



# C-130 HERCULES

**Mission:** The C-130 Hercules primarily performs the tactical portion of the airlift mission. The aircraft is capable of operating from rough, dirt strips and is the prime transport for airdropping troops and equipment into hostile areas. C-130s operate throughout the U.S. Air Force, serving with Air Mobility Command (AMC) (stateside based), theater commands, Air National Guard (ANG) and the Air Force Reserve Command (AFRC), fulfilling a wide range of operational missions in both peace and war situations. Basic and specialized versions of the aircraft airframe perform a diverse number of roles, including airlift support, Arctic ice resupply, aeromedical missions, aerial spray missions, fire-fighting duties for the U.S. Forest Service and natural disaster relief missions. The C-130 performs similar missions for the sixty-five (65) worldwide operators of the Hercules. See flags of worldwide operators on this page.

**Features:** In its personnel carrier role, the C-130 can accommodate 92 combat troops or 64 fully-equipped paratroops on side-facing seats. For medical evacuations, it carries 74 litter patients and two medical attendants. Paratroops exit the aircraft through two doors on either side of the aircraft behind the landing-gear fairings. Another exit is off the rear ramp for airdrops. The C-130 Hercules joins on mercy flights throughout the world, bringing in food, clothing, shelter, doctors, nurses and medical supplies and moving victims to safety. C-130 Hercules have served other nations, airlifting heavy equipment into remote areas to build airports and roads, search for oil and transport local goods.

**Background:** Four decades have elapsed since the Air Force issued its original design specification, yet the C-130 remains in production. The initial production model was the C-130A, with four Allison T56-A-11 or -9 turboprops. A total of 219 were ordered and deliveries began in December 1956. Two DC-130A's (originally GC-130A's) 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, assault transports or ambulances. The C-130B introduced Allison T56-A-7 turboprops and the first of 134 entered Air Force service in April 1959. C-130B's were used in aerial fire fighting missions by Air National Guard and Air Force Reserve units. Six C-130B's were modified in 1961 for snatch recovery of classified U.S. Air Force satellites by the 6593rd Test Squadron at Hickam Air Force Base, Hawaii. As a partial response to the overwhelming role played by the tactical airlift fleet in Operation Just Cause and in the Persian Gulf War, Congress approved the procurement of more C-130H's to replace aging E models.

Still in production, the C-130 Hercules transport aircraft first flew a prototype flight in 1954 and has been delivered to more than 64 countries. C-130s operate throughout USAF, serving with ACC, theater commands, AFRC, and ANG, fulfilling a wide range of operational missions in both peace and war situations. Basic and specialized versions perform a diversity of roles, including airlift support, DEW Line and Arctic ice resupply, aeromedical missions, aerial spray missions, fire-fighting duties for the US Forest Service, and natural disaster relief missions. In recent years, they have been used to bring humanitarian relief to many countries, including Haiti, Bosnia, Somalia, and Rwanda.

Early C-130A, B, and D versions are now retired. The C-130E is an extended-range development of the C-130B, with large underwing fuel tanks; 369 were ordered for MAC (now AMC) and TAC (now ACC), with deliveries beginning in April 1962. A wing modification to correct fatigue and corrosion on USAF's force of C-130Es has extended the life of the aircraft well into the next century. Ongoing modifications include a Self-Contained Navigation System (SCNS) to enhance navigation capabilities, especially in low-level environments. The SCNS incorporates an integrated communications/navigation management system that features the USAF standard laser gyro inertial navigational unit and the 1553B data bus; installation began in 1990. Other modifications include enhanced station-keeping equipment, 50 kHz VHF Omni-range/Instrument Landing System (VOR/ILS) receivers, secure voice capability, and GPS capability. Another major modification installs a state-of-the-art autopilot that incorporates a Ground Collision Avoidance System.

