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## Lockheed C-130 Hercules

### Mission

During the 1950s the versatile Lockheed C-130 Hercules was originally designed as an assault transport but was adapted for a variety of missions, including: special operations (low-level and attack), close air support and air interdiction, mid-air space capsule recovery, search and rescue (SAR), aerial refueling of helicopters, weather mapping and reconnaissance, electronic surveillance, fire fighting, aerial spraying, Arctic/Antarctic ice resupply and natural disaster relief missions.

Currently, the Hercules primarily performs the intratheater portion of the tactical airlift mission. This medium-range aircraft is capable of operating from rough, dirt strips and is the prime transport for paratroop and equipment drops into hostile areas.

### Background

On 23 August 1954, the YC-130A Hercules (#53-3397) made its maiden flight at Burbank, California. Only the two YC-130 prototypes (#53-3396 was the first built) were assembled at Lockheed's "Skunk Works" plant in Burbank, while more than 2,000 subsequent aircraft have been built in Marietta, Georgia.

The initial production model was the C-130A, with four three-bladed Allison T56-A-9 turboprops. A total of 219 were ordered. The first C-130A (#53-3129) flew on 7 April 1955 and deliveries began in December 1956. Two DC-130As (originally GC-130As) were built as drone launchers/directors, carrying up to four drones on underwing pylons. All special equipment was removable, permitting the aircraft to be used as freighters (accommodating five standard freight pallets), assault transports, or ambulances.

Five decades have elapsed since the Air Force issued its original design specification, yet the remarkable C-130 Hercules remains in production. The venerable "Herk" is the most successful military transport since the Douglas C-47 and has accumulated over 20 million flight hours. More than 900 C-130s and derivatives have been delivered to the U.S. Air Force during the past 30 years. The aircraft type currently serves in over 60 foreign countries and is expected to remain in production well into the 21st century.

#### U.S. Air Force

The C-130B entered service in June 1959. A total of 134 were delivered to the Air Force. The B-model introduced the four-bladed Allison T56-A-7 turboprops, carries additional fuel in the wings, and has strengthened landing gear. A few C-130Bs, used for aerial fire fighting missions, are still in service with Air National Guard units. Six C-130Bs were modified in 1961 for mid-air snatch recovery of classified Air Force satellites.

During the Vietnam Conflict, some Air Force C-130As were converted into gunships. In addition to their side-firing 20mm Vulcan cannons and 7.62mm Miniguns, they also possessed sensors, a target acquisition system, and a forward looking infra-red (FLIR) and low-light television system.

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Several A-models, redesignated C-130D, were fitted with wheel/ski landing gear for service in the Arctic and for resupply missions to units along the Distant Early Warning (DEW) line. The two main skis are 20 feet (6m) long, 6 feet (1.8m) wide, and weigh about 2,000 pounds (907kg) each. The nose ski is 10 feet (3m) long and 6 feet (1.8m) wide. The D-model also has increased fuel capacity and provision for jet-assisted takeoff (JATO). These were flown by the Air National Guard and have been replaced by the LC-130H variant.

The C-130E is an extended-range development of the C-130B. A total of 369 were ordered and deliveries began in April 1962. The maximum ramp weight of the E-model increased to 155,000 pounds (70,307kg), 20,000 pounds (9,072kg) more than the B-model. Its fuel capacity was increased by over 17,000 pounds (7,711kg). More powerful Allison T-56-A-7A engines were used and a pair of external fuel tanks with a capacity of 1,360 gallons were slung beneath the wings, between the engines. A recent wing modification to correct fatigue and corrosion on the USAF's fleet of E-models has extended the life of the aircraft well into the 21st century.

Similar to the E-model, the C-130H has updated T56-A-T5 turboprops, a redesigned outer wing, updated avionics, and other minor improvements. Delivery began in July 1974 [other sources state April 1975]. More than 350 C-130Hs and derivatives were ordered for active and reserve units of the U.S. services. The H-model has become the most produced of all C-130 models, with orders for 565 as of the end of 1979.

