Gallery of USAF Weapons

2013 USAF Almanac

Bombers

B-1 Lancer

Brief: A long-range, air refuelable multimrole bomber capable of flying intercontinental missions and penetrating enemy defenses with the largest payload of guided and unguided weapons in the Air Force inventory.

Function: Long-range conventional bomber.

Operator: ACC, AFMC.

First Flight: Dec. 23, 1974 (B-1A); Oct. 18, 1984 (B-1B).


IOC: Oct. 1, 1986, Dyess AFB, Tex. (B-1B).

Production: 104.

Inventory: 66.

Aircraft Location: Dyess AFB, Tex.; Edwards AFB, Calif.; Eglin AFB, Fla.; Ellsworth AFB, S.D.

Contractor: Boeing, AIL Systems, General Electric.

Power Plant: four General Electric F101-GE-102 turbofans, each 30,780 lb thrust.

Accommodation: pilot, copilot, and two WSOs (offensive and defensive), on zero/zero ACES II ejection seats.

Dimensions: span 137 ft (spread forward) to 79 ft (swept aft), length 146 ft, height 34 ft.

Weight: max T-O 477,000 lb.

Ceiling: more than 30,000 ft.

Performance: speed 900+ mph at S-L, range intercontinental.

Armament: three internal weapons bays accommodate a wide range of weapons incl up to 84 Mk 82 (500-lb) or 24 Mk 84 (2,000-lb) general-purpose bombs; up to 84 Mk 62 (500-lb) or 8 Mk 65 (2,000-lb) Quick Strike naval mines; up to 30 CBU-87/89 cluster bombs or 30 CBU-103/104/105 WCMDs; up to 24 GBU-31 or 15 GBU-38 JDAMs; up to 24 AGM-158 JASSMs; or a mix, employing a different type of weapon in each bay.

COMMENTARY

Proposed as replacement for the B-52. Four B-1A prototypes developed and tested in 1970s. Program canceled in 1977, but flight test continued. Program revived in 1981 as B-1B variant. Blended wing/body configuration, variable-geometry design, and turbofan engines provide long range, maneuverability, high speed, and survivability. Substantial payload and long loiter time. Offensive avionics include SAR for tracking-targeting-engaging moving vehicles, self-targeting of stationary targets, and following terrain. GPS-aided INS lets aircrews autonomously navigate without ground-based navigation aids and engage targets with precision.

Extant Variant(s)

- B-1B. Vastly upgraded B-1A, with 74,000 lb increase in useable payload, improved radar, and reduction in radar cross section, but max speed cut to Mach 1.2. Total production of 100 B variants, but USAF reduced inventory to 67 aircraft in 2002. One lost in 2008. First used in combat against Iraq during Desert Fox in December 1998. Equipped over the years with GPS, smart weapons carriage, improved onboard computers, improved communications. Sniper targeting pod added in mid-2008. Ongoing upgrades under Integrated Battle Station contract include Vertical Situation Display Upgrade, Central Integrated Test System, and Fully Integrated Data Link (FIDL). The FIDL upgrade includes Link 16 and Joint Range Extension data link, enabling permanent LOS and BLOS C2 connectivity. USAF plans to continue modernization efforts until it can field the next generation long-range strike aircraft, currently under development.

B-2 Spirit

Brief: Stealthy, long-range multimrole bomber that can deliver nuclear and conventional munitions anywhere on the globe.

Function: Long-range heavy bomber.

Operator: AFGSC, AFMC, ANG.

First Flight: July 17, 1989.


IOC: April 1997, Whiteman AFB, Mo.

Production: 21.

Inventory: 20.

Aircraft Location: Edwards AFB, Calif., Whiteman AFB, Mo.

Contractor: Northrop Grumman, Boeing, Vought.

Power Plant: four General Electric F118-GE-100 turbofans, each 17,300 lb thrust.

Accommodation: two pilots, on zero/zero ejection seats.

Dimensions: span 172 ft, length 69 ft, height 17 ft.
B-52H Stratofortress (SrA. Brittany Y. Auld)

**Weight:** max T-O 336,500 lb.
**Ceiling:** 50,000 ft.

**Performance:** speed high subsonic, estimated unrefueled range for a hi-to-hi mission with 16 B61 nuclear free-fall bombs is 5,000 miles, with one aerial refueling more than 10,000 miles.

**Armament:** in various combinations, up to nearly 60,000 pounds over two weapons bays. Nuclear weapons on rotary launcher assemblies (RLAs) (one RLA per each bay); up to 16 B61-7, 16 B83, or 8 B61-11 bombs. Conventional weapons on bomb rack assemblies (BRAs) (two BRAs per bay): 80 Mk 62 (500-lb) sea mines, 80 Mk 82 (500-lb) bombs, 80 GBU-38 JDAMs, or 34 GBU-87/89 munitions; on RLAs: 16 GBU-31 JDAMs, 16 Mk 84 (2,000-lb) bombs, 16 AGM-154 JSOWs, 16 AGM-158 JASSMs, or eight GBU-28 LGBs.

**Inventory:** 744.

**Production:** 1955-October 1962.

**First Flight:** November 29, 1954.

**IOC:** June 19, 1955.

**Contractor:** Boeing.

**Power Plant:** eight Pratt & Whitney TF33-P-3 turbofans, each 17,000 lb thrust.

**Accommodation:** two pilots, side by side, plus navigator, radar navigator, and EWO.

**Dimensions:** span 185 ft, length 193.3 ft, height 40.7 ft.

**Weight:** max T-O 488,000 lb.

**Ceiling:** 50,000 ft.

**Performance:** speed 650 mph, range 10,000+ miles.

**Armament:** 12 AGM-86B ALCMs externally, with provision for eight more ALCMs or gravity weapons internally. Conventional weapons incl AGM-86C/D CALCMs, Mk 62 sea mines, Mk 82/84 bombs, GBU-87/89 cluster bombs, GBU-103/104/105 WMDs, GBU-31/38 JDAMs, AGM-158 JASSMs, and GBU-10/12/28 LGBs. Future weapons incl JASSM-ER, Miniature Air Launched Decoy (MALD), and MALD-J jammer variant.

**COMMENTARY**

Many variants; all but one retired. Muttimation capabilities include long-range precision strike, CAS, offensive counterair, air interdiction, defense suppression, and maritime surveillance. Can carry weapon targeting pods. ECM suite uses a combination of electronic detection, jamming, and IR countermeasures to defeat air defenses.

**Extant Variants**

- **B-2A Block 30.**
- **B-2A Block 50.**
- **B-2A Block 30.**
- **B-2A Block 30.**

**Fighter and Attack Aircraft**

**A-10 Thunderbolt II**

**Brief:** Twin-engine aircraft specifically designed for CAS of ground forces against a wide range of ground targets, including tanks and other armored vehicles.

**Function:** Attack aircraft.

**Operator:** ACC, AFMC, PACAF, USAFE-AFRAF, ANG, AFRIC.

**First Flight:** February 5, 1975 (preproduction).

**Delivered:** October 1975-March 1984.

**IOC:** October 1977.

**Production:** 713.

**Inventory:** 346.

**Aircraft Location:** Barksdale AFB, La.; Edwards AFB, Calif.; Minot AFB, N.D.

**Contractor:** Boeing.

**Weapon Acronyms**

- AE: aeromedical evacuation
- AEHF: Advanced Extremely High Frequency
- AESA: active electronically scanned array
- AGM: air-to-ground missile
- AIM: air intercept missile
- ALCM: Air Launched Cruise Missile
- AMRAAM: Advanced Medium-Range Air-to-Air Missile
- ATP: advanced targeting pod
- BLOS: beyond line of sight
- BLU: bomb live unit
- BM: battle management
- C2: command and control
- C3I: command, control, communications
- CALC: Conventional ALCM
- CAS: close air support
- CBU: cluster bomb unit
- CEM: combat effects munition
- CEP: circle error probable
- CFT: conformal fuel tank
- COTS: commercial off the shelf
- CSAR: combat search and rescue
- CSO: combat systems officer
- EA: electronic attack
- ECM: electronic countermeasures
- EHF: extremely high frequency
- ELINT: electronic intelligence
- EO: electro-optical
- ER: extended range
- EW: electronic warfare
- EWO: electronic warfare officer
- FLIR: forward-looking infrared
- FMV: full-motion video
- GMTI: ground moving target indicator
- GPS: Global Positioning System
- HARRM: High-Speed Anti-Radiation Missile
- HE: high-explosive incendiary
- HUD: head-up display
- IDF: identification, friend or foe
- IR: imaging IR
- IMINT: imagery intelligence
- INS: inertial navigation system
- IR: infrared
- ISAR: intelligence, surveillance, & reconnaissance
- JASSM: Joint Air-to-Surface Standoff Missile
- JDAM: Joint Direct Attack Munition
- JSOW: Joint Standoff Weapon
- JSUPT: joint specialized undergraduate pilot training
- JTIDS: Joint Tactical Information Distribution System
- LANTIRN: Low-Altitude Navigation & Targeting Infrared for Night
- LCD: liquid crystal display
- LGB: laser guided bomb
- LGS: line of sight
- LRP: low-rate initial production
- MAST: measurement & signature intelligence
- MFD: multifunction display
- MOP: massive ordnance penetrator
- NVG: night-vision goggles
- PGM: precision guided munition
- ROVER: Remotely Operated Video Enhanced Receiver
- RPA: remotely piloted aircraft
- RWR: radar warning receiver
- S-L: sea level
- SAR: search and rescue
- SAR: synthetic aperture radar
- SATCOM: satellite communications
- SDB: Small Diameter Bomb
- SEAD: suppression of enemy air defenses
- SHF: super high frequency
- Shp: shaft horsepower
- SIGINT: signals intelligence
- SLEP: service life extension program
- TACAN: tactical air navigation
- TFA/TAT: terrain-following/terrain-avoidance
- TFO: takeoff
- WCM: Wind-Corrected Munitions Dispenser
- WSO: weapon systems officer

**B-52H Stratofortress (SrA. Brittany Y. Auld)
F-15E

**Aircraft Location:**
- Great Falls Arpt., Mont.
- Jacksonville Arpt., Fla.
- Spangdahlem Arpt., Germany (slated to lose A-10s in 2013)
- Whiteman AFB, Mo.

**Contractor:**
- Fairchild Republic, now Lockheed Martin

**Power Plant:**
- Two General Electric TF34-GE-100 turbofans, each 9,065 lb thrust

**Dimensions:**
- Span: 57.5 ft
- Length: 53.3 ft
- Height: 14.7 ft

**Weight:**
- Max T-O: 51,000 lb

**Performance:**
- Speed: 518 mph
- Range: 800 miles

**Armament:**
- One 30 mm, seven-barrel GAU-8/A 20 mm Gatling gun (1,174 rd)
- Two AIM-9 Sidewinders

**Function:**
- Maintain air superiority in aerial combat

**IOC:**
- Deliveried: November 1974-85

**First Flight:**
- A-10C. Introduced in June 1979

**Contractor:**
- McDonnell Douglas (now Boeing)

**Power Plant:**
- Two Pratt & Whitney F100-PW-220 turbofan engines, each 23,450 lb thrust; or two F100-PW-229 turbofan engines with afterburners, each 29,000 lb thrust

**Accommodation:**
- Pilot (C); two pilots (D)

**Dimensions:**
- Span: 42.8 ft
- Length: 63.8 ft
- Height: 18.7 ft

**Weight:**
- Max T-O: 68,000 lb

**Ceiling:**
- 60,000 ft

**Performance:**
- F-15C: Speed Mach 2.5, ferry range 3,450 miles with CFTs and three external tanks.

**Armament:**
- One internally mounted M61A1 20 mm six-barrel cannon (500 rd); four AIM-9 Sidewinders and four AIM-120 AMRAAMS or eight AIM-120s, carried externally.

**COMMENTARY**


**Extant Variant(s):**
- F-15C/D. Introduced in June 1979, with an internal EW countermeasures suite, additional 2,000 lb of internal fuel, and provision for conformal fuel tanks. Tactical capabilities were enhanced with the initiation of the Multistage Improvement Program. The final 43 production aircraft received the F-15E-designed APG-70 radar. Ongoing upgrades include the AESA radar and a more capable mission computer for 175 aircraft. USAF plans to sustain 249 aircraft through at least 2030 and expects on-going full-scale fatigue testing to determine possible life-extension measures. Long-term designated aircraft also are receiving a BLOS satcom upgrade, starting with Air Sovereignty Alert (ASA) aircraft. USAF also is modifying ASA aircraft with an advanced targeting pod and associated display upgrades. The FY14 budget request would begin development of an Eagle Passive/Active Warning Survivability System (EPAWS).
and IR-homing weapons. Carries a large and varied ordnance load. Equipped with Link 16 and ARC-210 BLOS satcom. Ongoing Radar Modernization Program includes upgrade to AESA radar. Mods also include EPAWS for greater survivability against modern threats.

**F-16 Fighting Falcon**

**Brief:** Multirole fighter aircraft that is highly maneuverable and proven in air-to-air combat, SEAD, and air-to-surface attack.

**Function:** Multirole fighter.

**Operator:** ACC, AETC, AFMC, PACAF, USAFE, AFAFRICA, ANG, AFRICOM.

**First Flight:** Dec. 8, 1976 (full-scale development).

**Delivered:** January 1979-2005.

**IOC:** October 1980, Hill AFB, Utah.

**Production:** 2,206.

**Inventory:** 852 (F-16C); 161 (F-16D).

**Aircraft Location:** Aviano AB, Italy; Edwards AFB, Calif.; Eglin AFB, Fla.; Eielson AFB, Alaska; Hill AFB, Utah; Homestead AFB, Fla.; Kunsan AB, South Korea; Luke AFB, Ariz.; Misawa AB, Japan; NAS JRB Fort Worth, Tex.; Nellis AFB, Nev.; Osan AB, South Korea; Shaw AFB, S.C.; Spangdahlem AB, Germany; and ANG in Alabama, Arizona, California, Colorado, District of Columbia (flying out of Maryland), Iowa, Minnesota, New Jersey, Ohio, Oklahoma, South Carolina, South Dakota, Texas, Vermont, Wisconsin.

**Contractor:** Lockheed Martin, Northrop Grumman.

**Power Plant:** Block 40: one General Electric F110-GE-100 (29,000 lb thrust); Block 42: one Pratt & Whitney F100-PW-220 (24,000 lb thrust). Block 50: one F110-GE-129 (29,000 lb thrust); Block 52: one F100-PW-229 (29,000 lb thrust).

**Accommodation:** pilot.

**Dimensions:** span 32.8 ft, length 49.3 ft, height 16.7 ft.

**Weight:** F-16C: empty (F100-PW-229) 18,591 lb, (F110-GE-129) 18,917 lb; gross, with external load (Block 40/42) 42,000 lb.

