

THE H-60 FOR THE USAF

Multi-Mission Helicopter



USAF
30878

SIKORSKY
AIRCRAFT  Division of
UNITED
TECHNOLOGIES.

PERFORMANCE



+ **COMBAT SURVIVABILITY**



+ **AIR TRANSPORTABILITY**



+ **RELIABILITY AND MAINTAINABILITY**



= **OPERATIONAL SUITABILITY**

The skies over North Viet Nam proved how difficult it is to fight and survive in a modern air war. The price in men and planes is high. Modern surface-to-air weapons makes enemy air space almost untenable. Yet we expect our airmen to go there - to win control of the air - and, hopefully, to return. While technology in the hands of the enemy can imperil the lives of our airmen, technology can also contribute to the survival of our pilots and crewmen. The H-60 is a helicopter designed to enhance survivability.

Although helicopters, in the hands of dedicated rescue crews, have performed remarkable feats in combat, they were designed principally, up to now, as noncombat, support aircraft. Progress in design and material technology, combined

with knowledgeable tactics, has brought about the evolution of the helicopter into a combat survivable aircraft.

The Sikorsky H-60 is the first production helicopter, designed from inception, to fly and survive in combat. For USAF application, it is ideally suited for combat support roles, such as rescue and special operations. The H-60 can in fact perform a myriad of combat support missions in the forward areas, missions where the threat, terrain or weather is too extreme for larger, high performance aircraft.

Operational suitability is the end result of dedicated effort, attention to detail and the knowledge gained over 30 years of designing and building Air Force rescue helicopters.





★ PERFORMANCE



Designed to meet essential combat needs, the H-60 can hover out of ground effect at 4000 feet altitude, 95°F temperature, and even climb vertically 450 feet per minute under those conditions. In fact, under almost any temperature, altitude, or weather conditions likely to be encountered in any potential theater of operations, a combat rescue H-60 can perform the mission more effectively than any other helicopter.

Terrain following flight, including extended period of nap-of-earth (NOE) flying, is vital to the survival of a rescue helicopter in a high threat environment. The H-60 has the high maneuverability and immediate control response required for effective NOE and low-level operations. Fifty-knot sideward and rearward flights illustrate the H-60's ability to ignore adverse wind conditions and execute landings along difficult axes of approach.

The H-60 is one of the smoothest flying, most vibration free helicopters ever built. The low vibration level represents the culmination of years of dedicated engineering and development efforts, and is attributable to



CARGO HOOK
CAPACITY: 8000 LBS.

the inherently stable elastomeric rotor system, the service proven bifilar absorber and a finely tuned airframe. The mission commander is free to exploit the broad flight envelope of the H-60 - without fear of vibration-induced fatigue in aircraft systems and crew - and to realize the full potential of this high performance helicopter. With less crew fatigue, and the USAF/Sikorsky developed air-to-air refueling capability, the H-60, for example, could rescue a downed fighter pilot, or a bomber crew **600** miles from base and return.

H-60 agility also enhances survivability. Superior flying qualities help the H-60 avoid detection and escape enemy fire. Generous control ranges, enhanced by a highly responsive rotor system and increased control power margins, afford the H-60 a high degree of controllability, with excellent low speed stability and performance.

The H-60 has immediate control and power response to execute swift, agile approaches to quick-stop high flare angle landings and hovers. It has the vertical rate of climb to depart confined areas rapidly -- fully loaded.

★ COMBAT SURVIVABILITY



Survivability will be a major challenge to all aircraft operating in the high threat environment. The H-60 was designed and built with the anticipated threat firmly in mind. The stringent design requirements for flight maneuverability and agility, ballistic tolerance, system redundancy, crashworthiness and a host of other parameters have given the H-60 the needed toughness to support the combat situation in the most demanding of conditions.

