B-1B 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: 63.
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 F110-GE-102 turbofans, each 37,800 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 including up to 84 Mk 82 (500-lb) or 24 Mk 61 (2,000-lb) general-purpose bombs; up to 64 Mk 62 (500-lb) or 8 Mk 65 (2,000-lb) Quick Strike naval mines; up to 34 Mk 122 (500-lb) or 15 GBU-31/J (JDAM); up to 24 AGM-158A JASSMs (AGM-158B JASSM-ER also integrated); GBU-54 Laser JDAM; 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. Fast, high-speed, and survivable. 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. 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 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. FIDL also adds an Ethernet infrastructure to enable rapid airborne retargeting. The B-1B has an expected service life beyond 2040.

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-52 Stratofortress

**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 CBU-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. Future weapons include JASSM-ER, GBU-53 SDB II, and GBU-57 Massive Ordnance Penetrator.

**COMMENTARY**

Based on the flying wing concept. Combination of advanced technologies, LO stealth design, and high aerodynamic efficiency. Able to attack heavily defended targets and neutralize enemy defenses. First use of B-2A in combat on March 24, 1999, against Serb targets in Allied Force, with two aircraft each dropping 16 JDAMs. Smoothly blended “fuselage” section has two large weapons bays capable of carrying up to nearly 60,000 lb of weapons. No vertical tail surfaces. Quadruple-redundant fly-by-wire digital flight-control system, actuating moving surfaces at the wing trailing edges that combine aileron, elevator, and rudder functions.

**Extant Variant(s)**

- **B-2A:** July 30, 1981.
- **B-2B:** July 30, 1982. B-2 production went in three successive blocks of capability: Blocks 10, 20, and 30. All aircraft have been upgraded to Block 30. Recent application of a specially formulated surface coating has significantly reduced maintenance time and improved operational readiness. Other improvements include integration of a Link 16 LOS tactical communication system and a smart BRA that enables delivery of 80 JDAMs on a single pass. Continuing modernization efforts include a new AESA radar antenna and high-speed computing upgrade that will enable future improvements, such as an EHF satcom system, Defensive Management System-Modernization (DMS-M), and the Flexible Strike capability to enable future use of advanced digital weapons, including the B61-12 bomb and Long-Range Standoff (LRSO) missile.

**B-52 Stratofortress**

**Brief:** A long-range, heavy multirole bomber that can carry nuclear or conventional ordnance or cruise missiles.

**Function:** Long-range heavy bomber.

**Operator:** AFGSC, AFMC, AFRC.

**First Flight:** April 15, 1952 (YB-52 prototype).

**Delivered:** 1955-October 1962.

**IOC:** June 19, 1955.

**Production:** 744.

**Inventory:** 76.

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

**Contractor:** Boeing.

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

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

**Dimensions:** span 185 ft, length 159.3 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 C pylons, Mk 62 sea mines, Mk 82/84 bombs, CBU-87/89 cluster bombs, CBU-103/104/105 WCDMs, GBU-31/38 JDAMs, AGM-158A JASSMs, and GBU-20/12/28 LGBs. Future weapons incl the GBU-54 Laser JDAM, AGM-158B JASSM-ER, MALD, and MALD-J jammer variant.

**COMMENTARY**

- Many variants; all but one retired. Multimission capability includes long-range precision strike, CAS of ground forces against a wide range of ground targets, including tanks and other armored vehicles. No vertical tail surfaces. Quadruple-redundant fly-by-wire digital flight-control system, actuating moving surfaces at the wing trailing edges that combine aileron, elevator, and rudder functions.

**Extant Variant(s)**

- **B-52H:** First flown July 1960. Total production was 102, with deliveries between May 1961 and October 1962. USAF’s only nuclear/conventional cruise missile carrier. Can conduct CAS using GPS/INS guided weapons. First delivered LGBs in Operation Iraqi Freedom in 2003, with LITENING targeting pods. The Internal Weapons Bay Upgrade program will convert 44 nuclear-weapon-capable Common Strategic Rotary Launchers into Conventional Rotary Launchers. Increment 1.1 of this upgrade will enable internal carriage of eight JDAMs and variants and will introduce external carriage of 16 LIDAMs. Increment 1.2 will provide internal carriage of eight JASSMs and eight MALDs or their variants, plus adding external carriage for 12 JASSM-ER missiles. Other ongoing fleet modernization efforts include the Combat Network Communications Technology (CONECT) program to replace aging cockpit displays and communications, enabling such things as machine-to-machine relaying and retargeting for CALCM and J-series weapons. As of Dec. 31, 2013, USAF estimates an average of 9,391 flight hours remain out of a certified service life of 27,701 hours.

**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, PAFAC, USAFE- AFRAFICA, ANG, AFRC.

**First Flight:** Feb. 15, 1975 (preproduction).

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

**IOC:** October 1977.

**Production:** 713.

**Inventory:** 334.
F-15 Eagle


Aircraft Location: Aviano AB, Italy; Edwards ABF, Edwards AFB, California; Eglin ABF, Florida; Kunsan AB, South Korea; Luke AFB, Arizona; Misawa AB, Japan; Osan AB, South Korea; Shaw AFB, South Carolina; and RAF Lakenheath, UK. Operator: ACC, AFMC, USAFE-AFAFRICA. First Flight: Dec. 11, 1986. Delivered: April 1988-2004. IOC: September 1989. Production: 236. Inventory: 218. Aircraft Location: Eglin ABF, Florida; Mountain Home ABF, Idaho; Nellis ABF, Nevada; RAF Lakenheath, UK; Seymour Johnson ABF, North Carolina. Contractor: McDonnell Douglas (now Boeing), Raytheon. 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. Armament: One internally mounted M61A1 20 mm six-barrel cannon (940 rd); four AIM-9 Sidewinders and four AIM-120 AMRAAMs or eight AIM-120s, carried externally. PERFORMANCE: Max 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; most air-to-surface weapons in USAF inventory (nuclear and conventional).

COMMENTARY
Basic F-15 airframe strengthened and upgraded for heavyweight multirole capability. Saw first combat in Desert Storm in 1991. Can maneuver at nine Gs and carry 9,000 lb of payload with CFTs and three external tanks.

F-15E Strike Eagles


COMMENTARY
Basic F-15 airframe strengthened and upgraded for heavyweight multirole capability. Saw first combat in Desert Storm in 1991. Can maneuver at nine Gs and carry 9,000 lb of payload with CFTs and three external tanks.