**Ceiling:** 50,000 ft.

**Performance:** speed Mach 2, ferry range 2,000+ miles.

**Armament:** one M61A1 20 mm cannon (500 rd); up to six air-to-air missiles, AGMs, and ECM pods external.

**COMMENTARY**

Workhorse of the USAF fighter fleet. A lightweight fighter supporting the majority of PGM taskings in combat operations. Among the most maneuverable fighters ever built. First flown by USAF in combat in 1991 Gulf War; USAF F-16s flew 13,500 missions, more than any other type. All Block 40/42 and 50/52 F-16s upgraded with the Common Configuration Implementation Program (CCIP), providing standardized cockpit configuration with color MFDs and software, modular mission computer, helmet mounted cueing system, and Link 16 data link.

**F-16 Fighting Falcon (SSgt. Christopher Boitz)**

**Extant Variant(s)**

- **F-16C/D.** Introduced in 1984, at production Block 25. Featured Multinational Staged Improvement Program (MSSP) II upgrades to cockpit, airframe, and core avionics plus addition of increased-range APG-68 radar. Block 25s also added the AIM-120 AMRAAM as a baseline weapon. With Block 30/32 came MSSP III mods, including expanded MFD memory; new engines (Block 30: F110-GE-100; Block 32: F100-PW-220); and additional weapons, including the AGM-88 HARM. USAF currently flies Block 40/42 and Block 50/52 aircraft, the newest variants but the majority of which are showing bulkhead cracks. Sustainment efforts include a legacy SLEP and Combat Avionics Programmed Extension Suite (CAPES) to extend them as a bridge to the F-35A. The SLEP includes a full-scale durability test and structural mods to add up to 10 years of service life. The CAPES upgrade includes an AESA radar, new cockpit display, data link enhancements, and improved defensive suite.

- **F-16CG Block 40/42 aircraft, first delivered in 1988, specialize in night attack with PGMs and wide-angle HUD. Greater T-O weight and maneuvering limits, expanded envelope, nine-G capability. Introduced LANTIRN pods, including automatic terrain following, for high-speed penetration and precision attack at night and in adverse weather. Other upgrades included APG-68(V5) fire-control radar, GPS, ring-laser gyros, enhanced-envelope gun sights, digital flight controls, and diffraction optics HUD.**

- **F-16DJ Block 50/52, first delivered in 1991, are optimized for SEAD, employing the AGM-88/HARM targeting system (HTS) and longer range APG-68(V9) fire-control radar. Other upgrades include F110-GE-129 and F100-PW-229 increased performance engines, newer cockpit control and display technology with avionics growth capability, ring laser gyro INS, GPS, ALR-56M radar warning receiver, ALE-47 threat adaptive countermeasures system, and advanced IFF system. Weapons improvements include use of Sniper and Litening ATPs. Downlink capability integrates with ROVER system to support joint terminal attack controllers (JTACs) on the ground.

**F-22 Raptor**

**Brief:** A fifth generation, multirole fighter designed to penetrate advanced anti-air threats and achieve air dominance.

**Function:** Air dominance multirole fighter.

**Operator:** ACC, AETC, AFMC, PACAF, ANG, AFRICOM.

**First Flight:** Sept. 7, 1997.

**Delivered:** 2002 (first production representative aircraft).

**IOC:** Dec. 15, 2005.

**Production:** 187 (planned).

**Inventory:** 187.

**Aircraft Location:** Edwards AFB, Calif.; Holloman AFB, N.M.; JB Elmendorf-Richardson, Alaska; JB Langley-Eustis, Va.; JB Pearl Harbor-Hickam, Hawaii; Nellis AFB, Nev.; Tyndall AFB, Fla.

**Contractor:** Lockheed Martin, Boeing.

**Power Plant:** two Pratt & Whitney F119-PW-100 turbofans, each 35,000 lb thrust.

**Accommodation:** pilot.

**Dimensions:** span 44.5 ft, length 62 ft, height 16.6 ft.

**Weight:** max T-O 83,500 lb.

**Ceiling:** above 50,000 ft.

**Performance:** speed Mach 2 with supercruise capability, ferry range 1,850+ miles with two external wing fuel tanks.

**Armament:** one internal M61A2 20 mm gun (480 rds); two AIM-9 Sidewinders stored in side internal weapons bays; six AIM-120 AMRAAMS (air-to-air loadout) or two AIM-120s and two GBU-32 JDAMs (air-to-ground loadout) in main internal weapon bay.

**COMMENTARY**

USAF’s newest operational fighter, built to operate day and night and in adverse weather, across full spectrum of missions. Flew its first operational sortie from Langley in 2006, as part of Noble Eagle. Combines stealth, supercruise, high maneuverability, and integrated avionics to counter and survive multiple anti-access threats and survive. Integrated avionics and infrared data link permit simultaneous engagement of multiple targets. Advanced flight controls, heavy structure, high-performance engines, thrust vectoring nozzles yield great maneuverability.

**Extant Variant(s)**

- **F-22A.** Cockpit fitted with six color LCD panels. The primary MFD provides a view of the air and ground tactical situation, including threat identity, threat priority, and tracking information, with two secondary MFDs showing air and ground threats, stores management, and air threat information. Two additional displays give navigation, communication, identification, and flight information. A HUD shows target status, weapon status, weapon envelopes,
and shoot cues. Other equipment includes APG-77 radar, an EW system with radar warning receiver and missile launch detector, JTIDS, IFF system, laser gyroscopic inertial, and GPS. FY14 funding request features the Reliability, Availability, and Maintainability Maturation Program (RAMMP) to continually evaluate the entire air vehicle and its interconnected subsystems. The funding request also continues retrofit of combat-coded aircraft with the Increment 3.1 upgrade, including APG-77 radar air-to-ground and EA improvements, initial integration of the GBU-39 SDB I, and J DAM retargeting capability. Future plans call for addition of AIM-120D Advanced AMRAAM and AIM-9X to counter new anti-access threats.

F-35 Lightning II

Brief: Next generation strike aircraft.
Function: Multirole fighter.
Operator: AETC, AFMC. Planned: ACC, PACAF, USAFE-AFPAFRC.
Delivered: April 2011 (first LRIP aircraft).
IOC: 2016 (USAF).
Production: planned: 1,763 USAF (F-35A); 680 Navy and Marine Corps (F-35B&C); unspecified number British; unspecified number to seven other partner countries.
Inventory: 11 (USAF).
Aircraft Location: Edwards AFB, Calif.; Eglin AFB, Fla.; Nellis AFB, Nev.; other locations TBD.
Contractor: Lockheed Martin, with BAE Systems, Northrop Grumman, Pratt & Whitney.
Armament: F-35A: one 25 mm GAU-22/A cannon and up to 18,000 lb on 10 weapons stations—four stations inside two weapons bays (for maximum stealth) and three stations on each wing; standard internal loadout: two AIM-120 AMRAAMs and two GBU-39 SDBs and JDAM retargeting capability. Future plans call for addition of AIM-120D Advanced AMRAAM and AIM-9X to counter new anti-access threats.

Special Operations Forces Aircraft

AC-130 Spectre/Spooky

Brief: Heavily armed aircraft using side-firing weapons integrated with sophisticated sensor, navigation, and fire-control systems to provide precise firepower or area saturation for long periods, at night and in adverse weather.
Function: Attack aircraft.
Operator: AF SOC.
Delivered: 1968-present.
IOC: 1972 AC-130H; 1996 AC-130U.
Production: 43; incl four recent conversions.
Inventory: eight AC-130H; 17 AC-130U.
Aircraft Location: Cannon AFB, N.M. (H model); Hurlburt Field, Fla. (U model).
Contractor: Lockheed Martin (airframe); Boeing (AC-130U).

AC-130W Stinger II

Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide ISR, strike, and armed overwatch.
Function: ISR and armed overwatch for special operations activities.
Operator: AF SOC.
First Flight: Dec. 8, 1964 (HC-130H).
Delivered: June 2006.
Production: 12 (converted).
Inventory: 12.
Aircraft Location: Cannon AFB, N.M.
Contractor: Lockheed Martin.
Accommodation: two pilots, two CSOs, flight engineer, and two loadmasters/gunners.
Function: to support US and allied SOF. personnel and to deliver personnel and equipment night, and adverse weather capability to air-drop.

Brief: MC-130E/H Combat Talon

Function: Multimission airlift.
Operator: AETC, AFSOC.
First Flight: March 19, 1989 (V-22).
Delivered: 2006.
IOC: 2009.
Production: 50 (planned).
Inventory: 22.
Aircraft Location: Hurlburt Field, Fla.; Kirtland AFB, N.M.
Contractor: Boeing, Bell Helicopter Textron.
Power Plant: two Rolls Royce-Allison AE1107C turboshafts, each 6,200 shp.
Accommodation: crew: officer: two pilots; enlisted: two flight engineers. Load: 24 troops seated, 32 troops on floor, or 10,000 lb cargo.
Dimensions: span 84.6 ft, length 57.3 ft, height 22.1 ft, rotor diameter 38 ft.
Weight: max vertical T-O 52,870 lb; max rolling max T-O 155,000 lb.
Ceiling: 25,000 ft.
Performance: cruise speed 277 mph, combat radius 575 miles with one internal auxiliary fuel tank, self-deploy 2,100 miles with one in-flight refueling.
Armament: one .50-caliber machine gun on ramp.

Extant Variant(s)
- MC-130W Stinger II. Upgraded with PSP to perform armed overwatch and CAS reconnaissance over friendly positions for threat prevention. Still maintains limited mobility capability but also can provide strike coordination, nontraditional ISR, and FLIR and anti-jam.

MC-130H Combat Talon II (SSgt. Samuel Morse)

IOC: 1966 MC-130E; June 1991 MC-130H.
Production: 22 new-build MC-130Hs.
Inventory: 5 MC-130E; 20 MC-130H.
Aircraft Location: Duke Field and Hurlburt Field, Fla.; Kadena AB, Japan; Kirtland AFB, N.M.; RAF Mildenhall, UK.
Contractor: Lockheed Martin (airframe), Boeing (integrated weapons system support).
Accommodation: MC-130E crew: officer: two pilots, navigator, EWO; enlisted: flight engineer, radio operator, two loadmasters. MC-130E load: 53 troops or 26 paratroopers. MC-130H crew: officer: two pilots, navigator, EWO; enlisted: flight engineer, two loadmasters. MC-130H load: 77 troops, 52 paratroopers, or 57 litters.
Dimensions: span 132.6 ft, height 38.5 ft, length 100.8 ft (MC-130E), 99.8 ft (MC-130H).
Weight: max T-O 155,000 lb.
Ceiling: 33,000 ft (MC-130H).
Performance: speed 300 mph (MC-130H), range 3,105 miles.
COMMENTS: Special operations mobility aircraft. Used primarily to conduct infiltration, resupply, and exfiltration of SOF. Capable of aerial drop under Joint Precision Airdrop System, landing on austere and unmarked landing zones. Can support psychological operations with leaflet bundle drops. Equipped with TF/TA radars, precision navigation systems using INS/GPS, and electronic and IR countermeasures for self-protection. All models capable of aerial refueling as a receiver and tanker.

Extant Variant(s)
- MC-130E Combat Talon I. Fourteen modified C-130E aircraft were equipped with a pod-based system to air refuel SOF helicopters and tilt-rotor aircraft. Plans call for replacement by MC-130J variants.
- MC-130H Combat Talon II. C-130H aircraft modified with an integrated glass cockpit were acquired in the late 1980s and early 1990s to supplement the Combat Talon I. All are modified with a state-of-the-art pod-based aerial refueling system to augment the MC-130E and MC-130P aerial refueling fleet.

MC-130J Commando II Brief: Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for SOF helicopters and tilt-rotor aircraft or to air-drop/resupply special operations forces.
Function: Air refueling for SOF helicopters and tilt-rotor aircraft and airdrop.
Operator: AETC, AFSOC.
First Flight: April 20, 2011.
Delivered: September 2011.
IOC: 2011.
Production: (converted).
Inventory: 10.
Aircraft Location: Cannon AFB, N.M.; Kirtland AFB, N.M.
Contractor: Lockheed Martin (airframe), Boeing.

MC-130E/H Combat Talon Brief: A modified C-130 able to provide global, day, night, and adverse weather capability to air-drop personnel and to deliver personnel and equipment to support US and allied SOF.
Function: SOF infiltration, exfiltration, and resupply.
Operator: AETC, AFSOC, AFRC.
First Flight: circa 1965 MC-130E; June 1984 MC-130H.
Delivered: initially 1966.
**Power Plant:** four Rolls Royce AE2100D3 turbo-props, each 4,591 shp.

**Accommodation:** crew: officer, two pilots, CSO; enlisted: two loadmasters. Load: not available.

**Dimensions:** span 132.6 ft, length 97.8 ft, height 38.8 ft.

**Weight:** max T-O 164,000 lb.

**Ceiling:** 28,000 feet with 42,000 lb payload.

**Performance:** speed 416 mph, range 3,000 miles.

**COMMENTARY**

Specialized tanker aircraft flies clandestine formation or single-ship intrusion of hostile territory missions to provide air refueling of SOF vertical-lift and tilt-rotor assets and the infiltration, exfiltration, and resupply of SOF by air or land-based operations. Has secondary mission of leaflets airdrop. Replacing MC-130E and MC-130P tankers. USAF officially changed name from Combat Shadow II to Commando II in March 2012.

**Extant Variant(s)**

- **MC-130J.** Mods include fully integrated INS/GPS systems, color LCDs, NVG lighting, HUDs, integrated defensive systems, digital moving map display, EO/IR system, dual satcom for voice/data, enhanced cargo-handling system, and enhanced service life wing. Also has fully populated CSO and auxiliary flight deck stations. Improvements over MC-130P reduces crew size, leaving the CSO to handle helicopter refueling process normally run by flight engineer, and loadmasters to handle other flight engineer and communications operator functions.

- **MC-130P Combat Shadow**
  
  **Brief:** Aircraft that flies clandestine or low-visibility, low-level missions into denied areas to provide air refueling for SOF helicopters or for airdrop/resupply of special operations teams.

  **Function:** Air refueling for SOF helicopters and airdrop.

  **Operator:** AETC, AFSOC, ANG.

  **First Flight:** Dec. 8, 1964 (as HC-130H).

  **Delivered:** from 1965.

  **IOC:** 1965.

  **Production:** (converted).

  **Inventory:** 26.

  **Aircraft Location:** Burbank, Calif.; Kadena AB, Japan; Kunsan AB, South Korea; JB Elmendorf-Richardson, Alaska; RAF Mildenhall, UK.

  **Contractor:** Lockheed Martin (airframe), Boeing.

  **Power Plant:** four Allison T56-A-15 turboprops, each 4,910 shp.

  **Accommodation:** officer: two pilots, two navigators; enlisted: flight engineer, communications systems operator, two loadmasters.

