harness to allow full mobility while firing. Similar harnesses are provided for the other gunners.

#### **Armor**

A new type of steel armor plate is being used in the armed CH-47. The steel undergoes a special heat treatment that results in an extremely high strength to weight ratio. It is mounted in the aircraft in double layers of steel alloy to protect vital areas. Hard outside layers shatter bullets and softer inside layers absorb fragments that may reach it.

Crew seats are unique in that armor is built into them which

provides 100 percent torso protection from the front, back, bottom and sides and still permits free movement and unrestricted vision. Seat armor consists of a wrap-around shoulder shield on the outboard side and a forward double door shield hinged at either side of the seat back. Armored seats also consist of quick disconnect features, ventilated cushions and rigid foam chin pads. Provisions are included for adding personnel crotch and head protection.

Extensive dualization of the Chinook's systems combined with armor plate will assure a high degree of survivability.


#### **Performance**

Mission and range are directly related to the armament load. For example, a basic armament package consisting of the M-5 with 500 rounds, two M-2s with 1,600 rounds, two XM-159s, and five .50 cal machineguns weighs about 4,800 pounds and pushes the armed CH-47's gross weight to

about 31,000 pounds, depending on ambient conditions. In this configuration the aircraft has a radius of operation of some 100 nautical miles. It carries about 4,000 pounds of fuel, has a mission duration of almost 2 hours, cruises outbound at an average airspeed of about 120 knots and inbound at about 130 knots.

A change in armament load changes mission capability. An alternate armament package drops the M-2s and XM-159s and adds 15,400 rounds of .50 caliber ammunition. This increases gross weight to approximately 33,000 pounds and cuts the radius of operation. It also cuts the outbound average cruise airspeed to nearly 115 knots and mission duration to about 1.80 hours.

Weapons and armor can be easily and quickly removed to convert the CH-47 back into a near standard transport helicopter.

The Chinook has already proved that it can carry the load. Now the Army is interested in seeing if it can pack the punch. 

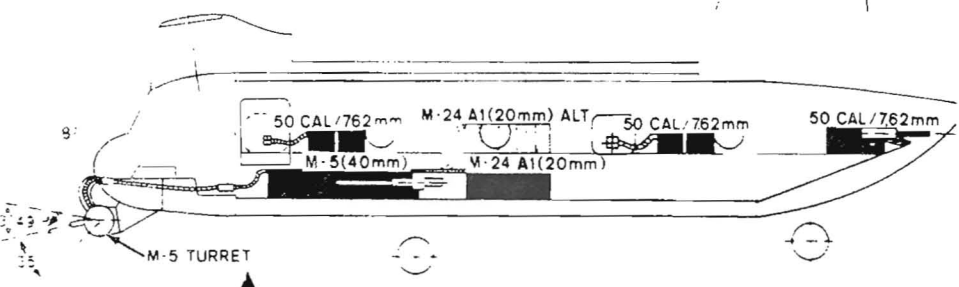
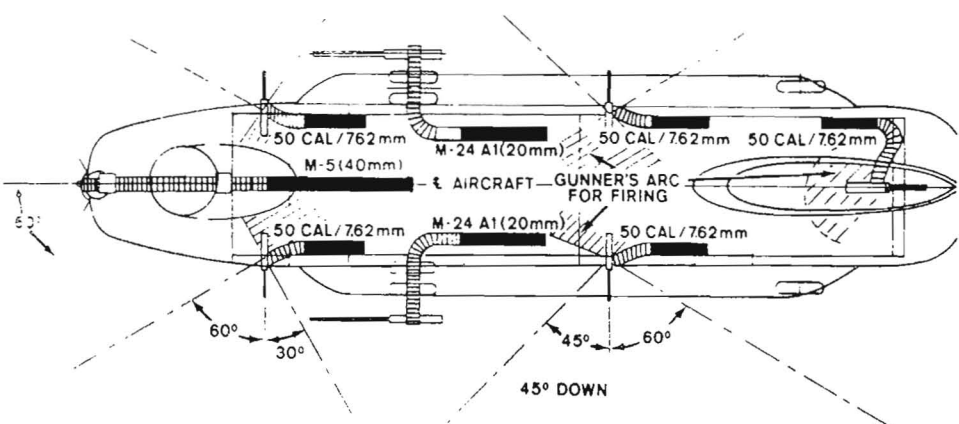


Figure 1

Figure 2