The basic C-130H is generally similar to the E model but has updated T56-A-15 turboprops, a redesigned outer wing, updated avionics, and other, minor improvements; delivery began in July 1974. More than 350 C-130Hs and derivatives were ordered for active and reserve units of the US services, including eight funded in FY 1996. Production of the H has now ended. Night Vision Instrumentation System was introduced from 1993; TCAS II in new aircraft from 1994. ANG and AFRC C-130Hs are used in fire-fighting missions. Specifically modified aircraft are used by the 757th AS, AFRC, based at Youngstown-Warren Regional Airport ARS, Ohio, for aerial spraying, typically to suppress mosquito-spread epidemics. Seven LC-130Hs, modified with wheel-ski gear, are operated by ANG's 109th AW in support of Arctic and Antarctic operations. While continuing to upgrade through modification, the Air Force has begun fleet modernization through acquisition of the C-130J version. This new model features a two-crew-member flight system, 6,000 SHP Allison AE 2100D3 engines and all-composite Dowty R391 propellers, digital avionics and mission computers, enhanced performance, and improved reliability and maintainability. Beginning in FY 1996, the Air Force started procuring C-130Js as replacements for the older C-130Es and Hs. Priority for replacement will be combat delivery aircraft. The Royal Air Force was the launch customer for the C-130J with the Royal Australian Air Force, Italian Air Force, and Royal Danish Air Force all procuring the new C-130J. The U.S. Marine Corps, the U.S. Coast Guard and other U.S. Government military have begun operation of the C-130J.

Other variants include HC/MC-130, AC-130H/U, and WC-130H, all described separately. Four HC-130Hs were modified as JC-130H with added equipment for aerial recovery of reentering space capsules, and two DC-130Hs are used for drone control duties, together with one DC-130A.

The C-130's design maximum gross weight is 155,000 pounds (175,000 pounds wartime) with a normal landing weight of 130,000 pounds. The operating weight is approximately 80,000 pounds. The airplane is capable of airlifting 92 ground troops, 64 fully equipped paratroopers, or 74 litter patients. It can also carry 45,000 pounds of cargo.

**FUSELAGE:** The fuselage is a semimonocoque design and divided into a flight station and a cargo compartment. Seating is provided for each flight station. The cargo compartment is approximately 41 feet long, 9 feet high, and 10 feet wide. Loading is from the rear of the fuselage. Both the flight station and the cargo compartment can be pressurized to maintain a cabin pressure-altitude of 5000 feet at an aircraft altitude of 28,000 feet.

**WINGS:** 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 9680 U.S. gallons.

**EMPELLAGE:** A horizontal stabilizer, vertical stabilizer, elevator, rudder, trim tabs, and a tail cone make up the empennage. This section consists of an all-metal full cantilever semimonocoque structure. It is bolted to the aft fuselage section.

**POWER PLANT:** (prior to the C-130J) Four Allison turboprop engines are attached to the wings. The engine nacelles have cowl panels and access doors forward of a vertical firewall. Clam-shell doors are located aft of the vertical firewall. Air enters the engine through a scoop assembly at the front of the nacelle.

**PROPELLERS:** (prior to the C-130J) Four Hamilton Standard electro-hydraulic, constant-speed, full feathering, reversible-pitch propellers are installed on each engine.

**LANDING GEAR AND BRAKES:** The modified tricycle-type landing gear consists of dual nose gear wheels and tandem mains. Main gear retraction is vertically, into fuselage fairings, and the nose gear folds forward into the fuselage. Power steering is incorporated into the nose gear. The landing gear design permits aircraft operation from rough, unimproved runways. The brakes are hydraulically operated, multiple-disc type. The braking system incorporates differential braking and parking brake control. A modulating anti-skid system is provided.

**AUXILIARY POWER UNIT (APU) (C-130H):** The APU supplies air during ground operation for engine starting and air conditioning. One 40 KVA AC generator is mounted on the APU as an additional AC power source. Emergency electrical power during flight is also available up to 20,000 feet.

**GAS TURBINE COMPRESSOR (GTC) AND AIR TURBINE MOTOR (ATM) (C-130E):** C-130E model aircraft have a GTC which supplies bleed air for engine start, air conditioning, and operation of an ATM. The ATM powers a 20 KVA electrical generator to supply auxiliary electrical power on the ground only.