  **Dimensions:** span 132.6 ft, length 97.8 ft, height 38.8 ft.

  **Weight:** max T-O 155,000 lb.

  **Ceiling:** 33,000 ft.

  **Performance:** speed 290 mph, range 4,000+ miles.

**ISR/BM/C3 Aircraft**

**E-3 Sentry**

**Brief:** Heavily modified Boeing 707-320B aircraft, fitted with an extensive complement of mission avionics providing seamless all-weather surveillance and C2 for tactical and air defense forces.

**Function:** Airborne early warning, tactical BM, and C2 of theater air forces.

**Operator:** ACC, PACAF, AFRIC.

**First Flight:** Oct. 31, 1975 (full avionics).

**Delivered:** March 1977-84.

**IOC:** 1977.

**Production:** 33.

**Inventory:** 22 E-3B; eight E-3C; two E-3G.

**Aircraft Location:** JBP Hillsgrove, Ohio; Kadena AB, Japan; Tinker AFB, Okla.

**Contractor:** Boeing, Northrop Grumman (radar), Lockheed Martin (computer).

**Power Plant:** four Pratt & Whitney TF33-PW-100A turbofans, each 21,000 lb thrust.

**Accommodation:** four flight crew, 13-19 mission specialists.

**Dimensions:** span 145.8 ft, length 152.9 ft, height 41.8 ft.

**Weight:** max T-O 335,000 lb.

**Ceiling:** over 35,000 ft.

**Performance:** speed 360 mph, range 5,000+ miles.

**COMMENTARY**

Battle management aircraft—airborne warning and control system (AWACS)—capable of conducting surveillance from Earth’s surface to the stratosphere, over land or water, at a range of more than 200 miles. Coordinates actions of hundreds of strike, support, and cargo aircraft. Integrates C2, BM, surveillance, target detection, and tracking in one platform. Operates in direct subordination to joint or combined air operations center.

**Extant Variant(s)**

- **E-3B.** Upgrade of earliest E-3A. Equipped with much-enhanced computer capabilities, jam-resistant communications, aseptere maritime surveillance capability, upgraded radio communications, and five additional mission consoles. Completed in 1994. Received Block 30/35 mods, integrating and enhancing four major subsystems; completed in 2001. Installing interim next generation IFF capability to ensure Block 30/35 aircraft meet new IFF requirements while awaiting Block 40/45 upgrade.

- **E-3C.** Upgrade from E-3A, including five additional mission consoles and Have Quick anti-jamming equipment. Received Block 30/35 upgrades. Also receiving interim next generation IFF.

- **E-3G.** Designation applied to Block 40/45 upgraded aircraft. Two modified as of February 2012, with entire fleet conversion planned by 2020. Considered the most comprehensive upgrade in E-3 program history; Block 40/45 mod will enhance tracking and combat identification capabilities, enhance mission effectiveness, improve mission system reliability, and lower life-cycle costs. Mods include a new mission computer system, using an open architecture with some 50 COTS computers and 24 COTS software products and automated processes to greatly reduce operator workload, new operator consoles, improved electronic support measures (ESM) passive surveillance capability; and full next generation IFF.

**E-4B National Airborne Operations Center**

**Brief:** A four-engine, swept-wing, long-range high-altitude airplane providing a highly survivable C3 center allowing national leaders to direct US forces, execute emergency war orders, and coordinate actions by civil authorities.

**Function:** Airborne operations center.

**Operator:** ACC.
First Flight: June 13, 1973 (E-4A); June 10, 1978 (E-4B).
Delivered: December 1974-85.
IOC: December 1974 E-4A; January 1980 E-4B.
Production: four.
Inventory: four.
Aircraft Location: Offutt AFB, Neb.
Contractor: Boeing, Rockwell, Raytheon.
Power Plant: four General Electric CF6-50E2 turbfans, each 52,500 lb thrust.
Accommodation: up to 112 flight crew and mission crew.
Dimensions: span 195.7 ft, length 231.3 ft, height 63.4 ft.
Weight: max T-O 800,000 lb.
Ceiling: above 30,000 ft.
Performance: speed 602 mph, range 7,130 miles.

COMMENTARY
Militarized version of the Boeing 747-200. Performs the National Airborne Operations Center (NAOC) mission. Provides survivable C3 platform in all situations, including sustained operations in a nuclear environment.
Extant Variant(s)

■ E-4B. Hardened against the effects of nuclear explosions, including electromagnetic pulse (EMP), A 1,200-kVA electrical system supports advanced satellite electronics, as well as state-of-the-art communications and data processing equipment such as EHF Milstar satellite terminals and six-channel International Maritime Satellite. A trifade radome houses SHF communications antenna. The last aircraft has received the Modernization Block 1 upgrade, which updated the electronic and communications infrastructure, utilizing COTS hardware and software. However, this final aircraft received a different physical configuration for its Audio In-Flight Upgrade (AIFU) because of diminishing manufacturing sources, so USAF plans to retrofit the first three to ensure a standard AIFU configuration.

E-8 JSTARS
Brief: A modified Boeing 707-300 series with long-range air-to-ground radar capable of locating, classifying, and tracking moving ground vehicles out to distances in excess of 124 miles.
Function: Ground surveillance, BM, C2 aircraft.
Operator: ACC, ANG.
Production: 18.
Inventory: 18.
Aircraft Location: Robbins AFB, Ga.
Contractor: Northrop Grumman, Motorola, Cubic, Raytheon.
Power Plant: four Pratt & Whitney TF33-102C turbojets, each 19,200 lb thrust.
Accommodation: flight crew: four; mission crew: two EWOs; enlisted: flight engineer, mission systems operator; officer: two pilots, navigator, each 4,910 shp.
Dimensions: span 145.8 ft, length 152.9 ft, height 42.5 ft.
Weight: max T-O 336,000 lb.
Ceiling: 42,000 ft.
Performance: speed 584 mph (optimal orbit), range 9 hr normal endurance, longer with air refueling.

COMMENTARY
Aircraft equipped with canoe-shaped radome under the forward fuselage housing a 24-ft-long side-looking phased array antenna capable of locating, classifying, and tracking vehicles on the ground. Data is transmitted via data link to ground stations or other aircraft. Provides theater ground and air commanders with surveillance data to support attack operations. Evolved from Army and Air Force programs to develop capability to detect, locate, and attack enemy armor at ranges beyond the forward area of troops. The first two developmental aircraft deployed in 1991 to Desert Storm.
Extant Variant(s)

■ E-8C. Production version delivered from 1996 to 2005. Earlier aircraft retrofitted to final production Block 20, featuring more powerful computers, an Internet protocol local area network, and BLOS connectivity. USAF plans to retire one aircraft damaged beyond economical repair, but others expected to remain in service until 2034. Developsment testing of the first new production-configured Pratt & Whitney JT8D-219 engine on the JSTARS test aircraft completed in 2011. However, in May 2012, USAF said it would not proceed with the re-engining program. With some COTS mission equipment now 20 years old, USAF is pursing new upgrades to operator work station computers and the radar processor.

EC-130H Compass Call
Brief: A heavily modified C-130 for electronic combat.
Function: Electronic warfare.
Operator: ACC.
First Flight: 1981.
IOC: 1983; Block 30 from February 1999.
Production: (converted).
Inventory: 14.
Aircraft Location: Davis-Monthan AFB, Ariz.
Contractor: Lockheed Martin.
Accommodation: officer: two pilots, navigator, two EWOs; enlisted: flight engineer, mission crew supervisor (crypto logic experienced), four crypto logic linguists, acquisition operator, and airborne maintenance technician.
Dimensions: span 132.6 ft, length 99 ft, height 38.8 ft.
Weight: max T-O 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 300 mph at 20,000 ft.

COMMENTARY
A psychological operations aircraft employed in every US war and most other contingency operations since 1980 (EC-130E), supporting a broad spectrum of information operations and psyops missions.
Extant Variant(s)


MC-12W Project Liberty
Brief: A medium- to low-altitude, twin-engine turboprop ISR version of the militarized C-12, based on the Beechcraft Super King Air 350/350ER.
Function: Manned tactical ISR.
Operator: ACC, ANG.
First Flight: April 2009.
Delivered: April 2009.
Production: 42 (planned).
Inventory: 42.
Aircraft Location: Beale AFB, Calif.; Key Field, Miss. (initial weapon system training). Other TBD.
Contractor: Hawker Beechcraft, L3 Communications.
Power Plant: two Pratt & Whitney Canada PT6A-60A turboprops, each 1,050 shp.
Accommodation: two pilots and two sensor operators.
Dimensions: span 48 ft, length 46.7 ft, height 14.3 ft.
Weight: max T-O 15,000 lb (350) and 16,500 lb (350ER).
MQ-1 Predator

Ceiling: 35,000 ft.
Performance: speed 359 mph; range 1,725 miles (350) and 2,760 miles (530).

COMMENTARY

Acquired to augment RPA systems operating in Southwest Asia, this sensor-equipped C-12 is a complete collection, processing, analysis, and dissemination system. It provides ground forces with targeting data and other tactical intelligence. The MC-12W began operations in Iraq in June 2009 and in Afghanistan in December 2009.

Extant Variant(s)

■ MC-12W. Initial mod to first seven aircraft—used King Air 350s—included full-motion video (FMV), LOS satcom data link to ROVER system, limited SIGINT, and basic BLOS connectivity. Subsequent mod to remaining 30 aircraft—based on King Air 350ER—includes enhanced FMV with laser designator, more robust SIGINT, and increased bandwidth for BLOS connectivity. Before joining the fleet, an additional five aircraft are completing mod to Phase 3 configuration, including a high-definition EO/IR sensor with Hi-beam capability, enhanced communications equipment, digital intercom control system, and tactical air navigation (TACAN) system. Phase 3 mods also will be applied to 33 of the original 37 aircraft.

MQ-1 Predator

Brief: A medium-altitude, long-endurance RPA. Operates as a persistent hunter-killer. Operator: ACC, AFSOC, ANG, AFRC.


Inventory: 319 (planned).


Aircraft Location: Cannon AFB, N.M.; Creech AFB, Nev.; Holloman AFB, N.M.; Hancock Field, N.Y.; Plattsburgh AFB, S.D.; Vandenberg AFB, Calif.; White Sands Missile Range, N.M.

Contractor: General Atomics Aeronautical Systems, Inc.

USAF forward deploys launch and recovery element (LRE) systems and support personnel for takeoff and landing operations, while the CONUS-based GCS conducts the mission via extended communication links.

Extant Variant(s)

■ MQ-1B. Multimission weaponized RPA. Employs near real-time FMV and MTS-A multimodal targeting system, which provides a laser designator and laser illuminator with EO/IR sensors in a single package. GCS controls the RPA via LOS data link or BLOS satcom data link. USAF received its last MQ-1B in May 2011.

MQ-9 Reaper

Brief: A medium-to-high altitude, long-endurance RPA. Operates as a persistent hunter-killer. Operator: ACC, AFSC, ANG, AFRC.


Production: 319 (planned).

Inventory: 104.

GCS Location: Cannon AFB, N.M.; Creech AFB, Nev.; Holloman AFB, N.M.; Hancock Field, N.Y.; Plattsburgh AFB, S.D.; Vandenberg AFB, Calif.; White Sands Missile Range, N.M.

Aircraft Location: Cannon AFB, N.M.; Creech AFB, Nev.; Eglin AFB, Fla.; Fort Drum, N.Y.; Holloman AFB, N.M.; Nellis AFB, Nev.

Contractor: General Atomics Aeronautical Systems, Inc.

Power Plant: one Honeywell TPE331-10GD turboprop, max 900 shp.


Ceiling: 50,000 ft.

Performance: cruise speed 230 mph, range 1,150 miles, endurance 14+ hr.

Armament: combination of AGM-114 Hellfires, GBU-12/13 Paveway IIls, and GBU-38 JDAMs.

COMMENTARY

System comprises several aircraft, GCS, a Predator Primary Satellite Link (PPSL), and spare equipment and operations and maintenance crews for deployed 24-hour operations. Delivers capabilities using mission kits with various weapons and sensors payloads combinations.

Extant Variant(s)

■ MQ-9B Reaper. Operational in Afghanistan since 2007. The baseline aircraft has an MTS-B multifocal targeting system, integrating an EO/IR sensor, color/monochrome daylight TV camera, image-intensified TV camera, laser designator (enabling laser guided munitions), and laser illuminator in a single package. The MTS-B sensors provide FMV as separate video streams or fused together. Also employs SAR for GBU-38 JDAM targeting. Procurement of advanced Airborne Signals Intelligence Payload (ASIP-2C) has been delayed, with eight planned for FY14. Ongoing enhancements include upgrading current satcom capability to use government-owned Ka satcom networks and continuing fielding of the Gorgon Star payload on specially modified Reapers to provide broad area sensor coverage. FY14 budget would fund R&D for extended range capability to meet combatant commander requirements.

OC-135 Open Skies

Brief: A modified C-135 aircraft that performs unarmored observation and verification flights over nations that are parties to the 1992 Open Skies Treaty.

Function: Observation aircraft.

Operator: ACC.


Production: three.

Inventory: two.

Aircraft Location: Offutt AFB, Neb.

Contractor: Boeing.

Power Plant: four Pratt & Whitney TF33-P-5 turbolfans, each 16,050 lb thrust.

Accommodation: flight crew: two pilots, two navigators, and two sensor maintenance technicians; Defense Threat Reduction Agency mission crew: mission commander, deputy, two sensor operators, and one flight follower; total seating: 35, incl space for foreign country representatives.

Dimensions: span 131 ft, length 135 ft, height 42 ft.

Weight: max T-O 297,000 lb.

Ceiling: 50,000 ft (basic C-135).

Performance: speed 500+ mph, range 3,900 miles.

COMMENTARY

A modified WC-135B used for specialized arms control treaty observation and imagery collection missions with framing and panoramic optical cameras installed in the rear of the aircraft.

Extant Variant(s)

■ OC-135B. One vertical and two oblique KS-87E framing cameras, used for photography approximately 3,000 ft above the ground, and...
RC-26 Condor
Brief: Specially configured variant of the Fairchild SA227-C C-26 Metro 23 with surveillance and communications equipment for use in domestic and overseas counterdrug efforts and for reconnaissance following natural and man-made disasters.
Function: Counterdrug-airborne day/night surveillance and C2.
Operator: ANG.
First Flight: 1990.
Delivered: C-26 first delivered 1989.
IOC: not available.
Production: 11.
Inventory: 11.
Contractor: Fairchild (airframe).
Power Plant: two Garrett TPE331-12UAR-701 turboprops, each 1,100 shp.
Accommodation: two pilots, one navigator-mission systems operator.
Dimensions: span 57 ft, length 59.5 ft, height 16.6 ft.
Weight: max T-O 16,500 lb.
Ceiling: 25,000 ft.
Performance: speed 334 mph, range 2,070 miles.