F-16 Fighting Falcon


Aircraft Location: Aviano AB, Italy; Edwards ABF, Edwards AFB, California; Eglin ABF, Florida; Kunsan AB, South Korea; Luke AFB, Arizona; Misawa AB, Japan; Osan AB, South Korea; Shaw AFB, South Carolina; and RAF Lakenheath, UK. Operator: ACC, AFMC, USAFE-AFAFRICA. First Flight: Dec. 11, 1986. Delivered: April 1988-2004. IOC: September 1989. Production: 236. Inventory: 218. Aircraft Location: Eglin ABF, Florida; Mountain Home ABF, Idaho; Nellis ABF, Nevada; RAF Lakenheath, UK; Seymour Johnson ABF, North Carolina. Contractor: McDonnell Douglas (now Boeing), Raytheon. 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. Armament: One internally mounted M61A1 20 mm six-barrel cannon (940 rd); four AIM-9 Sidewinders and four AIM-120 AMRAAMs or eight AIM-120s, carried externally. PERFORMANCE: Max 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; most air-to-surface weapons in USAF inventory (nuclear and conventional).

COMMENTARY
Basic F-15 airframe strengthened and upgraded for heavyweight multirole capability. Saw first combat in Desert Storm in 1991. Can maneuver at nine Gs and carry 9,000 lb of payload with CFTs and three external tanks.
F-22A Raptor (SSgt. Jacob N. Bailey)

**F-22A Fighting Falcon**

**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 weapons bay.
**Commentary**

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 RWR and missile launch detector, JTIDS, IFF system, laser gyroscope inertial reference, and GPS. The FY15 funding request would continue the Reliability, Availability, and Maintainability Maturation Program (RAMMP) to develop and integrate upgrades and retrofit of combat-coded F-22s with Increment 3.1 mods, upgrading SAR ground mapping, threat geolocation, EA capability, and integration of SDB 1. It also continues development of Increment 3.2, including integration of AIM-120D AMRAAM and AIM-9X.

**Extant Variant(s)**

- F-22A: Cockpit fitted with six color LCD panels. Dowlink 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, AFRIC. (SSgt. Jacob N. Bailey)
**First Flight:** Sept. 7, 1997.
**Delivered:** 2002 (first production representative aircraft).
**IOC:** Dec. 15, 2006 (F-35A prototype).
**Production:** 2002 (first production representative aircraft).
**Aircraft Location:** Edwards AFB, Calif.; Eglin AFB, Fla.; JB Pearl Harbor-Hickam, Hawaii; Nellis AFB, Nev.; Tyndall AFB, Fla.

**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.**

**Extant Variant(s)**

- F-16C/D: Introduced in 1984, at production Block 25. Featured Multinational Staged Improvement Program (MSSIP) II upgrades to cockpit, airframe, and core avionics plus addition of increased-range APG-68 radar. Block 25a also added the AIM-120 AMRAAM as a baseline weapon. With Block 30/32 came MSSIP III mods; new engines; and additional weapons, including the AGM-88HARM. Block 40/42 and Block 50/52 aircraft are the newest variants, but the majority are showing bulkhead cracks. Sustainment efforts to extend the F-16 as a bridge to the F-35A have included a legacy SLEP; integration of new weapons and targeting pods, and the Combat Avionics Programmed Extension Suite (CAPES).

**F-35 Lightning II**

**Brief:** Next generation strike aircraft.
**Function:** Multirole fighter.
**Operator:** AETC, AFMC. Planned: ACC, PACAF, USAFE-AFAFRICA, ANG.
**First Flight:** Dec. 15, 2006 (F-35A prototype).
**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 Britain; unspecified number to seven other partner countries.
**Inventory:** 22 (USAF).
**Aircraft Location:** Edwards AFB, Calif.; Eglin AFB, Fla.; Luke AFB, Ariz.; Nellis AFB, Nev.; other locations TBD.
**Contractor:** Lockheed Martin, with BAE Systems, Northrop Grumman, Pratt & Whitney.
**Power Plant:** F-35A; one Pratt & Whitney F135-PW-100; 40,000 lb thrust.
**Accommodation:** pilot.
**Dimensions:** span 35 ft, length 51.4 ft, height 14.4 ft.
**Weight:** max T-O 70,000 lb.
**Ceiling:** 50,000 ft.

**Acronyms, Continued**

- **JSUPT** Joint Specialized Undergraduate Training
- **JTIDS** Joint Tactical Information Distribution System
- **LANTIRN** Low-Altitude Navigation & Targeting System
- **LRIP** Low-rate Initial Production
- **MALD** Miniature Air Launched Decoy
- **Masint** Measurement & Signature Intelligence
- **MFD** Multifunction display
- **MTI** Military training instructor
- **NSA** National Security Agency
- **NVD** Night Vision Goggles
- **PGM** Precision guided munition
- **RPA** Remotely Operated Video Enhanced Receiver
- **RWR** Radar warning receiver
- **SAR** Synthetic aperture radar
- **SBLM** Satellite communications
- **SDB** Small Diameter Bomb
- **SEAD** Suppression of enemy air defenses
- **SHF** Super high frequency
- **Sigint** Signals intelligence
- **SL** Sea level
- **SLEP** Service life extension program
- **SOF** Special operations forces
- **STOL** Short takeoff and landing
- **TACAN** Tactical air navigation
- **TBD** Terrain-following/Terrain-Avoidance mode
- **T-O** Takeoff
- **WCS** Wind Corrected Munitions Dispenser weapon systems officer
Performance: speed Mach 1.6 with full internal weapons load, range 1,380 miles.

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-31 JDAMs.

**COMMENTS**

The F-35 is a joint and multinational program aimed at developing and fielding an affordable, highly common family of next generation strike fighters. For US forces, the program provides: F-35A conventional takeoff and landing (CTOL) variant for the Air Force; F-35B short takeoff and vertical landing (STOVL) variant for the Marine Corps; and F-35C carrier variant (CV) variant for the Navy. US Air Force's F-35A will replace F-15E and A-10 fleets with a stealthy multirole fighter. Designed to be able to enter heavily defended enemy airspace and engage all enemy targets in any conflict. Features advanced stealth design, high maneuverability, long range, and advanced avionics.

**Extant Variant(s)**

- **F-35A:** First flight by a USAF test pilot on Jan. 30, 2008. On May 5, 2011, USAF received its first production aircraft—dubbed AF-7—built as part of Lot 1 LRIP. F-35 joint schoolhouse at Eglin received its first F-35, a production model F-35A CTOL variant, on July 14, 2011. On Feb. 28, 2012, USAF cleared the F-35s at Eglin for initial flight operations. All variants are still in development and test. Program officials expect the development program, which is about 90 percent complete, to end in 2017. Nellis flew its first operational test mission on April 4, 2013. The first of 144 F-35As to be based at Luke, selected to train both USAF and international pilots, arrived March 11, 2014. The FY15 budget would procure another 26 F-35As.