**OIL:** The C-130 has four independent oil systems with a 12 gallon capacity for each engine. Oil is serviced through a filler neck located on the upper right engine cowling.

**FUEL:** The fuel system consists of a modified manifold-flow type incorporating fuel cross-feed, single point refueling (SPR) and defueling, and fuel dumping. Latest USAF versions incorporate blue foam for fire suppression.

**ELECTRICAL:** 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 APU. On the E model, the power is supplied by four 40 KVA engine-driven generators, and a 20 KVA generator driven by the ATM. DC power is provided from AC sources through four 200 ampere transformer rectifiers and one 24 volt, 36 ampere-hour battery.

**HYDRAULIC:** Four engine-driven pumps supply 3000 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 handpump. The hydraulic system maintains constant pressure during zero or negative "g" maneuvers.

**AIR CONDITIONING AND PRESSURIZATION:** Two independent air conditioning systems for the flight deck and cargo compartment are operated from engine bleed air in flight and by the GTC/APU on the ground.

**OXYGEN:** Both models have a 25 liter liquid oxygen (LOX) type system which provides for 96 man-hours of oxygen at 25,000 feet. It uses diluter-demand automatic pressure-breathing regulators. Portable units are also provided. System pressure is maintained at 300 psi.

**FLIGHT CONTROLS:** The primary flight control system consists of conventional aileron, elevator, and rudder systems. Hydraulic power boost is incorporated in each system.

**WING FLAPS:** The wing flaps are high-lift, Lockheed-Fowler type and are of conventional design and construction. Normal operation is by hydraulic motor. Emergency operation is by manual crank.

**ANTI-ICING:** Engine bleed air is used for anti-icing the wing and empennage leading edges, the radome, (radome anti-icing may be removed in some models, check with aircraft forms) and engine inlet air ducts. Electrical heat provides anti-icing for the propellers, windshield, and pitot tubes.

| General Characteristics  |  |
|--|--|
| <b>Primary Function:</b> Tactical and intratheater airlift   |  |
| <b>Contractor:</b> Lockheed Martin Aeronautics Company   |  |
| <b>Power Plant:</b> Four Allison T56-A-15 turboprops; 4,300 horsepower, each engine  |  |
| <b>Length:</b> 97 feet, 9 inches (29.3 meters)   |  |
| <b>Height:</b> 38 feet, 3 inches (11.4 meters)   |  |
| <b>Wingspan:</b> 132 feet, 7 inches (39.7 meters)  |  |
| <b>Cargo Compartment:</b> Length, 41 feet (12.5 meters); width, 108 inches (2.74 meters); height, 9 feet (2.74 meters). Rear ramp (one pallet position); length, 88 inches (2.23 meters); width, 108 inches (2.74 meters); height, 76 inches (1.93 meters) |  |
| <b>Speed:</b> 374 mph (Mach 0.57) at 20,000 feet (6,060 meters)  |  |
| <b>Ceiling:</b> 33,000 feet (10,000 meters) with 45,000 pounds (17,716 kilograms) payload  |  |
| <b>Maximum Takeoff Weight:</b> 155,000 pounds (69,750 kilograms)   |  |
| <b>Range:</b> 2,356 miles (2,049 nautical miles) with maximum payload; 2,500 miles (2,174 nautical miles) with 25,000 pounds (11,250 kilograms) cargo; 5,200 miles (4,522 nautical miles) with no cargo  |  |
| <b>Crew:</b> Five (two pilots, a navigator, flight engineer and loadmaster); up to 92 troops or 64 paratroops or 74 litter patients or six standard freight pallets with a maximum of 45,000 pounds of cargo.  |  |
| <b>Date Deployed:</b> April 1955   |  |