RC-135S Cobra Ball
Brief: A mission collector equipped with special EO instruments for observing ballistic missile flights at long range.
Operator: ACC.
First Flight: not available.
Production: converted.
Inventory: three RC-135S.
Aircraft Location: Offutt AFB, Neb.
Contractor: Boeing (original airframe), L3 Communications.
Power Plant: four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.
Accommodation: flight crew: two pilots, two navigators, two airborne systems engineers; mission crew: 10 EW officers, six or more electronic, technical, mission area specialists.
Dimensions: span 131 ft, length 135 ft, height 42 ft.
Weight: max T-O 299,000 lb.
Ceiling: 35,000 ft.
Performance: speed 500+ mph, range unlimited with air refueling.

RC-135V/W Rivet Joint
Brief: Designed to collect technical intelligence on adversary radar emitter systems.
Function: Electronic reconnaissance aircraft.
Operator: ACC.
First Flight: not available.
Production: converted.
Inventory: eight RC-135V; nine RC-135W; three TC-135W.
Aircraft Location: Offutt AFB, Neb.; Kadena AB, Japan; RAF Mildenhall, UK.
Contractor: Boeing (original airframe), L3 Communications.
Power Plant: four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.
Accommodation: flight crew: three pilots, two navigators; mission crew: three EW officers, 14 intelligence operators, four airborne maintenance technicians, and up to six more depending on mission.
Dimensions: span 131 ft, length 135 ft, height 42 ft.
Weight: max T-O 297,000 lb.
Ceiling: 50,000 ft.
Performance: speed 500+ mph, range 3,900 miles.

RC-135V/W Rivet Joint (USAf photo)

COMMENTARY
To collect optical and electronic data on ballistic missile-associated activity, Cobra Ball can deploy anywhere in the world in 24 hours and provide on-scene EO reconnaissance for treaty verification and theater ballistic missile proliferation. Equipment includes wide-area IR sensors, long-range optical cameras, and an advanced communications suite.

RC-135U Combat Sent
Brief: Designed to collect technical intelligence on adversary radar emitter systems.
Function: Electronic reconnaissance aircraft.
Operator: ACC.
First Flight: not available.
Production: converted.
Inventory: eight RC-135V; nine RC-135W; three TC-135W.
Aircraft Location: Offutt AFB, Neb.; Kadena AB, Japan; RAF Mildenhall, UK.
Contractor: Boeing (original airframe), L3 Communications.
Power Plant: four CFM International F108-CF-201 turbofans, each 21,600 lb thrust.
Accommodation: flight crew: three pilots, two navigators; mission crew: three EW officers, 14 intelligence operators, four airborne maintenance technicians, and up to six more depending on mission.
Dimensions: span 131 ft, length 135 ft, height 42 ft.
Weight: max T-O 297,000 lb.
Ceiling: 50,000 ft.
Performance: speed 500+ mph, range 3,900 miles.

RC-135U Combat Sent (USAf photo)

COMMENTARY
Extensively modified C-135, performing worldwide reconnaissance missions to detect, identify, and geolocate signals throughout the electromagnetic spectrum.

RC-135U Combat Sent (USAf photo)

RC-135U Combat Sent (USAf photo)

Extant Variant(s)
- RC-135V/W Rivet Joint. A self-contained standoff airborne Sigint collection system. Used mostly to exploit electronic battlefield and deliver near-real-time ISR information to tactical forces, combatant commanders, and National Command Authorities. Onboard capabilities encompass rapid search, detection, measurement, identification, demodulation, geolocation, and fusion of data from potentially thousands of electronic emitters. Planned mods include more robust communications intelligence (Comint), precision Elint upgrade, global salvo, and enhanced cockpit avionics.
- TC-135W. Used for training purposes.

RC-4 Global Hawk
Brief: A high-altitude, long-range, long-endurance RPA.
Function: Unmanned surveillance and reconnaissance aircraft.
**U-2 Dragon Lady** (MSgt. Scott T. Sturkol)

**Production:** 35 (U-2S/ST)

**Inventory:** 27 U-2; five TU-2 trainers.

**Aircraft Location:** Beale AFB, Calif.; Eglin AFB, Fla.; Andersen AFB, Guam.

**Operator:** Lockheed Martin.

**Power Plant:**
- Block 20: General Electric F108-GE-60 turbojet.
- Block 30 (Multi-int): General Electric F118-GE-101 turbojet.

**Accommodation:**
- Block 20: LRE pilot, one MCE sensor operator.
- Block 30 (Multi-int): LRE, MCE, and communications and mission planning actors. (ASIT system used in Afghanistan and Iraq.)

**Extant Variant(s):**
- Block 20 (Limt). Larger than original Block 10 (version retired in FY11), adding an enhanced integrated sensor suite (EISS) in an Imint-only configuration. Four being converted to new EO-4 communications relay configuration, deploying the battlefield airborne communications node (BACN), a theater communications relay system employed in place of the EISS.
- Block 30 (Multi-int). Employs the EISS ground target sensors and advanced Sigint program electronic signal collection sensor to provide a Multi-int capability. Supported combat operations in Afghanistan, Iran, and Libya and humanitarian relief efforts following Japan’s 2011 earthquake and massive tsunami. Congress directed USAF to sustain Block 30 operational capability until Dec. 31, 2014, despite plans to terminate it because it proved more expensive to operate than the U-2 aircraft it was intended to replace.
- Block 40. A multimission platform expected to provide SAR/MTI, Imint, and BMC2 support, utilizing the multiphase radar technology insertion program (MP-RTIP) AESA radar to simultaneously collect imagery intelligence on stationary ground targets and track ground moving targets. Delivery of final two Block 40 aircraft expected in FY14.

**RO-170 Sentinel**

**Brief:** An LO RPA in development and test that already has flown in combat.

**Function:** Unmanned surveillance and reconnaissance aircraft.

**Operator:** ACC.

**Aircraft Location:** Tonopah Test Range, Nev.

**Contractor:** Lockheed Martin.

**COMMENTARY**

Although the RO-170 is still under development and test, USAF has employed it in Southwest Asia for Enduring Freedom. In December 2009, USAF publicly acknowledged the aircraft for the first time, after photos had appeared in foreign news media of its operations over Afghanistan.

**Extant Variant(s):**

**RO-170-70.** No data available. Being developed in response to DOD call for additional RPA support to combatant commanders.

**U-2 Dragon Lady**

**Brief:** Single-seat, single-engine, high-altitude endurance reconnaissance aircraft carrying a wide variety of sensors and cameras.

**Function:** High-altitude reconnaissance.

**Operator:** ACC.

**First Flight:** Aug. 4, 1955 (U-2); 1967 (U-2R); October 1994 (U-25).

**Delivered:** 1955-October 1989.

**IOC:** circa 1956.

**WC-135W Constant Phoenix** (SSgt. Christopher Boitz)

**Production:** 16 (planned)

**Inventory:** 15 (planned)

**Aircraft Location:** Beale AFB, Calif.; Keesler AFB, Miss.

**Operator:** ACC.

**Power Plant:**
- F137-RR-100 turbofan, 7,600 lb thrust.

**Accommodation:**
- Loadmaster/dropsonde system operator.

**Performance:**
- Speed: 356.5 mph, range, 10,000 miles.
- Ceiling: 60,000 ft.
- Weight: max T-O 32,500 lb.

**WC-130 Hercules**

**Brief:** A high-wing, medium-range aircraft flown into the eye of tropical cyclones or hurricanes to collect weather data from within the storm’s environment.

**Function:** Weather reconnaissance aircraft.

**Operator:** AFRC.

**First Flight:** circa 1996 (production J model).

**Delivered:** September 1999-2002.

**IOC:** 2005.

**Production:** 10.

**Inventory:** 10.

**Aircraft Location:** Keesler AFB, Miss.

**Contractor:** Lockheed Martin.

**Power Plant:**
- Four Rolls Royce AE2100D3 turbo-props, each 4,700 shp.

**Accommodation:**
- Two pilots, navigator, aerial reconnaissance weather officer, weather recon loadmaster/dropsonde system operator.

**Dimensions:**
- Span: 130.9 ft, length 47.6 ft, height 15.3 ft.
- Weight: max T-O 40,000 lb.
- Ceiling: above 70,000 ft.
- Performance: speed 410 mph, range 7,000+ miles.

**COMMENTARY**

The system consists of an aircraft with an integrated sensor suite, LRE, MCE, and communications and mission planning equipment. (ASIT system used in Afghanistan and Iraq.)

**Extant Variant(s):**

**WC-130J.** Weather reconnaissance version of the most recent C-130 model, operated by the 53rd
HC-130 King (l) and an HH-60 Pave Hawk (r) (MSgt. Sean Mitchell)

**WRS** for weather reconnaissance duties. Includes two external 1,400-gallon fuel tanks and internal 1,800-gallon tank. Features include improved radar and Dowhy 391 six-bladed composite propellers. Equipment includes the GPS Dropsonde Wind-finding System, equipped with HF radio and sensing devices and released about every 400 miles over water, measuring and relaying to the aircraft a vertical atmospheric profile.

**WC-135 Constant Phoenix**

**Brief:** Collects particulate and gaseous effluents and debris in the atmosphere in support of the 1963 Limited Nuclear Test Ban Treaty.

**Function:** Air sampling and air collection.

**Operator:** ACC.

**First Flight:** 1965

**Delivered:** 1965-96.

**IOC:** December 1965.

**Production:** converted.

**Inventory:** two.

**Aircraft Location:** Offutt AFB, Neb.

**Contractor:** Boeing.

**Power Plant:** four Pratt & Whitney TF33-P-5 turbobolans, each 16,050 lb thrust.

**Accommodation:** seating for 33, incl cockpit crew.

**Dimensions:** span 131 ft, length 140 ft, height 42 ft.

**Weight:** max T-O 300,500 lb.

**Ceiling:** 40,000 ft.

**Performance:** speed 403 mph, range 4,600 miles.

**COMMENTS**


**HC-130J Combat King II**

**Brief:** An extended range version of the C-130J dedicated as a personnel recovery platform, designed to operate in hostile environments and provide C2 and helicopter in-flight refueling.

**Function:** Aerial refueling/transport.

**Operator:** ACC, AETC, ANG, AFRC.

**First Flight:** July 29, 2010.

**Delivered:** from 2010.

**IOC:** 2013 planned.

**Production:** 37 planned.

**Inventory:** two.

**Aircraft Location:** Davis-Monthan AFB, Ariz.; Kirtland AFB, N.M.; JB Elsmendorf-Richardson, Alaska; Moody AFB, Ga.; Patrick AFB, Fla.

**Contractor:** Lockheed Martin.

**Power Plant:** four Rolls Royce AE2100D3 turboprops, each 4,591 shp.

**Accommodation:** flight crew: two pilots, CSO, two loadmasters.

**Dimensions:** span 132.6 ft, length 97.8 ft, height 38.8 ft.

**Weight:** max T-O 164,000 lb.

**Ceiling:** 33,000 ft.

**Performance:** speed 363.4 mph at S-L, range 4,000+ miles.

**COMMENTS**

Replacing HC-130N/Ps. Based on USMC KC-130J tanker baseline with enhanced service life wing and cargo handling system, boom refueling receptacle, EO/IR sensor, CSO console on flight deck, and dual satcom. Features also include INS/GPS, NVG-compatible lighting, FLIR, radar/mis-sile warning receivers, chaff and flare dispensers.

**Extant Variant(s)**

**HC-130J**

**WC-135E.** With modified C-135B or EC-135C (former Looking Glass aircraft). Collection suite allows mission crew to detect radioactive “clouds” in real time. The aircraft has external flow-through devices to collect particulates on filter paper and a compressor system for whole air samples collected in holding spheres. Cockpit crew comes from 45th RS at Offutt, and special equipment operators from Det. 1, Air Force Technical Applications Center, at Offutt.

**Tanker Aircraft**

**HC-130 King (l) and an HH-60 Pave Hawk (r) (MSgt. Sean Mitchell)**

**KC-10 Extender** (SSgt. J. G. Buzanowski)

**Function:** Aerial refueling/transport.

**Operator:** ACC, AETC, ANG, AFRC.

**First Flight:** Dec. 8, 1964 (as HC-130H).

**Delivered:** from 1965.

**IOC:** 1986.

**Production:** 33 converted N/P models.

**Inventory:** nine HC-130N; 22 HC-130P.

**Aircraft Location:** Davis-Monthan AFB, Ariz.; Francis S. Gabreski Arpt., N.Y.; Kirtland AFB, N.M.; JB Elsmendorf-Richardson, Alaska; Moody AFB, Ga.; Patrick AFB, Fla.

**Contractor:** Lockheed Martin.

**Power Plant:** four Allison T56-A-15 turboprops, each 4,910 shp.

**Accommodation:** officer: two pilots, navigator; enlisted: flight engineer, airborne comm specialist, two loadmasters, three PJs.

**Dimensions:** span 132.6 ft, length 98.8 ft, height 38.5 ft.

**Weight:** max T-O 155,000 lb.

**Ceiling:** 33,000 ft.

**Performance:** speed 289 mph at S-L, range 4,000+ miles.

**COMMENTS**

Conducts operations to austere airfields and denied territory for expeditionary, all-weather personnel recovery operations, including air drop, air-lift, helicopter air-to-air refueling and forward area refueling point missions. Secondary roles include humanitarian assistance, disaster response, security cooperation/aviation advisory, emergency medical evacuation, noncombatant evacuation, and spaceflight support for NASA. Features include integrated GPS/INS navigation package, NVG lighting, FLIR, radar/mis-sile warning receivers, chaff/flare countermeasures dispensers, and data-burst communications. Both models to be replaced by HC-130J.

**Extant Variant(s)**

**HC-130N.** C-130H model modified with C-130E model radome, new center wing section, and the capability to refuel helicopters aurally.

**HC-130P.** C-130H model modified to refuel helicopters aurally.

**KC-10 Extender**

**Brief:** A modified McDonnell Douglas DC-10 that combines in a single aircraft the operations of aerial refueling and long-range cargo and AE transport.

**Function:** Aerial refueling/transport.

**Operator:** AMC, AFRC (assoc.).

**First Flight:** April 1980.

**Delivered:** March 1981–April 1990.

**IOC:** August 1982.

**Production:** 60.

**Inventory:** 59.

**Aircraft Location:** JB McGuire-Dix-Lakehurst, N.J.; Travis AFB, Calif.

**Contractor:** McDonnell Douglas (now Boeing).

**Power Plant:** three General Electric CF6-50C2 turbofans, each 52,500 lb thrust.

**Accommodation:** crew: two pilots, flight engineer, boom operator; AE crew: two flight nurses, three medical technicians; other crew depending on mission. Load: up to 75 people and 17 pallets or 27 pallets—a total of nearly 170,000 lb.

**Dimensions:** span 165.4 ft, length 181.6 ft, height 58 ft.
Weight: max T-O 590,000 lb.
Ceiling: 42,000 ft.
Performance: speed 619 mph, range 11,500 miles, or 4,400 miles with max cargo.