**Special Operations Forces Aircraft**

**AC-130H/U 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, for CAS, air interdiction, and armed reconnaissance.

**Function:** Attack aircraft.

**Operator:** AFSOC.

**First Flight:** 1967.

**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).

**ARMAMENT**

<table>
<thead>
<tr>
<th>Model</th>
<th>Armament</th>
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<tbody>
<tr>
<td>AC-130H</td>
<td>25 mm GAU-22/A cannon; 40 mm Bofors cannon; 255 mm Howitzer (100rd) AC-130U</td>
</tr>
<tr>
<td>C-130J</td>
<td>30 mm GAU-23/A cannon; 105 mm cannon; PJMs.</td>
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**COMMENTARY**


**Extant Variant(s)**

- **AC-130H Spectre:** Serves with 27th Special Operations Wing at Cannon. Equipped with digital fire-control computer, EO sensors, target-acquisition systems, including FLIR sensor and low-light-level television (LLTV), and capable of in-flight refueling. Advanced fire-control computers, navigation, communications, and sensor suites. Originally AC-130E, converted to H standard after Vietnam War.

**AC-130U Spooky:** Serves with 1st SOW, Hurlburt Field. Conversions of earlier gunships. Thirteen conversions by Rockwell delivered to 4th SOS in 1994-95. Four remaining conversions done by Boeing in recent years. In 1994-95. Four remaining conversions done by Boeing in recent years. All weapons can be subordinated to the APQ-180 digital fire-control radar, FLIR, or all-light-level television (ALLTV) for adverse weather attack operations.

**AC-130J Ghost rider**

**Brief:** Fourth generation gunship upgraded with digital avionics, trainable 30 mm and 105 mm canons, and low-yield PJMs, primarily to conduct CAS and air interdiction missions and is suited particularly for urban operations.

**Function:** Attack aircraft.

**Operator:** AFSOC.

**First Flight:** April 5, 1996 (basic C-130J).

**Delivered:** from 2014.

**IOC:** 2017 (planned).

**Production:** 32 (to be converted from new-build MC-130Js).

**Inventory:** 0.

**Aircraft Location:** Cannon AFB, N.M. (initial).

**Contractor:** Lockheed Martin.

**Power Plant:** four Rolls-Royce AE 2100D3 turboprops, 4,591 shp.

**Armament:** two pilots, two CSOs, three enlisted gunners.

**Dimensions:** span 132.6 ft, length 97.7 ft, height 38.8 ft.

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

**Ceiling:** 32,000 ft., 42,000 lb payload.

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

**Armament:** 30 mm GAU-23/A cannon; 105 mm cannon; PJMs.

**COMMENTARY**

A C-130J significantly modified to include fully integrated digital avionics cockpit, GPS/INS, integrated defensive systems and color weather radar, and PSP. Designed to provide ground forces with a direct-fire platform that is persistent, suited for urban operations, and delivers precision low-yield munitions against ground targets. Air interdiction missions may cover preplanned targets or targets of opportunity and include strike coordination and reconnaissance.

**Extant Variant**

- **AC-130J Ghost rider.** PSP includes a mission management console, robust communications suite, two EO/IR sensors, advanced fire control equipment, PJM delivery capability, and trainable cannons. First delivery expected in 2014, running through FY21. IOC slated for FY17 at Cannon.

**AC-130W Stinger II**

**Brief:** Highly modified C-130H aircraft that primarily provides armed overwatch, performing reconnaissance and direct ordnance delivery to support ground troops.

**Function:** Armed overwatch for special operations activities.

**Operator:** AFSOC.

**First Flight:** circa 2006 (Combat Spear).

**Delivered:** November 2010 (Dragon Spear).

**IOC:** 2010 (Dragan Spear).

**Production:** 12 (converted).

**Inventory:** 12.

**Aircraft Location:** Cannon AFB, N.M.

**Contractor:** Lockheed Martin.

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

**Armament:** two pilots, two CSOs, flight crew; PGMs.

**Dimensions:** span 132.6 ft, length 97.7 ft, height 38.8 ft.

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

**Ceiling:** 32,000 ft., 42,000 lb payload.

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

**Armament:** 30 mm GAU-23/A cannon; 105 mm cannon; PJMs.

**COMMENTARY**

A C-130W significantly modified to include fully integrated digital avionics cockpit, GPS/INS, integrated defensive systems and color weather radar, and PSP. Designed to provide ground forces with a direct-fire platform that is persistent, suited for urban operations, and delivers precision low-yield munitions against ground targets. Air interdiction missions may cover preplanned targets or targets of opportunity and include strike coordination and reconnaissance.

**Extant Variant**

- **AC-130W Stinger II.** PSP includes a mission management console, robust communications suite, two EO/IR sensors, advanced fire control equipment, PJM delivery capability, and trainable cannons. First delivery expected in 2014, running through FY21. IOC slated for FY17 at Cannon.
Function: Mobility support to SOF operations worldwide.

**C-146 Wolfhound**

AFRC units also provide AvFID aircraft training. Associate) out of Duke Field, where AFSOC and

reserve. Operated by AFSOC's 6th SOS Combat

runways. It is reconfigurable to support both airland

as the M-28 Skytruck, the C-145A is a high-wing

n

Extant Variant(s)

■ AC-130W Stinger II. Performs 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 C2. PSP mod includes a mission management console, communications suite, and flight deck hardware. SDB capability deployed in July 2012.

**C-145A Skytruck**

**Function:** Foreign aviation forces trainer and
direct support to SOF teams worldwide, utilizing
the AvFID mission and light mobility operations.

**Function:** Foreign aviation forces trainer and
direct support to SOF teams worldwide, utilizing
the AvFID mission and light mobility operations.

**Operator:** FSSC, AFRIC (classic associate).

**First Flight:** July 1993 (PZL M-28).

**Delivered:** from 2009.

**IOC:** n/a.

**Production:** 16 (planned).

**Inventory:** USSOCOM-owned.

**Aircraft Location:** Duke Field, Fla.

**Contractor:** PZL Mielec (Sikorsky subsidiary)

**Power Plant:** two Pratt & Whitney PT6A-65B turboprops, 1,100 shp.

**Accommodation:** crew: two pilots, one loadmaster. Load: 16 passengers or 10 paratroopers; up to four litters; max cargo 5,000 lb.