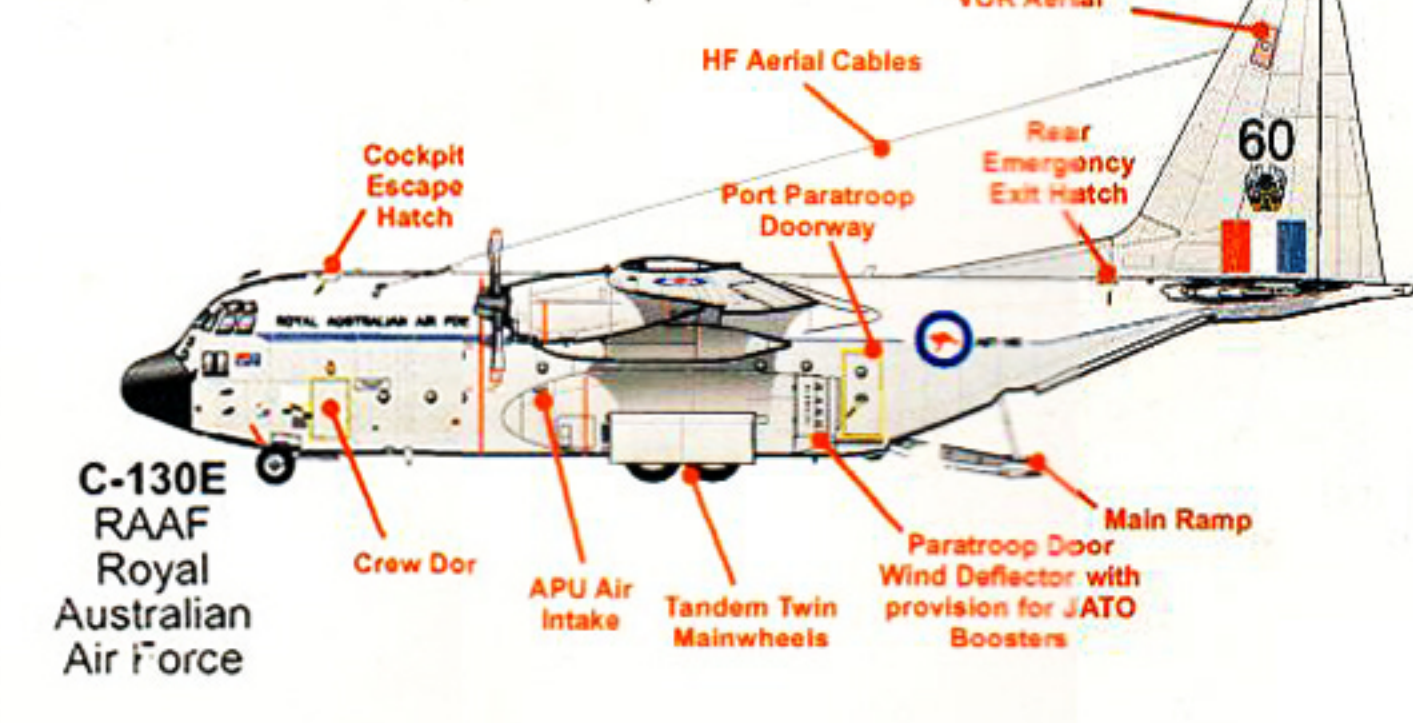


| C-130 Milestones |                |               |
|------------------|----------------|---------------|
| Model            | First Delivery | Last Delivery |
| C-130A           | 1956           | Nov 1959      |
| C-130B           | 1959           | Mar 1963      |
| C-130E           | 1962           | Mar 1974      |
| C-130H           | 1974           | Mar 1997      |
| C-130H2          | 1978           | 1992          |
| C-130H3          | 1992           | 1997          |
| C-130J           | 1999           | In Production |
| L-100            | 1964           | Dec 1968      |
| L-100-20         | 1968           | Mar 1981      |
| L-100-30         | 1970           | Mar 1997      |
| C-130H-30        | 1980           | 1997          |