**COMMENTARY**

USAF’s largest air-refueling aircraft. Combines tasks of tanker and cargo aircraft simultaneously, enabling it to support worldwide fighter deployments. Employs an advanced air-refueling boom or a hose and drogue system to refuel a wide variety of US and allied aircraft within the same mission. Can be air-refueled by a KC-135 or another KC-10.

**Extant Variants**

- KC-10A, DC-10 Series 30CF, modified to include three large fuel tanks under the cargo floor, an air-refueling operator’s station, aerial refueling boom and integral hose reel/drogue unit, a receiver refueling receptacle, and military avionics. FY13 budget includes upgrades to communications, navigation, and surveillance equipment to meet civil air traffic requirements. Service life expected through 2045.
- KC-46
  - **Brief:** A modified Boeing 767-200R that will provide air-refueling capability for any military fixed-wing aircraft and carry simultaneously a mixed load of passenger/prepackaged cargo, and palletized cargo.
  - **Function:** Aerial refueling/transport.
  - **Operator:** AMC.
  - **First Flight:** early 2015 (planned).
  - **Delivered:** from 2017 (planned).
  - **IOC:** TBD.
  - **Production:** 179.
  - **Inventory:** zero.
  - **Aircraft Location:** TBD.
  - **Contractor:** Boeing.
  - **Power Plant:** two Pratt & Whitney 4062, each 62,000 lb thrust.
  - **Accommodation:** 15 crew seats, incl aeromedical evacuation crew. Cargo load: 58 passengers (24 litters and 34 ambulatory). Cargo load: 18 pallet positions, max 65,000 lb.
  - **Dimensions:** Span 157.7 ft, length 165.5 ft, height 52.8 ft.
  - **Weight:** max T-O 415,000 lb.
  - **Ceiling:** 43,000 ft (767).
  - **Performance:** Speed 530 mph, range 1,500 miles with 150,000 lb transfer fuel, up to 11,015 miles for ferry mission.

**COMMENTARY**

Mainstay of the USAF tanker fleet for some 50 years, similar in size and appearance to commercial 767 aircraft but designed to military specifications.

**Extant Variant(s)**

  - **Accommodation:** flight crew: two pilots, boom operator, plus navigator depending on mission; AE crew: two flight nurses, three medical technicians (adjusted for patient needs). Load: 37 passengers, six cargo pallets, max 83,000 lb.
  - **Dimensions:** span 130.8 ft, length 136.3 ft, height 41.7 ft.
  - **Weight:** max T-O 322,500 lb.
  - **Ceiling:** 50,000 ft.
  - **Performance:** speed 530 mph; range 1,500 miles with 150,000 lb transfer fuel, up to 11,015 miles for ferry mission.

**COMMENTARY**

Mainstay of the USAF tanker fleet for some 50 years, similar in size and appearance to commercial 767 aircraft but designed to military specifications.

**Extant Variant(s)**

- KC-135R. Re-engined KC-135As with CFM56-2 (USAF designation F108) turbofans. Can operate from relatively short runways. First flight October 1982; deliveries started July 1984. Twenty were modified with the Multipoint Refueling System (MPRS), allowing the use of hose-and-drogue systems either on wing pods or attached to the end of the boom that enable them to refuel US Navy and NATO aircraft. The MPRS also allows them to refuel two aircraft at once, one on each wing pod. Other KC-135s may use the shuttlecock-shaped drogue attached to the boom. Upgrades include Pacer CRAG avionics and Block 30 safety mods (completed 2002) and GATM (completed 2011). Link 16 capability also added to a limited number. Plans call for Block 45 flight deck mods, including a new digital flight director, digital radar altimeter, and electronic engine instrument displays. Fleet service life projected to 2045.
- KC-135T aircraft (formerly KC-135Q) can carry different fuels in the wing and body tanks. Under same upgrade programs as R models.

**Transports**

**C-5 Galaxy**

- **Brief:** A heavy-lift, air-refuelable cargo transport for massive strategic airlift over long ranges, including oversize cargo.
- **Function:** Cargo and troop transport.
- **Operator:** AMC, ANG, AFRC.
- **First Flight:** June 30, 1968.
- **Delivered:** October 1969–April 1989.
- **IOC:** September 1970.
- **Production:** 131.
- **Inventory:** 35 C-5A; 34 C-5B; two C-5C; eight C-5M.
- **Aircraft Location:** Dover AFB, Del.; Eastern Wing Virginia Arpt., W.Va.; JBSA-Lackland, Tex.; Memphis Arpt., Tenn.; Stewart ANGB, N.Y.; Travis AFB, Calif.; Westover AFB, Mass.; Wright-Patterson AFB, Ohio.
- **Contractor:** Lockheed Martin.
- **Power Plant:** four General Electric TF39-GE-1C turbofans, each 43,000 lb thrust; (C-5M) four General Electric F139-GE-100 turbofans.
- **Accommodation:** crew: two pilots, two flight engineers, three loadmasters. Load: 81 troops and 36 standard pallets, max 270,000 lb. There is no piece of Army combat equipment the C-5 can’t carry.
- **Dimensions:** span 222.9 ft, length 247.1 ft, height 65.1 ft.
- **Weight:** max T-O 840,000 lb.
- **Ceiling:** 45,000 ft.
- **Performance:** speed 518 mph, range 2,473 miles with max payload (plus additional 575 miles after offload).

**COMMENTARY**

USAF’s largest airlifter. One of world’s largest aircraft. Can carry unusually heavy cargo over intercontinental ranges at jet speeds, take off and land in relatively short distances, taxi on substandard surfaces in emergencies. Front and rear cargo openings permit simultaneous drive-through loading and off-loading.

**Extant Variant(s)**

- **C-5A:** Basic model; 81 delivered 1969-73. Has undergone a major wing mod, extending service life by 30,000 flight hours. Incorporates avionic subsystems developed for C-5B. USAF plans to retire most remaining A models.
- **C-5B:** Embodies all improvements since completion of C-5A production, including strengthened wings, improved turbofans, and improved avionics, with color weather radar and triple INS. First flight September 1985. First delivery in January 1986.
C-17 Globemaster III (A1C Brett Clashman)

Some models equipped with defensive system. C-5C. Two A variants modified to carry outsize space cargo for NASA.

C-5M. Upgraded aircraft called Super Galaxy. Upgraded with latest avionics (under Avionics Modernization Program) and new GE CF6-80C2 (F138) turbofans, with 200 percent increase in thrust. Equipped with other components installed under the Reliability Enhancement and Re-engining Program (RERP). First flight June 6, 2006. Operational testing and evaluation concluded in 2010. First flight of production C-5M September 2010. USAF plans to modernize a total of 52 C-5s to the new C-5M standard, with delivery expected through FY17.

C-12 Huron

A twin-engine turboprop that provides diplomatic and special duty support passenger/ cargo airlift and test support.

Function: Special airlift.
Operator: AETC, AFMC, PACAF, AMC, USAFE-AFAFRICA, ANG, AFRC.

Production: 88.
Inventory: 16 C-12C; six C-12D; two C-12F; four C-12J.
Aircraft Location: Edwards AFB, Calif.; Holloman AFB, N.M.; JB Elmendorf-Richardson, Alaska; Yokota AB, Japan; various US embassies.
Contractor: Beech.
Power Plant: (C-12J) two Pratt & Whitney Canada PT6A-65B turboprops, each 1,173 shp.
Accommodation: Crew: two pilots, loadmaster, AE crew: two flight nurses, three medical technicians (altered as required). Load: 102 troops/paratroopers; 36 litter and 54 ambulatory patients; 18 pallet positions; max payload 170,900 lb.
Dimensions: span 77.8 ft, length 83.1 ft (B), 88.3 ft (H), height 24.5 ft.
Weight: max T-O 69,700 lb (B), 74,600 lb (H).
Ceiling: 45,000 ft.
Performance: speed 518 mph at 25,000 ft, range 4,850 miles (B), 4,850 miles (H).

C-20 Gulfstream

A twin-engine turboprop aircraft acquired to provide airlift for high-ranking government and DOD officials.

Function: Operational support airlift, special air missions.
Operator: AMC, USAFE-AFAFRICA.
Production: 84.
Inventory: 47.

Aircraft designed to provide cargo and passenger airlift and transport litters during AE.

Function: Pilot seasoning, passenger and cargo airlift.
Operator: AETC, AMC, USAFE-AFAFRICA, ANG.
Production: 84.
Inventory: 47.

C-21 Learjet

Aircraft through Block 17. Improvements include open-system communications architecture, new weather radar, all-weather formation flying system, NVG lighting, HF data link. Full retrofit to Block 17 to be completed by FY15. Additional planned mods include an advanced IFF system and other software upgrades to meet new operational requirements.

C-30 Brief: A twin-engine turboprop aircraft acquired to provide airlift for high-ranking government and DOD officials.

Function: Operational support airlift, special air missions.
Operator: AMC, USAFE-AFAFRICA.
First Flight: December 1979.
Delivered: September 1983-89.
IOC: circa 1983.
Production: not available.
Inventory: five C-20B; three C-20C; two C-20H; one C-20Q.
Aircraft Location: JB Andrews, Md.; Ramstein AB, Germany.
Contractor: Gulfstream.
Power Plant: two Rolls Royce Spey MK511-8 turbopfans (C-20B), each 11,400 lb thrust; two Rolls Royce Tay MK611-8 turbopfans (C-20H), each 13,850 lb thrust.
Accommodation: crew: two pilots, flight engineer, communication system operator, flight attendant. Load: 12 passengers.
Dimensions: span 77.8 ft, length 83.1 ft (B), 88.3 ft (H), height 24.5 ft.
Weight: max T-O 69,700 lb (B), 74,600 lb (H).
Ceiling: 45,000 ft.
Performance: speed 576 mph; range 4,250 miles (B), 4,850 miles (H).

C-20A/B models initially acquired to replace C-140D Jetstar aircraft.

Extant Variant(s)

C-20B. With advanced mission communications equipment and revised interior, delivered in 1988.

C-20H. Gulfstream IV SP aircraft, with advanced technology flight management systems and upgraded Rolls Royce engines acquired 1992. Equipped with GPS, vertical separation equipment, GATM, and traffic alert and collision avoidance system (TCAS).

C-21 Learjet

Aircraft designed to provide cargo and passenger airlift and transport litters during AE.

Function: Pilot seasoning, passenger and cargo airlift.
Operator: AETC, AMC, USAFE-AFAFRICA, ANG.
Production: 84.
Inventory: 47.

C-21 Learjet (MSgt. David H. Lipp)
Cabinet, congressional members, and other high-primary means of travel for the vice president, form, two AlliedSignal TFE731-2 turbofans, each 3,500 lb thrust.

Accommodation: crew; two pilots; AE crew; flight nurse, two medical technicians (adjusted as required). Load: eight passengers and 3,153 lb cargo; one litter or five ambulatory patients.

Dimensions: span 39.5 ft, length 48.6 ft, height 12.2 ft.

Weight: max T-O 18,300 lb.

Ceiling: 45,000 ft.

Performance: speed 530 mph at 41,000 ft, range 2,306 miles.

COMMENTARY
Provides operational support for time-sensitive movement of people and cargo throughout the US and European Theaters, including AE missions if required.

Extant Variant(s)
- C-21A. Military version of the Learjet 35A. Upgrades include color weather radar, TACAN, and HF/VHF/UHF radios. Budget/resource decisions that would have cut fleet in half are on hold at least through FY13.
- C-27 Spartan
  Brief: A small tactical transport capable of carrying heavy loads into a wide range of airfields, including unprepared strips at high altitude.
  Function: Tactical airlift.
  Operator: ANG.
  First Flight: September 1999 (developmental aircraft).
  Delivered: 2010.
  IOC: 2011.
  Production: 38 (planned).
  Inventory: 12.
  Contractor: L-3 Communications.
  Power Plant: two Rolls Royce AE 2100-D2 turboprops, rated at 4,637 shp.
  Accommodation: crew: two pilots, two loadmasters. Load: up to 68 troops or 24 paratroops; 36 litters plus six attendants; up to 25,353 lb cargo; 19,842 lb low velocity airdrop.
  Dimensions: basic G.222 airframe span 94.1 ft, length 74.5 ft, height 32.1 ft.
  Weight: max T-O 70,000 lb.
  Ceiling: 30,000 ft.
  Performance: speed 374 mph, range 1,150 miles with 22,046 lb payload.
  COMMENTARY
  Derivative of Alenia G.222, selected in 2007 to fulfill the Joint Cargo Aircraft requirement. Acquired to support ground forces served only by the basic airframes or for missions where the C-130 would operate at half-load capacity. USAF expects to divest all its C-27Js by the end of FY13, whether to another service or government agency or to the Boneyard.
  Extant Variant(s)
- C-27J. Equipped with digital avionics suite, NVG-compatible cockpit. Floor strength is equal to that of the C-130, and the cargo bay can accommodate C-130 pallets.
- C-28 Air Force Two
  Brief: A modified Boeing 757-200 used to provide backup transportation for the President. It is the primary means of travel for the vice president, Cabinet, congressional members, and other high-ranking US and foreign officials.
  Function: VIP air transport.
  Operator: AMC, ANG.
  Production: six.
  Inventory: four C-32A; two C-32B.
  Contractor: Boeing.
  Power Plant: two Pratt & Whitney PW2040 turbofans, each 4,700 lb thrust.
  Accommodation: crew: 16 (varies with mission). Load: up to 45 passengers.
  Dimensions: span 124.8 ft, length 155.2 ft, height 44.5 ft.
  Weight: max T-O 255,000 lb.
  Ceiling: 42,000 ft.
  Performance: speed 530 mph, range 6,325 miles.
  COMMENTARY
  Using COTS acquisition practices, contract award to first delivery in less than two years.
  Extant Variant(s)
- C-32A. Specially configured Boeing 757-200 airliner. Cabin divided into four sections: forward, communications center, galley, lavatory. 10 business-class seats; second, full-enclosed state room with private lavatory, two first-class swivel seats, convertible divan; third, conference and staff area with eight business-class seats; rear, 32 business-class seats, galley, two lavatories. Communications system provides worldwide clear and secure voice and data communications. Modern flight deck avionics are upgradeable.
- C-37 Gulfstream V
  Brief: Modified Gulfstream aircraft used for worldwide special air missions for high-ranking government and DOD officials.
  Function: VIP air transport.
  Operator: AMC, PACAF, USAFE-AFAFRICA.
  Production: 10 C-37A; two C-37B.
  Inventory: eight C-37A; three C-37B.
  Aircraft Location: Chievres, Belgium; JB Andrews, Md.; JB Pearl Harbor-Hickam, Hawaii; MacDill AFB, Fla.
  Contractor: Gulfstream.
  Power Plant: two BMW/Rolls Royce BR710A1-10 turbofans, each 18.2 ft.
  Dimensions: span 54.6 ft, length 55.6 ft, height 18.2 ft.
  Weight: max T-O 24,400 lb.
  Ceiling: 33,000 ft.
  Performance: speed 662 mph, range 3,000 miles.
  COMMENTARY
  Military version of Astra SPX produced by IAI and supported worldwide by Galaxy Aerospace.
  Extant Variant(s)
- C-38A. Acquired in 1998. Equipment includes...
modern avionics, navigation, communication, vertical separation, and safety equipment.