**Dimensions:** span 72.3 ft, length 43.3 ft, height 16.1 ft.

**Weight:** max T-O 16,534 lb.

**Ceiling:** 25,000 ft.

**Performance:** speed 256.5 mph, range 1,161.5 miles.

**COMMENTARY**

Originally purchased by USSOCOM and operated by AFSOC for the NSAv mission, providing dedicated air support for small, detached combat teams, the C-145A flew out of Cannon AFB, N.M., making its first deployment in March 2011 to support operations in Afghanistan. In 2012 USSOCOM began several asset realignments, including shifting the C-145As to support the AvFID mission as part of increased emphasis on the Combat Aviation Advisors role in building partner-nation capabilities. The last two of 10 aircraft departed Cannon for Duke Field in March 2013. Duke is slated to receive its six final C-145As in FY15.

**Extant Variant(s)**

■ C-145A. Built by Polish manufacturer PZL Mielec as the M-28 Skytruck, the C-145A is a high-wing aircraft with twin vertical fins and a nonretractable tricycle landing gear capable of STOL to unprepared runways. It is reconfigurable to support both airland and airdrop (max. 2,400 lb) of cargo, casualty evacuation, CSAR, humanitarian assistance, and disaster relief. Operated by AFSOC’s 6th SOS Combat Aviation Advisors and AFRC’s 711th SOS (classic associate) out of Duke Field, where AFSOC and AFRC units also provide AvFID aircraft training.

**Function:** Multimission mobility.

**C-146 Wolfhound**

**Brief:** STOL, multipurpose utility aircraft used for the AvFID mission and light mobility operations.

**Function:** Foreign aviation forces trainer and
direct support to SOF teams worldwide, utilizing
the AvFID mission and light mobility operations.

**Operator:** FSSC, AFRIC (classic associate).

**First Flight:** July 1993 (PZL M-28).

**Delivered:** from 2009.

**IOC:** n/a.

**Production:** 16 (planned).

**Inventory:** USSOCOM-owned.

**Aircraft Location:** Duke Field, Fla.

**Contractor:** PZL Mielec (Sikorsky subsidiary)

**Power Plant:** two Pratt & Whitney PT6A-65B turboprops, 1,100 shp.

**Accommodation:** crew: two pilots, one loadmaster. Load: 16 passengers or 10 paratroopers; up to four litters; max cargo 5,000 lb.

**Dimensions:** span 72.3 ft, length 43.3 ft, height 16.1 ft.

**Weight:** max T-O 16,534 lb.

**Ceiling:** 25,000 ft.

**Performance:** speed 256.5 mph, range 1,161.5 miles.

**COMMENTARY**

Originally purchased by USSOCOM and operated by AFSOC for the NSAv mission, providing dedicated air support for small, detached combat teams, the C-145A flew out of Cannon AFB, N.M., making its first deployment in March 2011 to support operations in Afghanistan. In 2012 USSOCOM began several asset realignments, including shifting the C-145As to support the AvFID mission as part of increased emphasis on the Combat Aviation Advisors role in building partner-nation capabilities. The last two of 10 aircraft departed Cannon for Duke Field in March 2013. Duke is slated to receive its six final C-145As in FY15.

**Extant Variant(s)**

■ C-145A. Built by Polish manufacturer PZL Mielec as the M-28 Skytruck, the C-145A is a high-wing aircraft with twin vertical fins and a nonretractable tricycle landing gear capable of STOL to unprepared runways. It is reconfigurable to support both airland and airdrop (max. 2,400 lb) of cargo, casualty evacuation, CSAR, humanitarian assistance, and disaster relief. Operated by AFSOC’s 6th SOS Combat Aviation Advisors and AFRC’s 711th SOS (classic associate) out of Duke Field, where AFSOC and AFRC units also provide AvFID aircraft training.

**Function:** Multimission mobility.

**C-145A Skytruck**

**Operator:** FSSC, AFRIC (classic associate).

**First Flight:** December 1991 (Do-328).

**Delivered:** from 2011.

**IOC:** n/a.

**Production:** 17 (converted).

**Inventory:** USSOCOM-owned.

**Aircraft Location:** Cannon AFB, N.M.

**Contractor:** Fairchild-Dornier; Sierra Nevada Corp.

**Power Plant:** two Pratt & Whitney 119C turbo -props, 2,150 shp.

**Accommodation:** crew: two pilots, one loadmaster. Load: 27 passengers; up to four litters; max cargo 6,000 lb.

**Dimensions:** span 69.6 ft, length 68.8 ft, height 23.8 ft.

**Weight:** max T-O 30,843 lb.

**Ceiling:** 31,000 ft.

**Performance:** speed 335 mph, range 2,070 miles (2,000 lb cargo).

**COMMENTARY**

Purchased by USSOCOM and operated by AFSOC for the NSAv mission, the C-146A provides direct support to SOF teams worldwide, utilizing prepared and semiprepared airfields. Sierra Nevada Corp. has overseen modifications and took delivery of the 17th aircraft from Fairchild-Dornier in summer 2013.

**Extant Variant(s)**

■ C-146A. Preowned aircraft built by German manufacturer Dornier as the Do-328, the C-146A has received NSAv-specific modifications, including communications suite (ARC-231, PRC-117, and Iridium package), troop/cargo-capable cabin, casualty evacuation capability, NVG compatibility, and STOL and austere landing zone enhancements. First deployed in October 2011 to support USAF/NORCOM operations.

**CV-22 Osprey**

**Brief:** A long-range, tilt-rotor, multimission transport aircraft designed to have the maneuverability and lift capability of a helicopter and the speed and range of a fixed wing aircraft. It can operate in adverse weather and restricted visibility.

**Function:** Multimission airlift.

**Operator:** AETC, AFSOC.

**First Flight:** March 19, 1989 (V-22).

**Delivered:** 2006.

**IOC:** 2009.

**Production:** 52 (CV-22; incl two replacements).

**Inventory:** 32.

**Aircraft Location:** Hurlburt Field, Fla.; Kirtland AFB, N.M.; RAF Mildenhall, UK.

**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 T-O 60,500 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.

**Commentary**

Multimission, dual-piloted, self-deployable, medium-lift vertical takeoff and landing (VTOL) tilt-rotor aircraft, operated by both the US Air Force and US Marine Corps. First operational deployment, to Africa, took place in November 2008; first combat deployment, to Iraq, in summer 2009. RAF Mildenhall received the first of 10 CV-22s in June 2013. Final delivery expected in 2014. FY15 budget would fund CV-22 production line shut down and Pacific region squadron standup.