- The H-60 is survivable against the 7.62 mm AP threat, and extensive ballistic and laboratory tests have illustrated the H-60's ability to continue flight after sustaining ballistic damage from projectiles as large as 23 mm HEI. Redundant systems, "fail-safe" designed devices and ballistically tolerant materials provide the H-60 with unprecedented staying power.
- Drained of oil, the H-60 main transmission has operated—at full flight loads—for over one hour, proving the ruggedness and staying power of the component.
- Low detectability and excellent threat avoidance capability greatly enhance survivability of the H-60. An IR suppression system is being developed to defeat heat seeking weaponry. The H-60 noise signature is dramatically lower than that of current helicopters, which will enable the H-60 to operate in much closer proximity to enemy forces without fear of aural detection. The radar signature has also been reduced by the use of rounded planes.

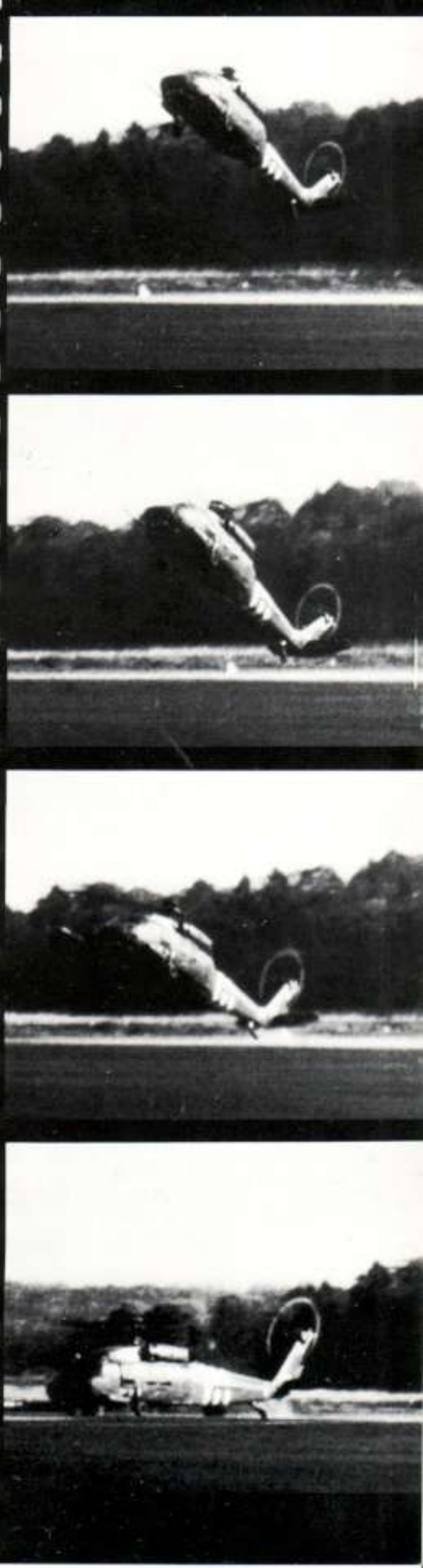
Crash Survivability Illustrated

YUH-60A inadvertent hard landing sequence captured on 16mm film during contractor testing illustrates protection provided by rugged tail gear. Tail wheel was replaced and aircraft returned to flight status the following day.

Crashworthiness

H-60 crashworthiness design features will substantially reduce crew and passenger injuries and airframe damage in all categories of accidents.

- A 2500 ft/minute impact is survivable in the Air Force H-60.
- A crashworthy fuel system with engine mounted suction feed greatly reduces the hazard of fuel spillage and associated post-crash fires.
- Crew and passenger seats limit g-loading on occupants to less injurious levels in survivable impacts.
- The cabin structure is designed to prevent parallelogramming and can resist deformation under simultaneous 20g forward, 10g downward and 9g lateral inertia loads.
- Wheeled landing gear absorbs the energy of most survivable impacts. Each main strut consists of two oleos, one above the other, which absorb the energy in high sink speed impacts. The tail wheel strut is of similar structure.





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★ AIR TRANSPORTABILITY



The H-60 is capable of rapid strategic deployment worldwide. It is air transportable in C-130, C-141, and C-5A aircraft. (One in a C-130, two in a C-141, and six to eight in a C-5A.)