C-40 Clipper
Brief: A Boeing 737-700 used primarily for medium-range airlift of senior military commanders, Cabinet officials, and members of Congress.
Function: Passenger transportation.
Operator: AMC, PACAF, USAFE-AFRAFRICA, ANG, AFRIC.
IOC: not available.
Production: 11.
Inventory: four C-40B; seven C-40C.
Aircraft Location: JB Andrews, Md.; JB Pearl Harbor-Hickam, Hawaii; Ramstein AB, Germany; Scott AFB, Ill.
Contractor: Boeing.
Power Plant: two General Electric CFM56-7 turbfans, each 27,000 lb thrust.
Accommodation: crew: 10 (varies with model and mission). Load: up to 89 passengers (C-40B); up to 111 (C-40C).
Dimensions: span 117.4 ft, length 110.3 ft, height 41.2 ft.
Weight: max T-O 171,000 lb.
Ceiling: 41,000 ft.
Performance: speed 530 mph, range 5,750 miles.

COMMENTARY
The C-40, which added winglets to Boeing 737-700, transports VIPs and performs other operational support missions. Both versions have modern avionics, integrated GPS and flight management systems, electronic flight instrument system, and HUD. Each also has auxiliary fuel tanks and managed passenger communications.

Extant Variant(s)
- C-40B. Equipped with an office-in-the-sky arrangement, including clear and secure voice/data communication and broadband data/video.
- C-40C. Does not have the advanced communications of the B model. It does have a VIP area, including sleep accommodations, and can be configured to carry from 42 to 111 passengers.

C-130 Hercules
Brief: A rugged aircraft capable of operating from rough dirt strips to provide theater airlift and paratrooping of troops and equipment into hostile areas.
Function: Inter- and intratheater airlift.
Operator: AETC, AMC, PACAF, USAFE-AFRAFRICA, ANG, AFRIC.
First Flight: August 1954 (C-130A).
Delivered: December 1955-present (C-130J).
Production: more than 2,200.
Inventory: 13 C-130E; 275 C-130H; 91 C-130J.
Aircraft Location: Dobbs ARS, Ga.; Dyess AFB, Tex.; Keesler AFB, Miss.; Little Rock AFB, Ark.; Maxwell AFB, Ala.; Minneapolis-St. Paul Arpt./ARS, Minn.; Niagara Falls Arpt., N.Y.; Peterson AFB, Colo.; Pittsburgh Arpt., Pa.; Pope Field, N.C.; Ramstein AB, Germany; Yokota AB, Japan; Youngstown ARS, Ohio; and ANG in Alaska, Arkansas, California, Delaware, Georgia, Hawaii, Illinois, Kentucky, Minnesota, Missouri, Nevada, New York, North Carolina, Ohio, Puerto Rico, Rhode Island, Tennessee, Texas, West Virginia, Wyoming.
Contractor: Lockheed Martin.
Power Plant: four Allison T56-A-7 turboprops (C-130E), 4,200 shp; four Allison T56-A-15 turboprops (C-130H), each 4,591 shp; four Rolls Royce AE2100D3 turboprops (C-130J), each 4,700 shp.
Accommodation: E/H crew: two pilots, navigator, flight engineer, loadmaster. J-30 crew: two pilots, loadmaster. E/H load: up to 92 combat troops or 64 para troopers or 74 litters or six cargo pallets or 16 Container Delivery System (CDS) bundles or any combination of these up to max weight for each version. J-30 load: 128 combat troops or 92 para troopers or 97 litters or eight pallets or 24 CDS bundles or any combination of these up to max weight.
Dimensions: span 132.6 ft, length 179.8 ft, height 38.8 ft; J-30 length 112.8 ft.
Weight: max T-O 155,000 lb (E/H/J), 164,000 lb (J-30); max payload 42,000 lb (E/H/J), 44,000 lb (J-30).
Ceiling: with max payload, 19,000 ft (E), 23,000 ft (H), 28,000 ft (J), 9,000 ft (30).
Performance: speed 345 mph (E), 366 mph (H), 417 mph (J), 410 mph (J-30); range with 35,000 lb payload 1,435 miles (E), 1,495 miles (H), 1,841 miles (J), 2,417 miles (J-30).

COMMENTARY
All-purpose theater transport that operates throughout USAF, performing diverse roles. Missions include tactical and intertheater airlift and airdrop support, Arctic resupply, AE flights, aerial spraying, firefighting duties for the US Forest Service, and natural disaster and humanitarian relief missions.
FY13 budget decision would terminate the C-130H Avionics Modernization Program (AMP), which would have enabled the model to fly without a navigator, and instead pursue a less ambitious safety of navigation upgrade only.

Extant Variant(s)
- C-130E. Extended-range version of early Hercules. Total of 389 ordered, with first deliveries in 1962. Original wing modified to correct fatigue and corrosion. Self-contained nav system, with an integrated communications/navigation management suite, GPS capability, and a state-of-the-art autopilot.
- C-130H. Model generally similar to E, with updated turboprops, redesigned outer wing, improved pneumatic systems. First delivery in July 1974. Equipped with updated avionics, improved lowpower color radar, NVG lighting. ANG LC-130Hs modified with wheel-ski gear and eight-bladed props to support Arctic and Antarctic operations. Modernized with digital displays, flight management systems, multifunction radar, new communications systems, and a single air data computer.
- C-130J. Features three-crew flight operations system, more powerful engines, all composite six-blade propeller system, digital avionics, and mission computers. Flies faster, higher, and farther than earlier C-130s. ANG and AFRIC units began receiving J models in 1999. Active units in 2004. First wartime deployment in 2004.

VC-25 Air Force One
Brief: A specially configured Boeing 747-200B used for air transport of the President and his entourage. When the President is aboard, it has the radio call sign Air Force One.
Function: Air transport of the President.
Operator: AMC.
First Flight: First flown as Air Force One Sept. 6, 1990.

COMMENTARY
Aircraft are equipped with staff work areas, a conference room, a general seating area, and an executive office. Communications capability includes worldwide secure and clear communications equipment.

Extant Variant(s)
■ VC-25A. Flown by the Presidential Airlift Group at the 89th AW. Service life remaining five years. FY14 budget would continue funding for service life extension upgrades.

Helicopters

HH-60 Pave Hawk
Brief: Specially modified helicopters used primarily for personnel recovery in hostile environments. Also conduct AE, civil SAR, disaster and humanitarian response, and other support missions.

Function: Personnel recovery medium-lift helicopter.

Operator: ACC, AETC, AFMC, PACAF, USAFE/ AFAFRICA, ANG, AFRC.


Accommodation: crew: 26; load: up to 76 passengers.

Dimensions: HH-60G: rotor diameter 53.6 ft, overall length 64.7 ft, height 16.7 ft. HH-60M: rotor diameter 53.7 ft, overall length 64.8 ft (fuselage 49.8 ft), height 16.9 ft.

Weight: max T-O 22,000 lb.

Ceiling: 14,000 ft (G).

Performance: speed 184 mph; range 580 miles (G).

Armament: two 7.62 mm miniguns or two .50-caliber machine guns.

COMMENTARY
Both versions are highly modified Black Hawk helicopters. The HH-60G was acquired by USAF in the early 1980s and has been in continuous use by Active Duty, ANG, and AFRC air rescue units. Under a short-term-fix operational loss replacement (OLR) program, USAF is procuring 24 HH-60s through the Army contract. Future plans call for a new Combat Rescue Helicopter to replace the HH-60G fleet, with contract award expected in FY13.

Extant Variant(s)
■ HH-60G. Equipped with advanced communications/navigation suite that includes INS/GPS/Doppler navigation systems, satcom, secure/anti-jam communications, and a precision landing system (PLS) that provides range/steering data to survivor radios. Automatic flight-control system, NVG lighting, FLIR, color weather radar, engine/rotor blade anti-ice system, retractable in-flight refueling probe, internal auxiliary fuel tanks, and an integral external rescue hoist. Combat enhancements include RWR, IR jammer, flare and chaff countermeasures dispensing system, and two machine guns. FY13 funding would update the IFF system and make mission-critical avionics and safety of flight mods.

■ HH-60U. Initial three aircraft purchased under OLR program are receiving minimal mods to be used by a noncombat-coded unit, freeing up three combat-coded Pave Hawks for deployed units. Subsequent OLR-purchased helicopters will be modified to the current HH-60G configuration.

UH-1 Iroquois
Brief: Modified Bell helicopter used to provide security and support for Air Force ICBM systems, undergraduate pilot training, combat aviation advisor training, and administrative airlift.

Function: Light lift utility and training helicopter.

Operator: AETC, AFDW, AFGSC, AFMC, AFSOC, AMC, PACAF.

First Flight: 1956.


Production: 20 TH-1H; many UH-1H; 79 UH-1N.

Inventory: 24 TH-1H; 10 UH-1H; 63 UH-1N.


Contractor: Bell, Lockheed Martin (TH-1H prime).

Power Plant: TH-1H: one honeywell T55-GE-715 turboshaft, 1,800 shp; UH-1H: one Lycoming T53-L-13B turboshaft, 1,400 shp. UH-1N: two Pratt & Whitney Canada T400-CP-400 turboshfts, 1,290 shp.

Accommodation: two: TH-1H: crew; UH-1H: up to 13 passengers; UH-1N: two pilot; flight engineer; load: up to 13 passengers (depending on fuel and atmospheric conditions) or up to six troops or, without seats, bulky, oversized cargo.

Dimensions: TH-1H: rotor diameter 48.0 ft, length 57.8 ft, height 13 ft. UH-1H: rotor diameter 48.3 ft, length 57.1 ft, height 13.6 ft. UH-1N: rotor diameter 48 ft, length 57.1 ft, height 12.8 ft.

Weight: max gross 10,500 lb (TH-1H); 9,500 lb (UH-1H); 10,500 lb (UH-1N).

Ceiling: 15,000 ft (10,000 ft with 10,000+ lb).

Performance: (UH-1N) speed 149 mph, range 300+ miles.

Armament: (optional) two General Electric 7.62 mm miniguns or two 40 mm grenade launchers; two-seven-tube 2.75-in rocket launchers.

COMMENTARY
UH-1N aircraft initially provided SAR capabilities, and then began replacing the UH-1Hs at missile wings and taking on other missions. With termination of the Common Vertical Lift Support Program (CVLSP) (also called the Common Support Helicopter), USAF may fly the 40-year-old UH-1N for at least another 10 years.

Extant Variant(s)
■ TH-1H. Modified version of the UH-1H for use by the 23rd FTS at Fort Rucker for Air Force undergraduate pilot training.

■ UH-1H. Single-engine version of UH-1 utility helicopter, based on Bell 205. AFSOC maintains two for combat aviation advisor training.

■ UH-1N. Military version of the Bell 212. Most used for ICBM security and administrative/VIP airlift. Also used by AETC’s 85th SOW at Kirtland for training purposes and by the 336th TRG at Fairchild for aircrew survival training. AFSOC maintains two for combat aviation advisor training. With CVLSP termination, AFSOC plans to provide selective mods, including an NVG-capable cockpit, upgraded sensors, and safety and sustainment improvements to extend fleet life and usefulness. USAF plans to purchase three or more USMC UH-1Ns to offset operational losses.

Trainers

T-1 Jayhawk
Brief: A medium range, twin-engine jet trainer version of the Beechcraft 400A. Used by USAF to train student airlift and tanker pilots and student combat systems operators.

Function: Advanced pilot training.

Operator: AETC, AFRC.

First Flight: Sept. 22, 1989 (Beechcraft 400A).


IOC: January 1993.

Production: 180.

HH-60 Pave Hawk (MSgt. Sean Mitchell)
Inventory: 178.
Aircraft Location: Columbus AFB, Miss.; Laughlin AFB and JBSA-Randolph, Tex.; Vance AFB, Okla.; NAS Pensacola, Fla.
Operator: Hawker Beechcraft.
Power Plant: two Pratt & Whitney Canada JT15D-5B turbines, each 2,900 lb thrust.
Accommodation: three pilots, two side by side, one to the rear.
Dimensions: span 43.5 ft, length 48.4 ft, height 13.9 ft.
Weight: max T-O 16,100 lb.
Ceiling: 41,000 ft.
Performance: speed 538 mph, range 2,555 miles.

COMMENTARY
Military version of Beech 400A used in the advanced phase of JSUPT for students selected to fly tanker or transport aircraft. Also used to train student CSOS.

Extant Variant(s)
■ T-1A. Cockpit seating for instructor and two students. Mods include UHF/VHF radios, INS, TACAN, airborne detection finder, increased bird-strike resistance, and an additional fuselage fuel tank. CSO training aircraft also have GPS-driven SAR and simulated RWR and have a second student and second instructor station.

T-6 Texan II
Brief: A single-engine turboprop aircraft used for primary and pilot training for Air Force and Navy pilots.
Function: Primary trainer.
Operator: AETC, USN.
Delivered: from May 2000 (operational aircraft).
Production: Planned: 452 (USAF); 315 (USN).
Inventory: "445 (USAF).
Aircraft Location: USAF: Columbus AFB, Miss.; Laughlin AFB, JBSA-Randolph, and Sheppard AFB, Tex.; Vance AFB, Okla. USN: NAS Corpus Christi, Tex.; NAS Whiting Field, Fla.; NAS Pensacola, Fla.
Contractor: Hawker Beechcraft (formerly Raytheon).
Power Plant: one Pratt & Whitney Canada PT6A-68 turboprop, 1,100 shp.
Accommodation: two pilots, in tandem, on zero/ejection seats.
Dimensions: span 33.5 ft, length 33.4 ft, height 10.7 ft.
Weight: basic 6,500 lb.
Ceiling: 31,000 ft.
Performance: speed 320 mph, range 1,035 miles.

COMMENTARY
T-6A. Close in structure to the F-5A export tactical fighter. World’s first supersonic trainer aircraft. Underwent structural renewal in successive Pacer Classic I and II mods, first begun in 1984, to extend service life.


■ T-38C. Redesignated after Avionics Upgrade Program, which added glass cockpit avionics, including HUD, color MFDs, mission computer, and INS/GPS. First model delivered 2002; last delivery 2007. Life sustaining measures include propulsion mods to replace major engine components to improve reliability and maintainability. Ongoing upgrades include Pacer Classic III, the latest structural renewal effort, which will replace major longeron, bulkheads/forms, internal skins, and structural floors, and an escape system upgrade. Service life expected to 2020.