**Extant Variant(s)**

■ CV-22B. Air Force’s variant of the V-22 Osprey. Operates with forces of USSOCOM. Mission is long-range clandestine penetration of denied areas in adverse weather and low visibility to infiltrate, exfiltrate, resupply SOF. Optimized for special missions, including in nuclear, biological, and chemical (NBC) warfare conditions. Designed to operate from land bases, austere forward operating locations, and air capable ships without reconfiguration.
Equipped with fully integrated precision navigation suite, a digital cockpit management system, FLIR, integrated NVG HUD, TFR/TA radar, digital map system. Has robust self-defense avionics and secure anti-jam communications.

**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.

**IOC:** 1966 MC-130E; June 1981 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).

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

**Accommodation:** MC-130E crew: officer, two pilots, two navigators, EWO; enlisted: flight engineer, radio operator, two loadmasters. MC-130E load: 53 troops or 26 para troopers. MC-130H crew: officer, two pilots, navigator, EWO; enlisted: flight engineer, two loadmasters. MC-130H load: 77 troops, 52 para troopers, 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.

**COMMENTARY**

Special operations mobility aircraft. Used primarily to conduct infiltration, resupply, and exfiltration of SOF. Capable of airdrop using Joint Precision Air Drop System, landing on austere and unmarked landing zones. Can support psychological operations with leaflet bundle drops. Equipped with TFR/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 or to air-drop/resupply special operations forces.

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

**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:** 37 (planned).

**Inventory:** 13.

**Aircraft Location:** Cannon AFB, N.M.; Kirtland AFB, N.M.; RAF Mildenhall, UK.

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

**Power Plant:** four Rolls Royce AE2100D3 turboprops, each 4,910 shp.

**Accommodation:** crew: officer, two pilots, CSO; enlisted: two loadmasters. Load: n/a.

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

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

**Ceiling:** 28,000 ft 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 special operations forces vertical-lift and tilt-rotor assets and the infiltration, exfiltration, and resupply of SOF by airdrop or air-land 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-130P Mods:** Include fully integrated INS/GPS systems, color LCDs, NVG lighting, HDUs, integrated defensive systems, digital mapping职业教育 system, EO/IR system, single 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 reduce 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:** 1966.

**Production:** (converted).

**Inventory:** 23.

**Aircraft Location:** Hurlburt Field, Fla.; Kadena AB, Japan; Kirtland AFB, N.M.; Moffett Field, Calif.

**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 98.8 ft, height 38.5 ft.

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

**Ceiling:** 33,000 ft.

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

**COMMENTARY**

Specialized tanker aircraft flies clandestine formation or single-ship intrusion of hostile territory missions to provide air refueling of SOF helicopters and the infiltration, exfiltration, and resupply of SOF by airdrop or air-land operations.

**Extant Variant(s)**

- **MC-130P Mods:** Include fully integrated INS/GPS system, NVG-compatible interior and exterior lighting, FLIR, radar and missile warning receivers, chaff and flare dispensers, satellite and data-burst communications.

**U-28A**

**Brief:** A militarized version of the Pilatus PC-12 that provides tactical airborne ISR support for special operations teams.

**Function:** Tactial ISR.

**Operator:** AFSC, AFRC.

**First Flight:** circa 1994 (PC-12).

**Delivered:** 2006.

**IOC:** n/a.

**Production:** (converted).

**Inventory:** USSOCOM-owned.

**Aircraft Location:** Cannon AFB, N.M.; Hurlburt Field, Fla.

**Contractor:** Pilatus Aircraft Ltd.

**Power Plant:** single Pratt & Whitney PT6A-67B, 1,200 shp.

**Accommodation:** officer: two pilots, one CSO, one tactical systems officer.

**Dimensions:** span 53.3 ft, length 47.3 ft, height 14 ft.

**Weight:** max T-O 10,935 lb.

**Ceiling:** 30,000 ft.

**Performance:** speed 253 mph, range 1,725 miles.

**COMMENTARY**

Modified Pilatus PC-12 aircraft flies worldwide special operations missions. USSOCOM owned and AFSC operated for the NSA role. AFRC provides associate instructors for flying training.

**Extant Variant(s)**

- **U-28A Mods:** Include advanced radio-commu-
ISR/BM/C3 Aircraft

E-3 Sentry
Brief: Heavily modified Boeing 707-320B aircraft, fitted with an extensive complement of mission avionics providing all-weather air surveillance and C2 for tactical and air defense forces.
Function: Airborne early warning, tactical BM, and C2 of theater air forces.
Operator: ACC, PACAF, AFRC.
Delivered: March 1977-84.
Production: 33.
Inventory: 22 E-3B; six E-3C; three E-3G.
Aircraft Location: JB Elmendorf-Richardson, Alaska; 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.
Dimensions: span 145.8 ft, length 152.9 ft, height 41.8 ft.
Weight: max T-O 335,000 lb.
Ceiling: above 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, austere 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. 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-8 JSTARS
Brief: A modified Boeing 707-300 series with long-range air-to-ground radar capable of locating, classifying, and tracking vehicles on the ground.
Function: Ground surveillance, BM, C2 aircraft.
Operator: ACC (active associate) and ANG.
Contractor: Boeing, Rockwell, Raytheon.
Power Plant: four General Electric CF6-50E2 turbofans, each 52,500 lb thrust.
Accommodation: full flight crew.
Dimensions: span 145.8 ft, length 152.9 ft, height 41.8 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
Airborne equipment, aircraft equipped with a canop-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 retired one aircraft damaged beyond economical repair. Development testing of the first new production-configured Pratt & Whitney JTBD-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 continuing some upgrades through FY15 but expects to begin an aircraft recapitalization program in FY18.

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 (cryptologic experienced), four cryptologic linguists, acquisition operator, and airborne maintenance technician.
Dimensions: span 132.6 ft, length 99 ft, height 38 ft.
Weight: max T-O 155,000 lb.
Ceiling: 25,000 ft.
Performance: speed 300 mph at 20,000 ft.

**COMMENTARY**
Aircraft designed to disrupt enemy C2 communications and limit adversary coordination essential for enemy force management.

**Extant Variant(s)**
- **EC-130H.** Mods include EA system and air refueling capability. All aircraft retrofitted to Block 35. Mission equipment baseline upgrades occur about every three years to ensure continued protection against evolving threats. Also replacing center wing box to meet wing life service life expiration.