Self-deployment over extended ranges is possible when the H-60 is configured with air-to-air refueling. Within a theater of operation, it is deployable on internal fuel alone.

Preparation for air transport consists of folding the main and tail blades, removing the mast extender, horizontal stabilizer, and other fuselage protuberances, and folding the tail.

Preparation for flight is a simple reversal of the process. Blade tracking is not necessary due to the master track indexes determined during manufacture.

UH-60A ELAPSED Time Requirement*

Preparation for loading	1.5 hours
Loading	.5 hours
Unloading	.5 hours
Preparation for flight	2.0 hours

*Due to externally mounted USAF mission equipment, the above times will be slightly longer.

Air transportability by C-141 and C-5A was successfully demonstrated during Government Competitive Test (GCT) by Army crews that bettered the elapsed time goals for preparation, loading, unloading and preparation for flight. A YUH-60A was loaded aboard a YC-15 AMST in even less time.

Rapid deployability — whether it be by air transport or self-deployment — will make the H-60 an important supporting element of our strategic strike forces worldwide.



★ RELIABILITY—AVAILABILITY— MAINTAINABILITY



MAIN ROTOR ELASTOMERIC BEARING

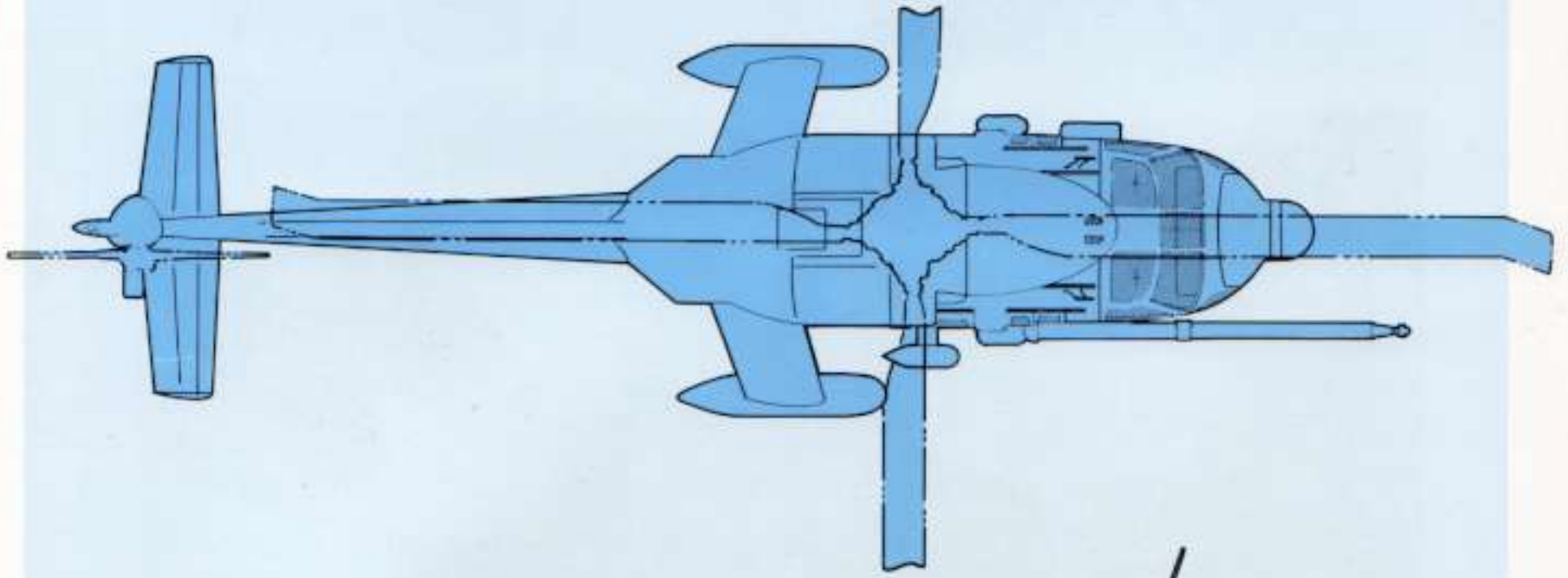
The H-60 is an extremely reliable aircraft that will achieve new highs in availability and unit readiness, as demonstrated in the Army's prototype operational testing. Design simplicity, modular construction, component and system redundancy all add up to an aircraft bred for the tactical environment, ready around the clock to respond to the demands of the combat situation.