T-41 Mescalero
Brief: Short-range, high-wing trainer used primarily for aerodynamic and navigation courses.
Function: Training, support.
Operator: AETC.
Delivered: 1968.
Inventory: four.
Aircraft Location: US Air Force Academy, Colo.
Contractor: Cessna.
Power Plant: one Continental IO-360-D2 piston engine, 210 hp.
Accommodation: two side by side.
Dimensions: span 36.1 ft, length 26.5 ft, height 9.9 ft.
Weight: max T-O 2,550 lb.
Ceiling: 14,000 ft.
Performance: speed 182 mph, range 630 miles.

COMMENTARY
Used primarily by US Air Force Academy.

Extant Variant(s)
■ T-41C. Military version of Cessna 172. All-metal, strut-braced high-wing monoplane. Equipped with modern avionics, GPS, and other equipment appropriate to its mission. Used for Aero 456 flight testing, USAFA flying team support, orientation flights.

T-51 Cessna
Brief: A short-range, high-wing aircraft used primarily by the USAFA Flying Team during intercollegiate competitions.
Function: Training, competition.
Operator: AETC.
Delivered: 1970s.
Inventory: three.
Aircraft Location: USAFA, Colo.
Contractor: Cessna.
Power Plant: one Lycoming 0-320 E2D piston engine, 150 hp.
Accommodation: two side by side.
Dimensions: span 33.3 ft, length 24 ft, height 8.5 ft.
Weight: (Cessna 150M) max T-O 1,760 lb.
Ceiling: 12,600 ft.
Performance: speed 162 mph, range 450 miles.

COMMENTARY
Military designation for civilian Cessna 150. All-metal, strut-braced, high-wing monoplane.

Extant Variant(s)
■ T-51A. The aircraft is equipped with modern avionics.
avionics, GPS, and other equipment appropriate to its mission.

**T-53**

**Brief:** A Cirrus SR20 personal aircraft with advanced avionics and safety features for USAF’s Powered Flight Program.

**Function:** Training.

**Operator:** AETC.

**Delivered:** 2012.

**Inventory:** 25.

**Aircraft Location:** USAFA, Colo.

**Contractor:** Cirrus.

**Power Plant:** One Continental IO-360-ES six-cylinder, fuel-injected, air-cooled engine, 200 hp.

**Accommodation:** Two, side by side, plus three passengers.

**Dimensions:** Span 38.3 ft, length 26 ft, height 8.9 ft.

**Weight:** Max T-O 3,050 lb.

**Ceiling:** 17,500 ft.

**Performance:** Speed 178 mph, range 690 miles.

**COMMENTARY**

Military designation for civilian Cirrus SR20. All-composite monoplane.

**Extant Variant(s)**

- **T-53A.** The aircraft is equipped with modern avionics, GPS, and Cirrus Airframe Parachute System, integrated fuselage roll cage, cuffed wing design, and other active and passive safety systems and features that are standard on Cirrus aircraft.

**TG-10 Merlin/Kestrel**

**Brief:** TG-10B variant used as a Basic Soaring Trainer, while the TG-10C is used as an aerobatic glider for competitions and demonstrations.

**Function:** Trainer.

**Operator:** AETC.

**Delivered:** May 2002.

**IOC:** December 2002.

**Inventory:** 12 (B); three (C); four (D).

**Aircraft Location:** USAFA, Colo.

**Contractor:** Blank.

**Accommodation:** Two.

**Dimensions:** Span 55.4 ft (B), 46.6 ft (C), length 27.2 ft (B), 27.6 ft (C); height 6.2 ft (B), 6.9 ft (C).

**Weight:** 1,168 lb (B), 1,100 lb (C).

**Performance:** Speed 142.6 mph (B), 146.1 mph (C); glide ratio 28:1 (B), 26:1 (C).

**COMMENTARY**

Both USAF models, produced in the Czech Republic, have a common cockpit and control layout, allowing cadets to move between the two as necessary.

**Extant Variant(s)**

- **TG-10B Merlin.** Civilian L-23 Super Blanik sailplane.
- **TG-10C Kestrel.** Civilian L-13AC Blanik sailplane.
- **TG-10D Kestrel.** Civilian L-13AC Blanik sailplane.

**TG-15 Duo Discus/Duo 2B**

**Brief:** Sailplane used for advanced cross-country training and competition.

**Function:** Trainer-cross-country competition sailplane.

**Operator:** AETC.

**Inventory:** Two (A); three (B).

**Aircraft Location:** USAFA, Colo.

**Contractor:** Scheppp-Hirth, Germany.

**Accommodation:** Two-seat (A), single-seat (B).

**Dimensions:** Span 65.6 ft (A), 49.2 ft (B); length 28.3 ft (A), 22.3 ft (B).

**Weight:** 1,543 lb (A), 1,157 lb (B).

**Performance:** Max permitted speed 155 mph.

**COMMENTARY**

Sailplanes manufactured by Scheppp-Hirth of Germany. Used for cross-country soaring training and Soaring Society of America national competitions.

**Extant Variant(s)**

- **TG-15A.** Two-seat variant.
- **TG-15B.** Single-seat variant.

**UV-18 Twin Otter**

**Brief:** Modified utility transport used for parachute jump training.

**Function:** Parachutist.

**Operator:** AETC.

**First Flight:** May 1965 (commercial version).

**Delivered:** 1977 (two); 1982 (one).

**LGM-30G Minuteman III (USAF)**

**Strategic Missiles**

**AGM-86 Air Launched Cruise Missile**

**Brief:** A small, subsonic winged air vehicle, deployed on B-52H aircraft, which can be equipped with either a nuclear or conventional warhead.

**Function:** Strategic air-to-surface cruise missile.

**Operator:** AFGSC.

**IOC:** June 1979 (full-scale development). Delivered: from 1981.

**Dimensions:** Span 12 ft, length 20.8 ft, body diameter 2 ft.

**Weight:** 3,150 lb.

**Performance:** Speed 550 mph (B), high subsonic (C/D); range 1,500+ miles (B), 690 miles (C/D).

**COMMENTARY**

Programmed to conduct strategic attack—nuclear or conventional—on surface targets. Small radar signature and low-level flight capability enhance the missile’s effectiveness.

**Extant Variant(s)**

- **AGM-86B.** First production version. Last of 1,715 delivered in 1986. Undergoing SLEP to extend life to 2030. USAF to cut inventory to 526 nuclear types. Force to be consolidated at Minot.
- **AGM-86C.** Conventional warhead version, called CALCM. Some 600 B models converted; initial deliveries in 1987. Few remain in inventory. First used operationally in Desert Storm; used widely in subsequent combat operations. Provides adverse weather, day/night, air-to-surface, accurate, stand-off strike capability. Range greater than 500 miles. Block 1A enhancements offer improved accuracy and increased immunity to electronic jamming.
- **AGM-86D.** CALCM Block II penetrator version with AUP-3(M) warhead. Provides standoff capability against hardened, deeply buried targets. Used with success in Southwest Asia operations.

**LGM-30 Minuteman**

**Brief:** A solid-fuel ICBM capable of being fired from silo launchers and delivering a thermonuclear payload of one to three warheads with high accuracy over great distances.

**Function:** Strategic surface-to-surface ballistic missile.

**Operator:** AFGSC.

**IOC:** December 1962, Malmstrom AFB, Mont.

**Production:** 1,800.

**Dimensions:** Span 212 ft, length 159 ft, body diameter 27 ft.

**Weight:** 416,000 lb.

**Performance:** Speed at burnout approx 15,000 mph, range 5,000+ miles.

**COMMENTARY**

Three-stage, solid-propellant ICBM in underground
Tactical Missiles and Weapons

AGM-65 Maverick

**Brief:** A tactical, TV or IR guided or laser guided air-to-surface missile carried by fighters and designated for use in CAS, interdiction, and defense suppression missions, having standoff capability and high probability of strike against a wide range of targets.

**Function:** Air-to-surface guided missile.

**First Flight:** August 1969.

**Delivered:** from August 1972.

**IOC:** February 1973.

**Contractor:** Raytheon.

**Power Plant:** Thiokol TX-481 solid-propellant rocket motor.

**Guidance:** EO TV guidance system (B/HK); IIR seeker (D/G); laser seeker (E).

**Warhead:** 125-lb cone-shaped (B/D/H); 300-lb delayed-fuse penetrator (E/G/K).

**Dimensions:** span 2.3 ft, length 8.2 ft, diameter 12 in.

**Performance:** classified.

**COMMENTARY**
First employed during Vietnam War; used extensively in Desert Storm and Iraq Freedom. Integrated with A-10 and F-16 for use against tanks and columns of vehicles and in the SEAD role.

**Extant Variant(s)**

- **AGM-65B:** Laser guided version used by USAF and USMC. Employs lightweight penetrator warhead.
- **AGM-65C:** Uses IIR seeker with software mods to track larger targets. Employs heavy weight penetrator warhead. Has digital autopilot and a pneumatic actuation system. First delivered in 1989.
- **AGM-65H:** Upgraded B variant to increase capability. Undergoing tracker upgrade.
- **AGM-65K:** Modified G variant, replacing IR guidance system with EO TV guided seeker. Undergoing tracker upgrade.
- **AGM-65L:** New laser Maverick to strike moving targets traveling at high speed. Will use EO TV seeker components with new semi-active laser (SAL) components.

**AGM-88 HARM**

**Brief:** A tactical air-to-surface missile designed to seek and destroy enemy radar-equipped air defense sites, using an advanced guidance system that senses and homes in on enemy radar emissions.

**Function:** Air-to-surface anti-radiation missile.

**First Flight:** April 1979.

**Delivered:** 1982-98.

**IOC:** circa 1984.

**Contractor:** Raytheon.

**Power Plant:** Thiokol dual-thrust, solid-propellant rocket motor.

**Guidance:** proportional with fixed antenna and seeker head in missile nose.

**Warhead:** high-explosive fragmentation.

**Dimensions:** span 3.7 ft, length 13.7 ft, diameter 10 in.

**Performance:** speed supersonic, range 30+ miles.

**COMMENTARY**
Joint USAF-Navy weapon. Great velocity and ability to cover wide range of frequencies with use of programmable digital processors in carrier aircraft’s avionics and missile. Highly effective against enemy ground radar. Carried by USAF F-16CJ Block 50/52ds dedicated to SEAD mission.

**Extant Variant(s)**

- **AGM-88B:** Equipped with eraseable and electronic programmable read-only memory, permitting in-field changes to missile memory.
- **AGM-88C:** Current production model. Has warhead more lethal than earlier variants. Control section mod replacing current navigation system with GPS and inertial measurement unit; upgraded missiles to be redesignated AGM-88F.
- **AGM-154 Joint Standoff Weapon**

**Brief:** Joint USAF and Navy family of low-cost glide weapons with a standoff capability.

**Function:** Air-to-surface guided missile.

**First Flight:** December 1994.

**Delivered:** from 2000.

**IOC:** 2000 (USAF).

**Contractor:** Raytheon.

**Guidance:** GPS/INS.

**Warhead:** (see variants below).

**Dimensions:** length 13.3 ft, diameter 13 in.

**Performance:** range 13.8 miles low altitude, 73 miles high altitude.

**COMMENTARY**
Medium-range, GPS/INS guided, standoff air-to-ground weapon. Used to attack a variety of soft and armored area targets during day and night, and adverse weather conditions. USAF stopped its production in FY05.

**Extant Variant(s)**

- **AGM-154A:** The baseline BLU-97 CEM variant for use against soft and area targets.
- **AGM-154B:** The BLU-108 variant provides antiarmor capability.

**AGM-158 Joint Air-to-Surface Standoff Missile**

**Brief:** An advanced weapon designed to attack heavily defended targets with high precision at great standoff range. Joint USAF-Navy program.

**Function:** Air-to-surface guided weapon.

**First Flight:** April 8, 1999.

**Delivered:** through FY19 (planned).

**IOC:** September 2003.

**Contractor:** Lockheed Martin, Raytheon, Honeywell.

**Power Plant:** Teledyne Continental Motors turbojet (baseline); Williams Intl. turboban (ER).

**Guidance:** GPS/INS and IIR terminal seeker.

**Warhead:** 1,000-lb class penetrator.

**Dimensions:** length 14 ft.

**Performance:** 1,000-lb dual mode penetrator/blast-fragmentation warheads; range 200+ miles (baseline), 500+ miles (ER).

**COMMENTARY**
Autonomous precision strike weapon. Can attack both fixed and relocatable targets, from non-hardened above ground to moderately hardened buried targets.

**Extant Variant(s)**

- **AGM-158 JASSM:** Stealthy LO airframe equipped with GPS/INS guidance, IIR terminal seeker. Low operational support costs.
- **AGM-158 JASSM-ER:** Extended-range version. Utilizes same baseline body, but new engine and fuel system increase range to more than 500 miles. Currently integrated only on the B-1B.

**AIM-9 Sidewinder**

**Brief:** A supersonic, short-range, IR-guided air-to-air missile with a high-explosive warhead, carried by fighter aircraft.

**Function:** Air-to-air missile.

**First Flight:** September 1953.

**Delivered:** 1957-present. AIM-9M deliveries began circa 1983; AIM-9X May 2002.

**IOC:** circa 1983 (9M); 2003 (9X).

**Contractor:** Raytheon, Loral.

**Power Plant:** Thiokeol Hercules and Bemrite Mk 36 Mod 11 solid-propellant rocket motor.

**Guidance:** solid-state IR homing guidance.

**Warhead:** annular blast fragmentation.

**Dimensions:** span 2.1 ft, length 9.4 ft, diameter 5 in.

**Performance:** speed Mach 2+, range 10+ miles.

**COMMENTARY**
Developed by the Navy for fleet air defense, adapted by USAF for fighter aircraft use. Early versions used extensively in the Vietnam War.

**Extant Variant(s)**

- **AIM-9M-9:** Expanded IR countermeasures detection capability.
- **AIM-9X:** A jointly funded Navy-USAF project. Employs same rocket motor and warhead as AIM-9M. Has fixed forward canards and smaller fins to increase flight performance. Employs IIR seeker. FY14 budget request would fund Block II full rate production.

**AIM-120 AMRAAM**

**Brief:** A supersonic, medium-range, active radar guided air-to-air missile with a high-explosive warhead.

**Function:** Air-to-air guided missile.

**First Flight:** December 1984.

**Delivered:** 1986.

**IOC:** September 1991.

**Contractor:** Raytheon.

**Power Plant:** Alliant boost-sustain solid-propellant rocket motor.

**Guidance:** active radar terminal/inertial midcourse.

**Warhead:** blast fragmentation.

**Dimensions:** span 1.7 ft, length 121 ft, diameter 7 in.

**Performance:** speed supersonic, range 20+ miles.

**Silo.** Sole remaining US land-based ICBM. Major life extension program ensures viability to 2020. Ongoing mods would extend that to 2030.

**Extant Variant(s)**

- **LGM-30G:** Minuteman III became operational in 1970, providing improved range, rapid retargeting, and the capability to place three re-entry vehicles on three targets with a high accuracy. USAF initially deployed 550, later reducing to 500 based at Warren, Malmstrom, and Minot. Deactivation of a further 50 completed in July 2008.