EC-130J Commando Solo (CS/Super J SJ)
Brief: A C-130J-modified for psychological warfare broadcast and information operations (CS) and special operations mobility missions (SJ).
Function: Psychological and SOF mobility operations.
Operator: ANG.
First Flight: April 5, 1996 (C-130J).
Delivered: March 1980 (J model from 2003).
IOC: December 1980 (EC-130E).
Production: seven.
Inventory: seven (three CS, four SJ).
Aircraft Location: Harrisburg Arpt., Pa.
Contractor: Lockheed Martin, Raytheon.
Power Plant: four Rolls Royce-Allison AE2100D3 turboprops, each 4,637 shp.
Accommodation: officer: two pilots, flight systems officer, mission systems officer; enlisted: two loadmasters, five electronic communications systems operators (CS).
Dimensions: span 132.6 ft, length 97.8 ft, height 38.8 ft.
Weight: max T-O 164,000 lb.
Ceiling: 28,000 ft.
Performance: speed 335 mph cruise, range 2,645 miles.

**COMMENTARY**
Commando Solo aircraft have been employed for psychological operations in every US war and most other contingency operations since 1980; providing Military Information Support Operation (MISO) and civil affairs broadcasts. Recapitalization to the J model coincided with introduction of a secondary mission—special operations mobility, known as SOFFLEX—and planned introduction of a roll on/off (RORO) broadcast package to enable the Super J aircraft to perform the primary mission as lower cost modular Commando Solo aircraft.

**Extant Variant(s)**
- **EC-130J Commando Solo.** Three heavily modified C-130J aircraft used by ANG’s 193rd SOW as a broadcast station for psychological warfare operations. Specialized mods include enhanced navigation systems, self-protection equipment, and worldwide color television configuration. Air refuelable. First entered service in 2004, with deployments to contingency operations beginning in 2005.

EC-130 Super J. Four modified C-130J aircraft used by ANG’s 193rd SOW for SOFFLEX missions, including personnel and cargo airdrop, combat offload, and infiltration/exfiltration. Plans call for incorporation of a RORO psychological broadcast package (potentially the Army’s Fly-Away Broadcast System).

**MC-12 Liberty** (SrA. Tiffany Troja)

MC-12W 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: from April 2009.
IOC: June 2009.
Production: 42 (planned).
Inventory: 41.
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 57.9 ft, length 46.7 ft, height 14.3 ft.
Weight: max T-O 15,000 lb (350) and 16,500 lb (350ER).
Ceiling: 35,000 ft.
Performance: speed 350 mph; range 1,725 miles (350) and 2,760 miles (350ER).

**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 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 TACAN system. USAF plans to transfer the MC-12W to USUOCOM and the Army at end of FY14.

MQ-1 Predator
Brief: A medium-altitude, long-endurance RPA, providing joint force commanders with a multimission asset that combines imagery sensors with strike capability.
Function: Armed reconnaissance, airborne surveillance, target acquisition.
Operator: ACC, AFSOC, ANG, AFRIC.
Production: 268 air vehicles.

**MC-12 Liberty** (SrA. Tiffany Troja)

Inventory: 156.
Aircraft Location: Cannon AFB, N.M.; Creech AFB, Nev.; Fort Polk Airfield, La.; Fort Huachuca, Ariz.; Grand Forks AFB, N.D.; Holloman AFB, N.M.; March ARB, Calif.; Whiteman AFB, Mo.
Contractor: General Atomics Aeronautical Systems.
Power Plant: one Rotax 914F turbo engine.
Accommodation: GCS; pilot, sensor operator.
Dimensions: span 55 ft, length 27 ft, height 6.5 ft.
Weight: max T-O 2,250 lb.
Ceiling: 25,000 ft.
Performance: speed 84-135 mph, range 770 miles, max endurance 40 hr.
Armament: Two AGM-114 Hellfire missiles.

**COMMENTARY**
Fully operational system comprises four air vehicles, GCS, satellite link, and about 55 personnel for 24-hour operations. Became a fully USAF system in 1996. Systems armed with two Hellfire missiles since 2002, at which time designation changed from RQ-1 to MQ-1 to denote multimission capability. USAF forward deploys launch and recovery equipment (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 multispectral/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 to BLOS satcom data link. USAF received its last MQ-1B in March 2011, but continues to fund GCS and airframe mods.

MQ-9 Reaper
Brief: A medium-to-high altitude, long-endurance RPA. Operates as a persistent hunter-killer.
Operator: ACC, AFSOC, ANG.
Delivered: November 2003.
Production: 319 (planned).
Inventory: 104.
GCS Location: Cannon AFB, N.M.; Creech AFB, Nev.; Holloman AFB, N.M.; Hancock Field, N.Y. Planned: Ellsworth AFB, S.D.
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; L3 Communications; Raytheon.
Power Plant: one Honeywell TPE331-10GD turboprop, max 900 shp.
Accommodation: GCS; pilot, sensor operator.
Dimensions: span 66 ft, length 36 ft, height 12.5 ft.
Weight: max T-O 10,500 lb.
Ceiling: 50,000 ft.
Performance: cruise speed 230 mph, range 1,150 miles, endurance 14+ hr.
Armament: combination of AGM-114 Hellfires,
SA-227-DC C-26 Metro 23 with surveillance and Specially configured variant of the Fairchild RC-26 Condor recording system notes position, altitude, time, roll at approximately 35,000 ft. The data annotation and each picture and is used for high-altitude photography.

Extant Variant(s)

- SA-227-DC C-26 Metro 23

Performance:
- 50,000 ft (basic C-135).
- Dimensions:
  - span 131 ft, length 135 ft, height 42 ft.
  - Ceiling: 25,000 ft.
  - Weight: max T-O 16,500 lb.
  - Performance: speed 534 mph, range 2070 miles.

COMMENTARY

Electronic reconnaissance aircraft.
- Function: Counterdrug airborne day/night surveillance and C2.
- Operator: ANG.
- First Flight: 1990.
- Delivered: C-26 first delivered 1989.
- IOC: n/a.
- 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 534 mph, range 2070 miles.

Extant Variant(s)

- MQ-9 Reaper (Lt. Col. Leslie Pratt)

GBU-12/49 Paveway IIs, 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 payload combinations.

Extant Variant(s)

- MQ-9B Reaper. Operational in Afghanistan since 2007. The baseline aircraft is an MTS-B multispectral 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. FY15 funding would continue to support GCS and airframe capability development activities, including leveraging Gorgon Stare quick reaction capability; pursuing Block 5 (with two ARC-210 radios, high-definition MTS-B, and more); adding Step Stare mode to the EOIR sensor; and modifying additional airframes to ER configuration.