#### *U.S. Navy & Marines*

The C-130 Hercules first entered naval service in 1960 when four LC-130F's were obtained for Antarctic support missions. These ski-equipped "Herks" were soon followed by 46 KC-130F models procured by the Marine Corps in 1962 for the dual role of assault transport and aerial tanker for fighter and attack aircraft. That same year the Navy obtained seven C-130F's without inflight refueling equipment to serve its transport requirements. The KC-130F made its first test flight in January 1960 as the GV-1 under the old Navy designation system. The tanker version can refuel two aircraft simultaneously from the 3,600 gallons in its cargo compartment. The fuel is routed to two detachable pylon pods located below the outer wing, containing refueling gear.

In 1965, the Navy procured a number of C-130Gs to provide support to Polaris submarines and the exchange of their crews. Essentially the same as the F-model, these aircraft have increased structural strength, allowing higher gross weight operation. All models feature crew and cargo compartment pressurization, single-point refueling and a Doppler navigation system. The four of these aircraft were later modified as TACAMO communications relay aircraft and were redesignated EC-130G. After replacement by the E-6A, three aircraft were returned to transport configuration (albeit with no cargo ramp) as TC-130Gs, one now serving as the Blue Angels support aircraft, *Fat Albert*.

One other model, the EC-130Q, served in two VQ squadrons. This version had a permanently installed VLF radio transmitter system used to supplement shorebased communications facilities and acted as a strategic communications aircraft, communicating with ballistic-missile submarines.

#### **Statistics**

More than 145 Hercules aircraft were deployed in support of Operations Desert Shield and Desert Storm. These aircraft moved units to forward bases once they arrived in the theatre. From 10 August 1990 to the cease-fire, Air Force C-130s flew 46,500 sorties and moved more than 209,000 people and 300,000 tons of supplies within the Area of Responsibility (AOR). They provided logistical support, aeromedical evacuation of the wounded, and battlefield mobility once the fighting started. During the "100-hour" ground campaign, C-130s flew more than 500 sorties a day!

#### **Features**

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The C-130 design employs a cargo floor at truck-bed height above the ground, an integral "roll on/roll off" rear loading ramp, and an unobstructed, fully-pressurized cargo hold which can rapidly be reconfigured for the carriage of troops, stretchers or passengers. The Hercules can also be committed for airdrops of troops or equipment and for LAPES (Low Altitude Parachute Extraction System) delivery of heavy cargoes.

- *Cargo Compartment* - The C-130 can carry more than 42,000 pounds (19,051kg) of cargo. Rollers in the floor of the cargo compartment enable quick and easy handling of cargo pallets and can be removed to leave a flat surface, if needed. Five 463L pallets (plus a ramp pallet for baggage) may be loaded onto the aircraft through the hydraulically-operated main loading ramp/door assembly located in the rear of the aircraft. The ramp can also be lowered to the ground for loading and unloading of wheeled vehicles. Tie-down fittings for securing cargo are located throughout the compartment.

In its personnel carrier role, the C-130 can accommodate 92 combat troops or 64 fully-equipped paratroopers on side-facing, webbed seats. For aeromedical evacuations, it can carry 74 litter patients and two medical attendants.

- *Aerial Delivery of Cargo* - Three primary methods of aerial delivery are used for equipment or supplies. In the first, parachutes pull the load, weighing up to 42,000 pounds (19,051kg), from the aircraft. When the load is clear of the plane, cargo parachutes deploy and lower the load to the ground.

The second method, called the Container Delivery System (CDS), uses the force of gravity to pull from one to 16 bundles of supplies from the aircraft. When the bundles, weighing up to 2,200 pounds (998kg) each, are out of the aircraft, parachutes deploy and lower them to the ground.

LAPES is the third aerial delivery method. With LAPES, up to 38,000 pounds (17,237kg) of cargo is pulled from the aircraft by large cargo parachutes while the aircraft is five to 10 feet (3m) above the ground. The load then slides to a stop within a very short distance.