Reliability is greatly enhanced by the very low vibration levels throughout the H-60. Low vibration is the result of proper airframe tuning and use of an efficient bifilar absorber which dampens vibration at the source—the main rotor head—before it feeds into the main transmission and airframe.

H-60 main and tail rotors have no conventional roller bearings and are lubrication free. Fleet proven elastomeric bearings in the main rotor head, and cross-beam bearingless composite paddles in the tail rotor give the H-60 unprecedented reliability in rotor systems.

H-60 maintenance support concept calls for replacement of components or modules. "On condition" maintenance concept is extensively applied throughout the H-60. Parts will be replaced when condition or wear dictates, thereby providing full life utilization of components. The end result will be greater aircraft availability at lower cost. All major components and modules can be replaced with use of common hand tools and a portable aircraft-mounted maintenance crane. Components are grouped to avoid queuing of mechanics in one area of the airframe.

The H-60 has a high degree of self-supportability provided by an on-board APU power source and an aircraft mountable maintenance crane. It all results in a total, reliable system requiring minimum maintenance.



THE H-60: COMBAT RESCUE CONFIGURATION (TYPICAL)

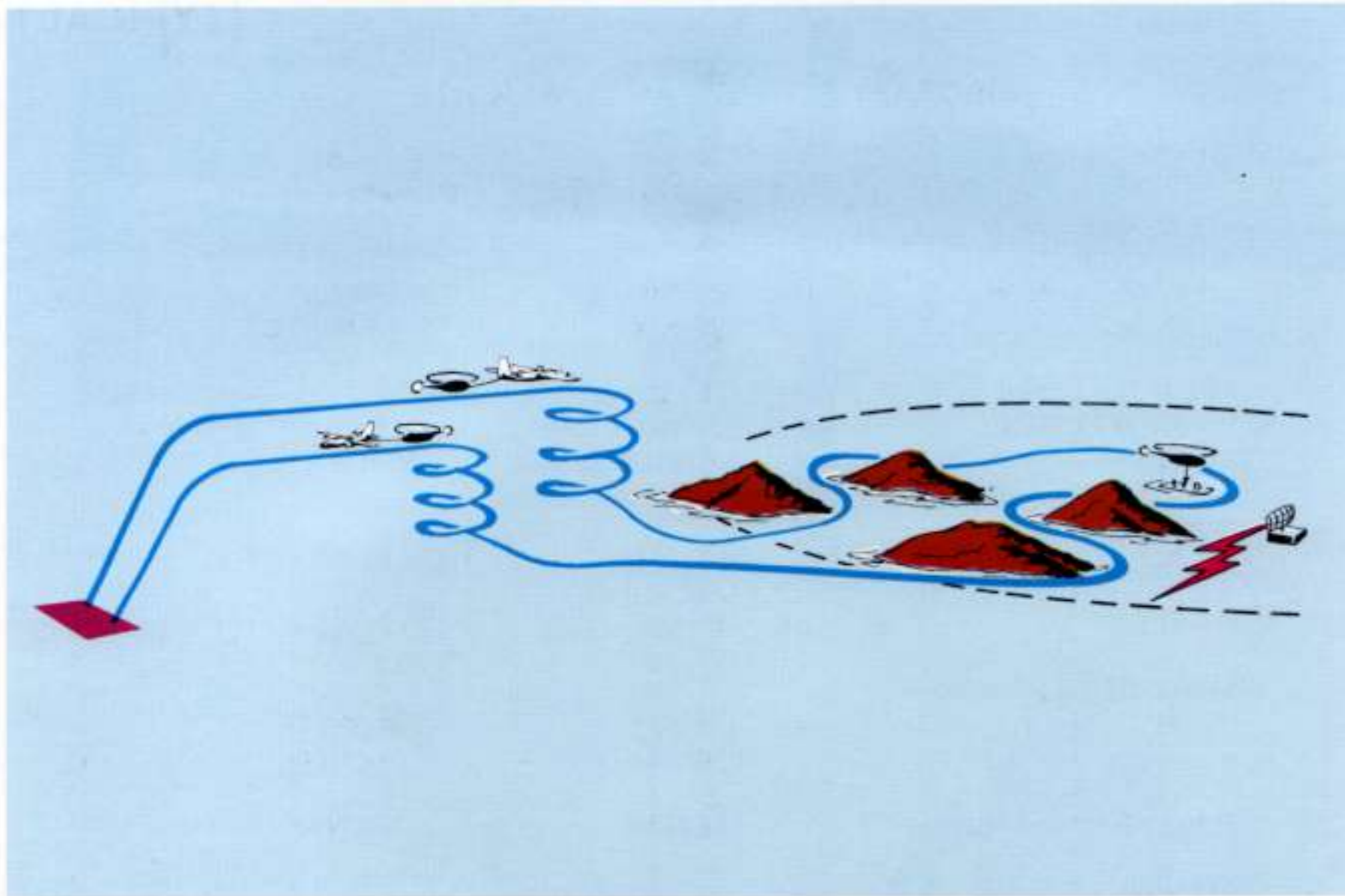
AIRCRAFT PERFORMANCE/WEIGHTS

At 18,600 Lbs.	H-60 (T700-GE-401)	H-60 Growth Engine
Cruise Speed (MCP) 4,000 Ft. 95° F SLS	130 Kts. 149 Kts.	149 Kts. 154 Kts. (TL)
Maximum Speed 4,000 Ft. 95° F SLS	150 Kts. 153 Kts. (TL)	156 Kts. 153 Kts. (TL)
Vertical ROC 4,000 Ft. 95° F SLS	990 Ft./Min. (2.5 Min. Rating) 1,820 Ft./Min. (TL)	1,455 Ft./Min. (TL) 1,820 Ft./Min. (TL)
Hover Ceiling 95° F Std.	4,000 Ft. 8,400 Ft.	6,000 Ft. 10,400 Ft.
Range (Unrefueled)	417 N.M.	400 N.M.
Weight		
Empty	12,929 Lbs.	12,943 Lbs.
Useful Load	5,998 Lbs.	5,998 Lbs.
Mission T.O.	18,927 Lbs.	18,941 Lbs.
Maximum G.W. Limit	21,884 Lbs.	21,884 Lbs.

TL: Transmission Limited



COMBAT RESCUE MISSION PROFILE (TYPICAL)



Take Off Gross Weight

18,927 Lbs.

Radius of Action

543 N.M.

(One refuel outbound, one inbound)