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.
- Delivered: 1993-96.
- Production: three.
- Inventory: two.
- Aircraft Location: Offutt AFB, Neb.
- Contractor: Boeing.
- Power Plant: four Pratt & Whitney TF33-P-5 turbofans, 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 3900 miles.

COMMENTARY

Aircraft performs special missions during commercial or governmental airlift missions, providing real-time streaming video footage to ground personnel.

Extant Variant(s)

- MQ-9B. Specialized equipment includes state-of-the-art digital aerial cameras and an IR video camera. An extensive communications suite allows communications from 29 to 960 MHz, including provisions for plugging in 800 MHz handheld radios, and air phone capabilities. ANG is seeking funding to reconfigure Block 25 aircraft, which no longer meet either combatant commander or domestic requirements because of outdated and problematic mission management system, EO/IR sensor, and communication suite.

RC-13SS Cobra Ball

Brief: A Masint collector equipped with special EO instruments for observing ballistic missile flights at long range.

Function: Electronic reconnaissance aircraft.
- Operator: ACC.
- First Flight: n/a.
- Production: converted.
- Inventory: three.
- Aircraft Location: Offutt AFB, Neb.
- Contractor: Boeing (original airframe), L3 Communications.
- Power Plant: four CFM International F108-CF-201 turbosfans, each 21,600 lb thrust.
- Accommodation: flight crew; two pilots, navigator. Mission crew: officer; three EWOs; enlisted: two airborne systems engineers, two airborne mission specialists.
- Dimensions: span 131 ft, length 135 ft, height 42 ft.
- Weight: max T-O 297,000 lb.
- Ceiling: 45,000 ft.
- Performance: speed 500+ mph, range 3,900 miles.

COMMENTARY

Monitors missile-associated signatures and tracks missiles during boost and re-entry phases to provide reconnaissance for treaty verification and theater ballistic missile proliferation.

Extant Variant(s)

- RC-13SS Cobra Ball. Provides the capability 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: n/a.
- Delivered: circa 1970-78.
- IOC: circa 1970s.
- Production: converted.
- Inventory: two.
- Aircraft Location: Offutt AFB, Neb.
- Contractor: Boeing (original airframe), L3 Communications, Textron.
- Power Plant: four CFM International F108-CF-201 turbosfans, each 21,600 lb thrust.
- Accommodation: flight crew; two pilots, two navigators, two airborne systems engineers; mission crew: 15 EWO officers, six or more electronic, technical, mission area specialists.
- Dimensions: span 135 ft, length 140 ft, height 42 ft.
- Weight: max T-O 299,000 lb.
- Ceiling: 35,000 ft.
Performance: speed 500+ mph, range unlimited with air refueling.

**COMMENTARY**
Collects and examines data on airborne, land, and naval radar systems, providing strategic analysis for National Command Authorities and combatant forces. Distinctive antennae arrays on the chin and wing tips, large cheek fairings, and extended tail. Each airframe has slightly unique reconnaissance equipment.

**Extant Variant(s)**

- RC-135U Combat Sent. Uses special Sigint suite to collect scientific and technical Elint data against air-, land-, and sea-based emitter systems. Critical to effective design, programming, and reprogramming of RWRs as well as jammers, decoys, and anti-radiation missiles and to the development of effective threat simulators.

RC-135V/W Rivet Joint

**Brief:** Contains highly advanced electronic signal collection systems to acquire real-time Elint and Sigint data for theater and tactical commanders.

**Function:** Electronic reconnaissance aircraft.

**Operator:** ACC.

**First Flight:** n/a.

**Delivered:** circa 1973-99. Continuous equipment updates.

**IOC:** circa 1973.

**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.

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

**Extant Variant(s)**

- RC-135/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 sensor and mission planning system upgrades.

- TC-135W. Used for training purposes.

**RQ-4 Global Hawk**

**Brief:** A high-altitude, long-range, long-endurance RPA.

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

**Operator:** ACC.

**First Flight:** Feb. 28, 1998.

**Delivered:** from 1995 (ACTD versions). IOC: Block 30 August 2011; Block 40 FY14 (planned)

**Production:** TBD.

**Inventory:** 25.

**Aircraft Location:** Beale AFB, Calif.; Grand Forks AFB, N.D.; Andersen AFB, Guam. Planned: two other forward operating bases.

**Contractor:** Northrop Grumman, Raytheon, L3 Communications.

**Power Plant:** one Rolls Royce-North American F137-RR-100 turbofan, 7,600 lb thrust.

**Accommodation:** one launch and recovery element (LRE) pilot, one mission control element (MCE) pilot, one MCE sensor operator.

**Dimensions:** span 130.9 ft, length 47.6 ft, height 15.3 ft.

**Weight:** max T-O 32,500 lb.

**Ceiling:** 60,000 ft.

**Performance:** speed 356.5 mph, range 10,000 miles.

**COMMENTARY**
The RQ-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)**

- RQ-170. 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-2S).

**Delivered:** 1955-October 1989.

**IOC:** circa 1956.

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

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

**Aircraft Location:** Beale AFB, Calif.

**Contractor:** Lockheed Martin.

**Power Plant:** General Electric F118-GE-101 turbojet.

**Accommodation:** one (two for trainer).

**Dimensions:** span 105 ft, length 63 ft, height 16 ft.

**Weight:** max T-O 40,000 lb.

**Ceiling:** above 70,000 ft.

**Performance:** speed 410 mph, range 7,000+ miles.

**COMMENTARY**
The U-2 is the Air Force’s premier high-altitude reconnaissance platform, capable of carrying Multi-int sensors simultaneously. Although the U-2 was designed initially in the 1950s, current aircraft were produced primarily in the 1980s, when the
production line was reopened to produce the TR-1, a significantly larger and more capable version of the aircraft. Conversion to 5 model configuration began in October 1994.

**Extant Variant(s)**
- U-2, A single-seat aircraft. Each current operation involves a U-2 in Block 20, configuration, featuring a new glass cockpit using MDFs, a digital autopilot, a new EW system, and new data links. Sensor upgrades include the ASARS-2A SAR sensor; SVERDS-2A EO imagery system (providing multispectral and IR capability); and enhanced RF-intelligence capability. Optical bar camera is also still in use, providing broad-area synoptic imagery coverage. With the FY15 budget, USAF announced plans to retire the U-2 fleet beginning in FY16.
- TU-2ST. A two-seat trainer aircraft.