**AIM-120 AMRAAM** (Lockheed Martin photo/Matthew Short)
GBU-10 Paveway II (Sgt. Michael Ammons)

IR signature: If no target is detected, the warhead detonates after a preset time. Primary targets are massed tanks, armored personnel carriers, and self-propelled targets.

Extant Variant(s)

GBU-107 Passive Attack Weapon


Dimensions: length 7.7 ft, diameter 15 in. Performance: delivers a high-speed volley of nearly 4,000 metal projectiles in three sizes from a single canister; projectiles: 15 in rods (350), 7 in rods (1,000), and small-nail size (2,400).

Extant Variant(s)
- GBU-107A. Weapon has no explosive. Ejects various-size, penetrating projectiles, WCMD guided for greater accuracy. Full production completed in six months. Used during Iraqi Freedom.

GBU-24 Paveway III


Extant Variant(s)

GBU-28 Paveway III


Extant Variant(s)
- GBU-28B/B. Integrates GPS/INS guidance into...
the existing GBU-28 guidance control unit to provide poor weather capability and improved target location. Entered production in 1999.


GBU-31/32/38 Joint Direct Attack Munition
Brief: A joint USAF/Navy/GPS INS-guided weapon, carried by fighters and bombers, that provides highly accurate, autonomous, all-weather conventional bombing capability.
Function: Air-to-surface guided bomb.
Contractor: Boeing, Textron, Honeywell.
Guidance: GPS/INS.
Warhead: BLU-120/B 18,000-lb high explosive.
Dimensions: length 20.5 ft, diameter 31.5 in.
Warhead: GPS/INS, 250-lb class penetrating blast fragmentation munition.
Dimensions: bomb: length 6 ft, width 7.5 in; BRU-61/A carriage (four bombs) length 12 ft, width 16 in, height 16 in.
Performance: near-precision capability at standoff range up to 46 miles.
COMMENTARY
Capable of destroying high-priority and stationary targets from fighters and bombers in internal bays or on external hardpoints. Can be targeted and released against single or multiple targets.
Extant Variant(s)

GBU-43 MOAB Bomb
Brief: A massive weapon designed for use against large area or buried targets.
Function: Massive guided bomb.
Guidance: GPS/INS.
Warhead: BLU-120/B 18,000-lb high explosive.
Dimensions: length 30 ft, diameter 3.3 ft.

GBU-43/B. GPS guided munition with fins and inertial gyro for pitch and roll control. Weighs 21,000 lb, of which 18,700 lb is attributed to BLU 120/B warhead. History’s largest satellite guided, air-delivered weapon.

GBU-53 Small Diameter Bomb II
Brief: Air-launched, precision strike standoff weapon for use against both fixed and moving targets in adverse weather conditions. Features higher loadout and less collateral damage similar to the SDB I.
Function: Air-to-surface guided munition.
First Flight: 2012 (planned).
Delivered: from 2013 (planned).
IOC: TBD.
Contractor: Raytheon.
Guidance: Tri-mode seeker, fusing millimeter-wave radar, uncooled IIR, and digital semiactive laser sensors on a single gimbal.

GBU-54 Laser JDAM
Brief: A joint USAF/Navy-GPS/INS guided weapon equipped with a laser seeker, carried by fighters, providing highly accurate, autonomous, all-weather conventional bombing capability against stationary and moving targets.
Function: Air-to-surface guided bomb.
Contractor: Boeing.
Guidance: GPS/INS with laser.
Warhead: Mk 82 500-lb munition.
Dimensions: length (with JDAM and warhead) approx 8 ft.

GBU-57 Massive Ordnance Penetrator
Brief: A massive earth-penetrating weapon for use against hard and deeply buried targets.
Function: Massive precision guided bomb.
Guidance: GPS.
Warhead: 5,300-lb high explosive.
Dimensions: length 20.5 ft, diameter 31.5 in.

COMMENTARY
USAF partnered with the Defense Threat Reduction Agency in 2004 on early development and test.
**Satellite Systems**

**Advanced EHF Satellite System**
*Brief:* Satellites communication system that provides global, secure, protected, and jam-resistant strategic and tactical communications.
*Function:* Communications.
*Operator:* AFSPC.
*First Launch:* August 2010.
*IOC:* Late 2013 (planned).
*Constellation:* four.
*Design Life:* 14 years.
*Launch Vehicle:* Atlas V.
*Operational Location:* Schriever AFB, Colo.
*Orbit Altitude:* Geosynchronous at 22,000+ miles.
*Contractor:* Lockheed Martin, Northrop Grumman.
*Power Plant:* Solar arrays generating 20,000 watts.
*Dimensions:* length 31 ft, width 98 ft (with full solar array extension).
*Weight:* 13,400 lb.
*Performance:* 24-hr low, medium, and extended data rate connectivity from 65 north to 65 south latitude worldwide.
*Commentary:* Replenishing existing Milstar satellites, operating at much higher capacity and data rate capability. Offers secure, anti-jam communications around the world. Uses cross-linked satellites, eliminating the need for ground relay stations. Collaborative program with Canada, Netherlands, and United Kingdom.
*Extant Variant(s):*
- **AEHF SV-2.** Launched in May 2012. Now in orbit and operational.

**Defense Meteorological Satellite Program**
*Brief:* Satellites that collect air, land, sea, and space environmental data to support worldwide strategic and tactical military operations.
*Function:* Space and Earth environmental data collection.
*Operator:* National Oceanic and Atmospheric Administration (NOAA).
*IOC:* 1965.
*Constellation:* two low Earth orbit (LEO).
*Design Life:* 48 months.

**Defense Satellite Communications System**
*Brief:* Joint service satellite system that provides high-capacity communications for deployed air, land, and sea forces.
*Function:* Communications.
*Operator:* AFSPC.
*IOC:* circa 1972.
Constellation: classified.
Design Life: Three year requirement and five year goal.
Launch Vehicle: Titan IV with inertial upper stage.
Delta IV Heavy EELV.
Operational Location: Buckley AFB, Colo.; Schriever AFB, Colo.
Orbit Altitude: Geosynchronous at 22,000+ miles.
Contractor: TRW (now Northrop Grumman), Aerojet
Power Plant: solar arrays generating 1,485 watts.
Dimensions: diameter 22 ft, height 32.8 ft, with solar paddles deployed.
Weight: approx. 5,200 lb.
Performance: uses IR sensors to sense heat from missile and booster plumes against Earth’s background.
COMMENTS

Extant Variant(s)
Block 5. Nine satellites in period 1989-present. This latest variant is more survivable than predecessors, includes a medium wavelength IR sensor for more mission utility, and accommodates 6,000 detectors.

Global Positioning System
Brief: A US space-based radio-positioning system that provides 24-hour worldwide highly accurate three-dimensional (latitude, longitude, and altitude) position, velocity, and time data in an accurate three-dimensional (latitude, longitude, and time) navigation and timing service to military and civilian users.

Function: Worldwide navigation, timing, and velocity data.
Operator: AFSPC.
Constellation: at least 24 spacecraft.
Design Life: 7.5 yr (IIIA); 12 yr (IIF); 7.5 yr (IIR-IIR-M); 15 yr (IIIA).
Launch Vehicle: Delta II, Delta IV.
Operational Location: Schriever AFB, Colo.
Orbit Altitude: 12,578 miles.
Contractor: Boeing (II, IIA, IIF), Lockheed Martin (IIR, IIR-M, IIA).

Power Plant: solar panels generating 700 watts (II); 1,136 watts (IIR-IIR-M), up to 2,900 watts (IIF).
Dimensions: (II/IIIA) 5 x 6.3 x 6.25 ft, span incl solar panels 38 ft; (IIF) 9.6 ft x 6.5 ft x 12.9 ft, span incl solar panels 43.1 ft.
Weight: on orbit, 2,370 lb (II/IIIA); 3,439 lb (IIR-IIR-M).
Performance: orbit the Earth every 12 hr, emitting continuous signals, providing time to within one billionth of a second, velocity within a fraction of a mile per hr, and location to within a few ft.

COMMENTS
Further, contribution to precision bombing, CSAR, mapping, and rendezvous. Provides accurate three-dimensional (latitude, longitude, and altitude) position, velocity, and time data in an uninterrupted way.

Extant Variant(s)
GPS Block IIA. Launched first in 1997. Current constellation includes 11 IIA’s as launched to replace original GPS Block I series.
GPS Block IIF. Upgrades include extended design life, faster processors, and improved anti-jam and accuracy, with multiple civil/military signals and two dedicated civil signals. Follow-on to IIR-M. First launched in 2010, second in 2011, a third in 2012, leaving nine more either in storage or production.
GPS Block IIR-IIR-M. First launched in 2005 and last in 2009. Upgrades included two new signals, enhanced encryption and anti-jamming capabilities, and more.
GPS Block IIR-M. First launched in 2005 and last in 2009. Upgrades included two new signals, enhanced encryption and anti-jamming capabilities, and more.
GPS Block IIIA. Future generation expected to provide improved accuracy, availability, integrity, and resistance to jamming. First launch slated for 2014.

Milstar Satellite Communications System
Brief: A joint service satellite communications system that provides global, secure, protected, and jam-resistant strategic and tactical communications.

Function: Communications.
Operator: AFSPC.
IOC: July 1997 (Milstar I).
Constellation: five.
Design Life: 10 yr.
Launch Vehicle: Titan IV/Centaur.
Operational Location: Schriever AFB, Colo.
Orbit Altitude: Geosynchronous at 22,000+ miles.
Contractor: Lockheed Martin, Boeing, TRW (now Northrop Grumman).
Power Plant: solar panels generating 8,000 watts.
Dimensions: length 51 ft, width 116 ft with full solar array extension.
Weight: 10,000 lb.
Performance: Milstar I sats have low data rate (LDR) payload, transmitting 75 to 2,500 Mbps of data over 192 channels in EHF range; Milstar II sats have both LDR and medium data rate (MDR) payloads, transmitting 4,800 bps to 1.5 Mbps over 32 channels.

COMMENTS
Backbone of strategic-tactical DOD communications. Provides secure, anti-jam communications around the world. Uses cross-linked satellites, eliminating the need for ground relay stations. Offers 24-hour-a-day capability. Last of six satellites launched in 2003.

Extant Variant(s)
Block I. Two Milstar I satellites launched in the period 1994-95. Both still active.
Block II. Four Milstar II satellites launched in period 1999-2003. First one was placed in nonuseable orbit. Other three are still active.

Space Based Infrared System
Brief: Advanced surveillance system for missile warning, missile defense, battlespace characterization, and technical intelligence. System includes IR sensors payloads on host satellites in highly elliptical orbit (HEO) and two IR sensors each on dedicated satellites in geosynchronous Earth orbit (GEO).

Function: space surveillance.
Operator: AFSPC.
First Launch: GEO 1, May 2011.
Constellation: four GEO sats, two HEO sensors (planned).
Design Life: not available.
Launch Vehicle: GEO, Atlas V.
Operational Location: Bad Aibling, Germany.
Orbit Altitude: Geosynchronous and high elliptical.
Contractor: Lockheed Martin, Northrop Grumman.
Power Plant: solar array, 2,435 watts (GEO).
Dimensions: GEO 7 x 6.3 x 19.7 ft.
Weight: 5,603 lb (GEO on orbit).

COMMENTS
Follow-on to the Defense Support Program satellite. System includes GEO satellites, HEO payloads, and ground assets. HEO sensor detects launch of SLBMs from the North Polar region and can be tasked for other IR detection missions. GEO scanning IR sensor performs strategic missile warning mission, global technical intelligence, and initial phase for the strategic missile defense mission, providing two times the revisit rate and three times the sensitivity of DSP.

Extant Variant(s)
SBIRS HEO. HEO-1 and HEO-2 payloads went into operation in 2008 and 2009, respectively USAF expects to deliver HEO-3 to the host in June 2013 and HEO-4 in May 2015.
SBIRS GEO. USAF launched the GEO-1 satellite in 2011; officials say the quality of its data is exceeding performance expectations. Launch of GEO-2 took place March 19, 2013; delivery of GEO-3 slated for late 2015 and GEO-4 2016.

Space Based Surveillance System
Brief: Space-based capability to provide metric and characterization data on objects in space.
Function: Space surveillance and object identification.
Operator: AFSPC.
IOC: 2012 (planned).
Constellation: one LEO satellite.
Design Life: seven years.
Launch Vehicle: Minotaur IV.
Operational Location: Schriever AFB, Colo.
Orbit Altitude: 390 miles, sun-synchronous orbit.
Contractor: Boeing (system integration, ground segment, operations and sustainment); Ball Aerospace (satellite).
Power Plant: 750 watts, powered from solar arrays and batteries.
Dimensions: height approx. 10 ft; 10 ft x 3.2 ft, plus solar panels.
Weight: approx. 2,273 lb.

COMMENTS
Designed to track and collect optical signatures of Earth-orbiting objects, including space debris, from a space-based platform. First operational satellite (SSBS Block 10) launched in September 2010. In March 2011, USAF announced satellite control authority had transferred to 1st SOPS at Schriever, culminating the on-orbit initialization, checkout, calibration, and system characterization process.

Wideband Global SATCOM
Brief: Satellites that provide high-capacity communications for deployed forces (air, land, and sea).
Function: Communications.
Operator: AFSPC.
Design Life: 14 years.
Launch Vehicle: Atlas V, Delta IV.
Operational Location: Schriever AFB, Colo.
Orbit Altitude: Geosynchronous at 22,000+ miles.
Contractor: Boeing.
Power Plant: solar arrays generating 9,934 watts.
Dimensions: based on Boeing 702 Bus.
Weight: 13,000 lb at launch.
Performance: approx. 10 times the capability of a DSSC satellite.

COMMENTS
Designed to provide worldwide communications coverage for tactical and fixed users, augmenting and then replacing DSSC X-band frequency service and augments the one-way Global Broadcast Service Joint Program Ka-band frequency capabilities. WGS satellites also provide a new high-capacity two-way Ka-band frequency service.

Extant Variant(s)
Block I. Three satellites (SV-1 thru SV-3) launched in October 2007, April 2009, and December 2009. SV-1 was in service over the Pacific Ocean region in April 2008; SV-2 over the Middle East in August 2009; and SV-3 over Europe and Africa in June 2010.
Block II. Comprises satellites modified to better support the airborne ISR mission. SV-4 satellite launched Jan. 20, 2012, and began operations over the Indian Ocean area in August 2012. USAF expects to launch SV-5 in 2013. In a US-Australia partnership, codified in 2007, Australia provides funds to purchase SV-6, also slated for launch in 2013. The US entered a multilateral partnership with Canada, Denmark, Luxembourg, Netherlands, and New Zealand, in which the new partners will fund acquisition and support for SV-9.

WGS (Boeing illustration)