Total Mission Time

9 Hours 25 Minutes

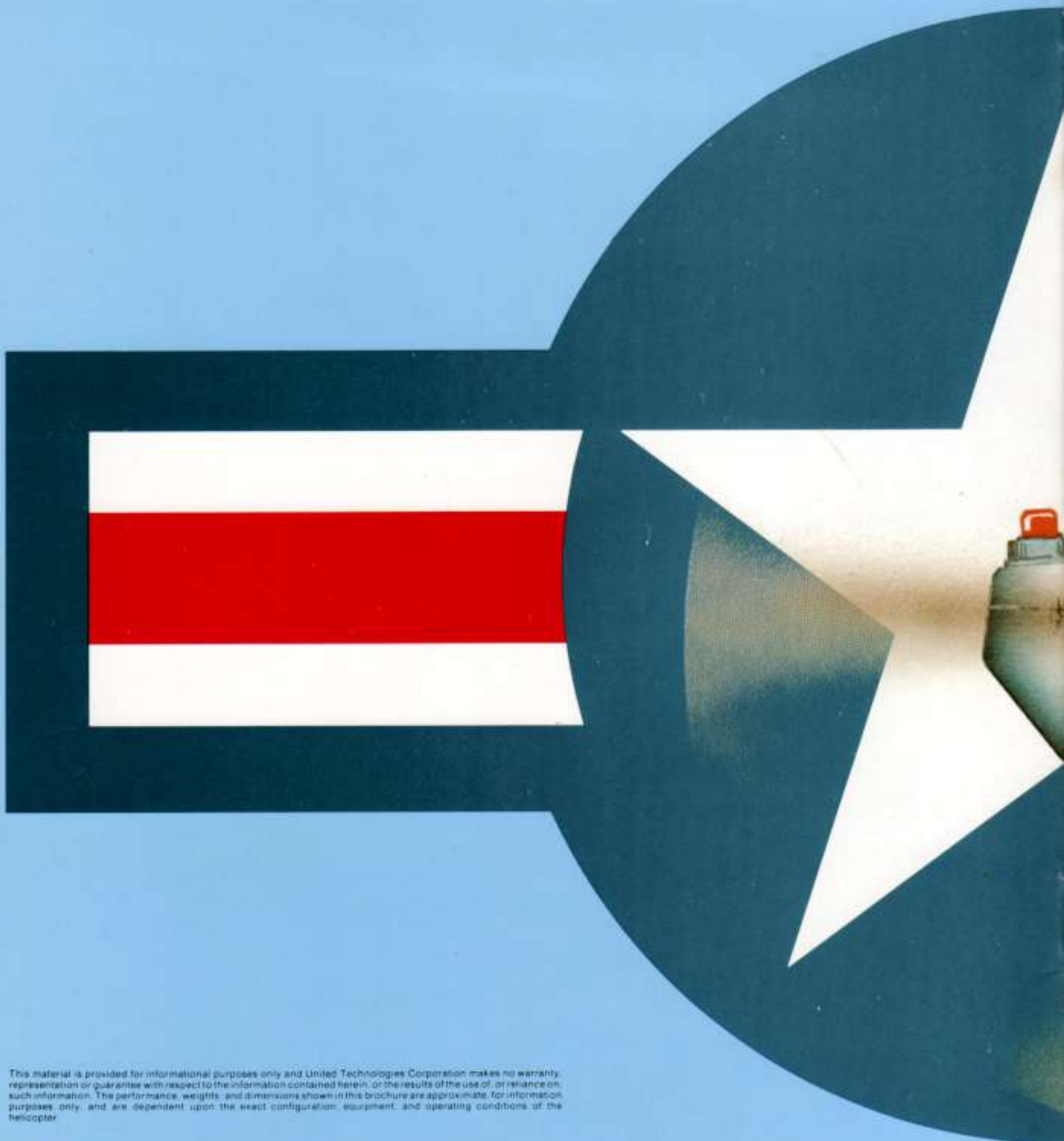
THE H-60 FOR THE U.S.A.F.

- ★ **Combat Rescue**
- ★ **Special Operations**
- ★ **Missile Site Support**
- ★ **Combat Airstrip/Base Defense**
- ★ **Interdiction Support**
- ★ **Drone Retrieval**
- ★ **TACS - Mobility and Support**
- ★ **Short Range Logistics**
- ★ **FEBA - C³**
- ★ **Medevac**
- ★ **Command/Administrative Transport**



A derivative of the Army's UH-60A, the SH-60B is being developed for the Navy's LAMPS mission. In addition to different avionics, sensors, and weapons suit, the SH-60B has a higher powered engine, a larger fuel tank, an external rescue hoist, more versatile auto flight control system, a redesigned tail wheel installation and

external supports for torpedoes, or other droppable stores. If the Air Force selects the H-60 generic type as its multi-mission H-3 replacement, it can accrue the benefits of both derivatives of this most advanced state-of-the-art helicopter, completely developed, tested, tooled and in high-rate production.



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