- *Wings and Fuel Tanks* - The full cantilever wing contains four integral main fuel tanks and two bladder-type auxiliary tanks. Two external tanks are mounted under the wings. This gives the C-130 a total usable fuel capacity of approximately 9,530 gallons.
- *Landing Gear* - The modified tricycle-type landing gear consists of dual nose gear wheels and tandem mains and permits aircraft operation from rough, unimproved runways. Main gear retraction is vertically, into fuselage blister fairings, and the nose gear folds forward into the fuselage. Power steering is incorporated into the nose gear.
- *Electrical Systems* - AC electrical power for the C-130H model is provided by five 40 KVA generators, 4 driven by the engines and one driven by the Auxiliary Power Unit (APU). On the E-model, the power is supplied by four 40 KVA engine-driven generators, and a 20 KVA generator driven by the Air Turbine Motor (ATM). DC power is provided from AC sources through four 200 ampere transformer rectifiers and one 24 volt, 36 ampere-hour battery.
- *Hydraulic Systems* - Four engine-driven pumps supply 3,000 psi pressure to the utility and booster systems. An electric AC motor-driven pump supplies pressure to the auxiliary system and is backed up by a hand pump. The hydraulic system maintains constant pressure during zero or negative "g" maneuvers.

### **Stretched Herks**

A number of military operators use the civilian version of the Hercules, which bears the Lockheed

designation L-100. Certificated in February 1965, the basic L-100 was broadly equivalent to the C-130E, without pylon tanks or military equipment. The L-100-20 was given plugs fore (5 feet/1.5m) and aft (3.3 feet/1m) of the wing. The L-100-30 has a full 15-foot (4.6m) fuselage stretch.

**Roles and Variants**

The C-130 Hercules is arguably the most versatile tactical transport aircraft ever built. Its uses appear almost limitless: airlift and airdrop, electronic surveillance, search and rescue, space-capsule recovery, helicopter refueling, landing (with skis) on snow and ice, and aerial attack. It has even landed and taken off from a carrier deck without benefit of arresting gear or catapults.

<b>Primary Role</b>	<b>Specialized Model/Variant</b>
Tactical Airlift	All models, including the new <a href="#">C-130J</a>
Attack Gunship	<a href="#">AC-130</a> (Spectre/Spooky II)
Drone Control	<a href="#">DC-130</a>
Combat Communications	<a href="#">C-130B</a> (Talking Bird)
Command and Control	<a href="#">EC-130E</a> (ABCCC / <a href="#">Commando Solo</a> )
Electronic Warfare	<a href="#">EC-130H</a> (Compass Call)
Maritime Patrol	<a href="#">HC-130H</a> , <a href="#">EC-130V</a>
Arctic/Antarctic Support	<a href="#">LC-130</a> (formerly C-130D)
Special Operations	<a href="#">MC-130E/H</a> (Combat Talon), <a href="#">MC-130P</a> (Combat Shadow)
Aerial Refueling	<a href="#">HC-130N/P</a> , <a href="#">MC-130E</a> , <a href="#">MC-130P</a> , <a href="#">KC-130</a>
Search and Rescue	<a href="#">HC-130N/P</a> , <a href="#">HC-130H</a> , <a href="#">EC-130V</a>
Weather Reconnaissance	<a href="#">WC-130</a>

**Interesting Efforts**

[C-130 Hercules Lands on U.S.S. Forrestal](#)

When one reviews the encyclopedic range of accomplishments by the C-130 Hercules and its valiant aircrews over the years, surely one of the most astounding took place in October of 1963 when the U.S. Navy successfully landed a Marine Corps KC-130 on the deck of an aircraft carrier.

 [Video >>](#)



[Operation 'Credible Sport'](#)


In 1980, following the failure of Operation "Eagle Claw" (aka [Desert One](#)) the U.S. military made radical modifications to a C-130H Hercules so it could take off and land almost like a helicopter. The aircraft was equipped with lift rockets slanting downward, slowdown rockets facing forward, missile motors facing backward, and still more rockets to stabilize the plane as it touched down. The mission — land in a Tehran soccer stadium, rescue 53 American hostages held captive in Iran, and get out.... FAST!



Two aircraft received these special modifications and were redesignated YMC-130H. The first modified plane ([#74-1683](#)), created in just a couple of months, crashed on the runway during a training exercise

after a rocket discharged prematurely and ripped off the aircraft's right wing. The second modified plane (#74-1686) was never used and is now on display at Robins AFB in Georgia.

 [Video >>](#)

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