| C-130 Missions & Variants  |  |
|----------------------------|--|
| Missions                   | Specialized Variant  |
| Tactical Airlift           | AI   |
| Aerial Tanker              | KC-130B, KC-130F, KC-13H, HC-130H(N), HC-130N, HC-130P, KC-130R, KC-130T |
| Command & Control          | EC-130E (ABCCC), EC-130G, & EC-130Q                                      |
| Maritime Patrol            | C-130H-NP/PC-130H  |
| Special Operations         | MC-130E & MC-130H  |
| Search & Rescue            | SC-130B/HC-130B, HC-130E, HA-130H, HC-130H(N), HC-130N, & HC-130P        |
| Humanitarian Relief        | AI   |
| Staff/VIP Transport        | VC-130B & VC-130H  |
| Reconnaissance             | RC-130B  |
| Airborne Hospital          | C-130E (AEH)   |
| Arctic & Antarctic Support | C-130BL/LC-130F, C-130D, LC-130H, & LC-130R                              |
| Drone Control              | GC-130A/DC-130A, DC-130E, & DC-130H                                      |
| Electronic Warfare         | EC-130E (CL), EC-130E (RR), EC-130H                                      |
| Space & Missile Operations | JC-130A, JC-130B, & NC-130H  |
| Test & Evaluation          | NC-13A, NC-130B, JC-130E, NC-130E, LC-130H, & RC-130S                    |
| Weather Reconnaissance     | WC-130B, WC-130E, WC-130H  |
| Gunship                    | AC-130A, AC-130E, AC-130H, & AC-130U                                     |



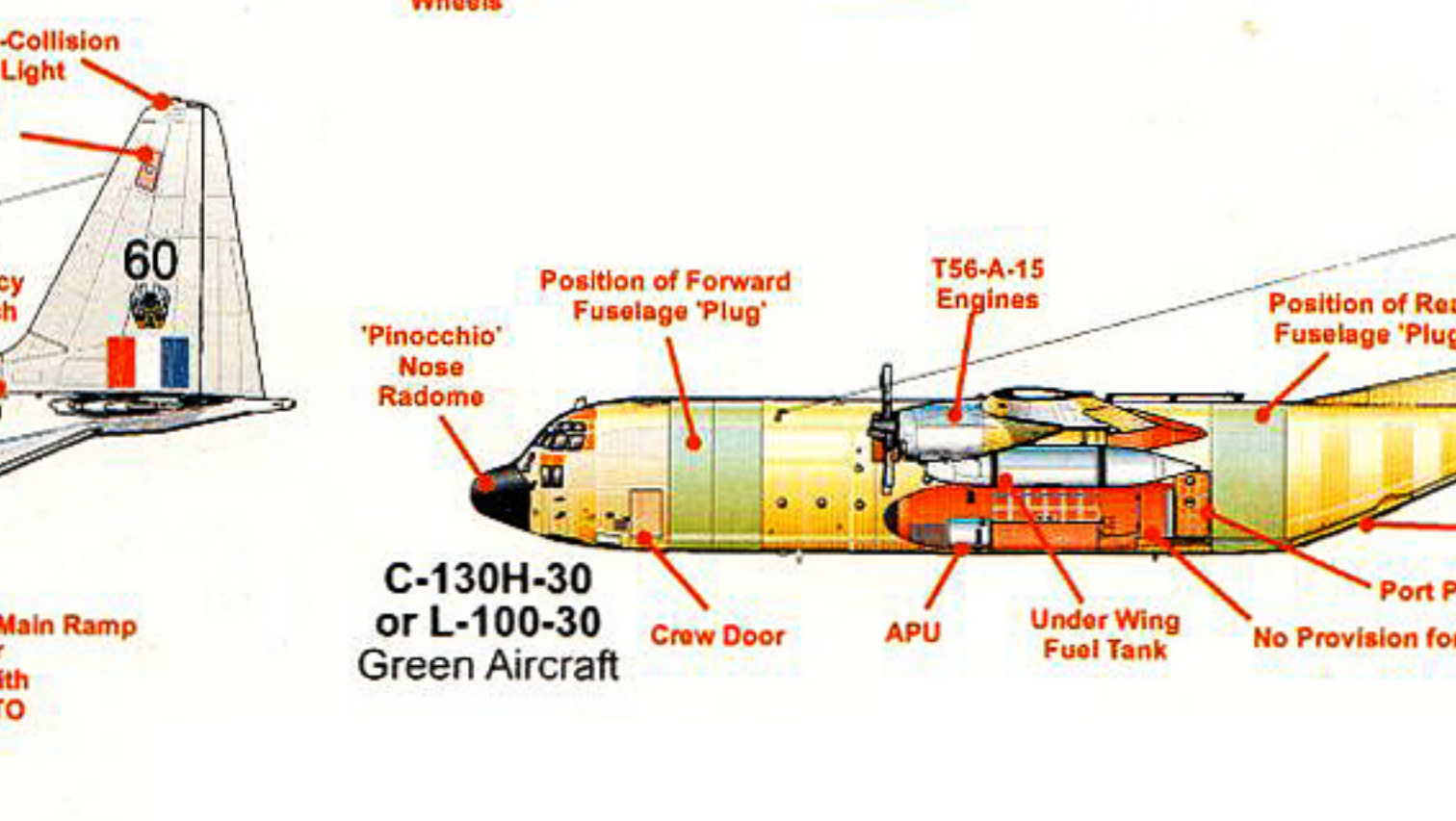
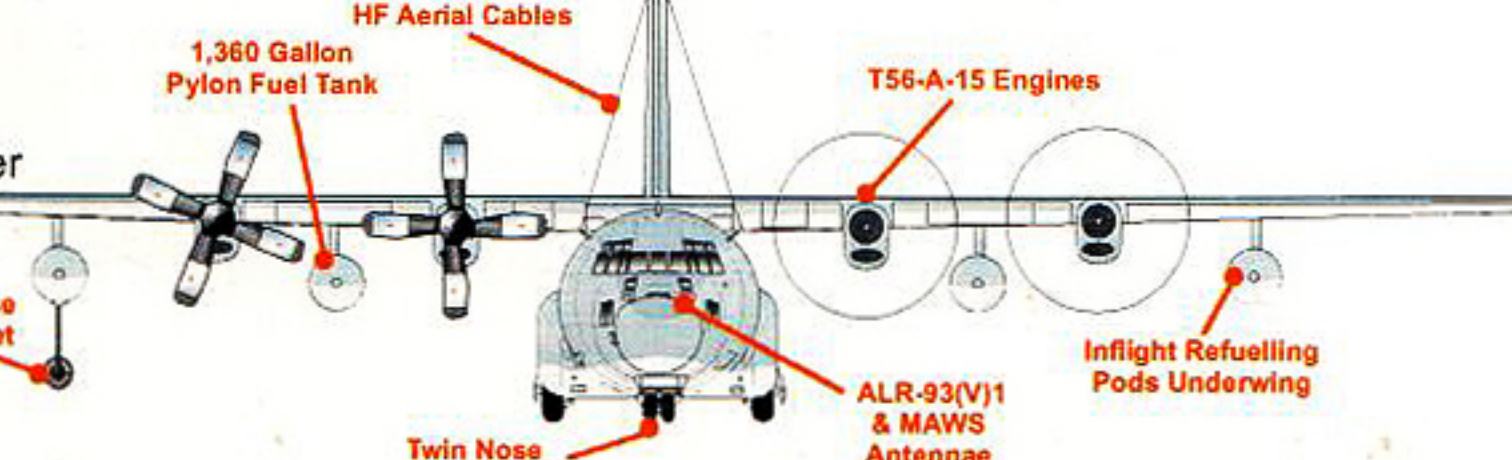
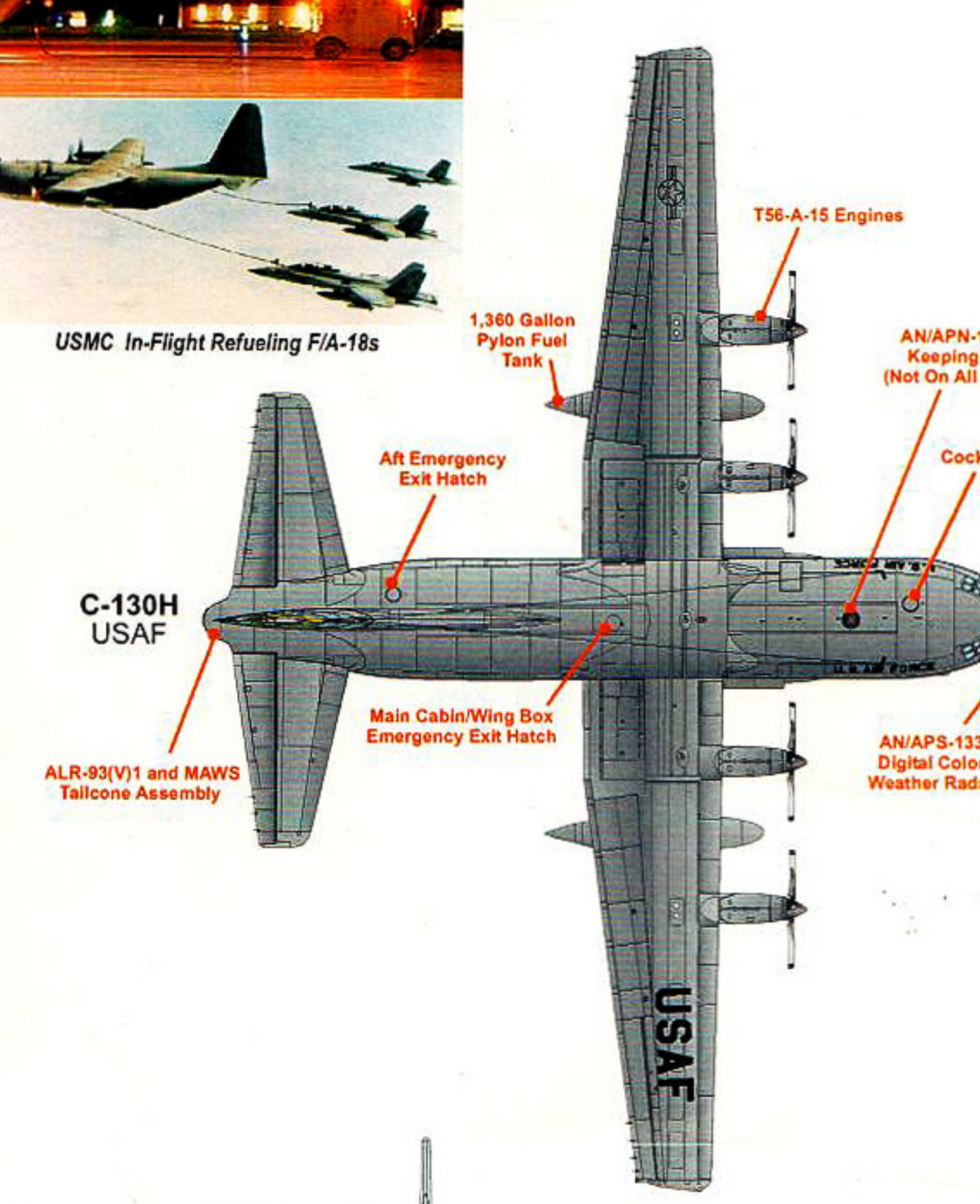
Two Basic Paint Schemes For USAF are Low Visibility Gray and European Theater Green Camouflage



C-130E RAAF Royal Australian Air Force



US Navy KC-130T During SMP Program at LMLAC's Greenville Aircraft Center.



C-130H-30 or L-100-30 Green Aircraft

The C-130 Hercules military transport aircraft is a rugged tactical airlifter that has been in continuous production since its introduction in the mid-1950s. Of the more than 2,200 C-130s delivered, there are still about 1600 in service in more than 65 countries. Over 70 different configurations have been built.