**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 turboprops, each 4,700 shp.

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

**Dimensions:** span 132.5 ft, length 99.3 ft, height 38.5 ft.

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

**Ceiling:** 28,000 ft.

**Performance:** speed 417 mph at 22,000 ft, range 1,841 miles with payload, endurance 18 hr at 300 mph.

**COMMENTARY**

Flown by AFRC's "Hurricane Hunters" to provide forecasting data for tropical disturbances and storms, hurricanes, and winter storms. An average mission lasts 11 hours and covers almost 3,500 miles. Configured with sallitized weather instrumentation.

**Extant Variant(s)**

- **WC-130J.** Weather reconnaissance version of the most recent C-130 model, operated by the 53rd 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 WindFinder System, equipped with HP radio and sensing devices and released about every 400 miles over water, measuring and relaying to the aircraft a vertical atmospheric profile.

**HC-130J King**

**Brief:** An extended-range version of the C-130J dedicated to 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.

**Production:** 37 planned.

**Inventory:** seven.

**Aircraft Location:** Davis-Monthan AFB, Ariz.; Moody AFB, Ga.; Patrick AFB, Fla.

**Contractor:** Lockheed Martin.

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

**Accommodation:** a 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.

**COMMENTARY**

Replacing HC-130N/Ps. Based on USMC KC-135J 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/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 aerially.

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

- **HC-130Q.** First ACC aircraft delivered to 79th RQS at Davis-Monthan Sept. 24, 2011; first training aircraft delivered to 58th SOW at Kirtland Sept. 29, 2011. Plans also would add the Lightweight Airborne Radio System V12 to speed locating personnel and add the ALO 213 EW management system to automate/integrate defensive systems.

**HC-130 King (MSgt. Sean Mitchell)**

**Brief:** An extended-range, CSAR-configured C-130 that extends the range of rescue helicopters through in-flight refueling and performs tactical delivery of paraservice (PJ) specialists and/or equipment in hostile environments.

**Function:** Aerial refueling/transport.

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

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

**Delivered:** from 1965.

**IOC:** 1966.

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

**Inventory:** nine HC-130N; 18 HC-130P.

**Aircraft Location:** Davis-Monthan AFB, Ariz.; Kirtland AFB, N.M.; JB Elmendorf-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 97.8 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.

**COMMENTARY**

Conducted joint missions to austere airfields and denied territory for expeditionary, all-weather personnel recovery operations, including airdrop, airland, heli-copter air-to-air refueling and forward areas 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-130V.** Dedicated as a personnel recovery platform, designed to operate in hostile environments and provide C2 and helicopter in-flight refueling.

- **HC-130Q.** First ACC aircraft delivered to 79th RQS at Davis-Monthan Sept. 24, 2011; first training aircraft delivered to 58th SOW at Kirtland Sept. 29, 2011. Plans also would add the Lightweight Airborne Radio System V12 to speed locating personnel and add the ALO 213 EW management system to automate/integrate defensive systems.

**WC-135 Constant Phoenix**

**Brief:** Collects particulate and gaseous effluent and debris samples 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:** 1965-95.

**IOC:** December 1965.

**Production:** converted.

**Inventory:** two.

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

**Contractor:** Boeing.

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

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

**Dimensions:** spa span 31 ft, length 140 ft, height 42 ft.

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

**Ceiling:** 4,000+ miles.

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

**COMMENTARY**


**Extant Variant(s)**

- **WC-135W.** Either a 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.
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KC-10 Extender (Sgt. J. G. Buzanowski)

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 turbofan engines, 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: Max cruising speed 619 mph, range 9,000 miles, max T-O 415,000 lb.

COMMENTARY
USAF's largest air-refueling aircraft. Combines tasks of tanker and cargo aircraft simultaneously, enabling it to support worldwide fighter deployments. Employs advanced refueling technology.

KC-46 Extender

IOC: August 2018.
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 turbofan engines, 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: Max cruising speed 619 mph, range 9,000 miles, max T-O 415,000 lb.

COMMENTARY
USAF's largest air-refueling aircraft. Combines tasks of tanker and cargo aircraft simultaneously, enabling it to support worldwide fighter deployments. Employs advanced refueling technology.

KC-135 Stratotanker

First Flight: August 1956.
Delivered: January 1957-65.
IOC: June 1957, Castle AFB, Calif.
Production: 732.
Inventory: 354 KC-135R; 54 KC-135T.
Contractor: Boeing.
Power Plant: Four CFM International CFM56-2 (USAF designation F108) turbofan engines. 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, on one 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 QATM mod (completed 2011).

Extant Variant(s)

1. KC-135R. Re-engined KC-135As with CFM56-2 turboshaft engines. 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, on one 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 QATM mod (completed 2011). Link 16 capability also added to a limited number. FY15 budget would fund repairs to the now 10-year-old Pacer CRAG mods. Fleet service life projected to 2045.

2. KC-135ST (formerly KC-135Q) can carry different fuels in the wing and body tanks. Under same upgrade programs as R models.

Transports

C-5 Galaxy

First Flight: June 30, 1968.
Delivered: October 11, 1983.
IOC: September 1970.
Production: 131.
Inventory: 31 C-5A; 29 C-5B; two C-5SC; 10 C-5M.
Aircraft Location: Dover AFB, Del.; Eastern West Virginia Arpt., W.Va.; JB-7Ackland, 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 F110-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.

KC-135 Stratotanker (SrA. Amber Russell)
C-12 Huron

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

Function: Special airlift.

Operator: AFMC, PACAF.

First Flight: Oct. 27, 1972 (Super King Air 200).


Production: 88.

C-17 Globemaster III

Brief: A heavy-lift, air refuelable cargo transport for intertheater (strategic) and intratheater (tactical) direct delivery airlift of all classes of military cargo.

Function: Cargo and troop transport.

Operator: AETC, AFMC, AMC, PACAF, ANG, AFRIC.


Production: 223.

Inventory: 1,887.

Aircraft Location: JB Andrews, Md.; Ramstein AB, Germany.

Contractor: Gulfstream.

Power Plant: Two Rolls Royce Spey MK511-B turbofans (C-20B), each 11,400 lb thrust; two Rolls Royce Tay MK611-B turbofans (C-20H), each 13,850 lb thrust.

Accommodation: Two pilots, flight engineer, communication system operator, flight attendant. Load: 18 passengers.

Dimensions: span 140 ft, length 139.3 ft (B), 149 ft (H), height 53.1 ft.

Weight: max T-O 69,700 lb (B), 74,600 lb (H).

Ceiling: 45,000 ft.

Performance: speed 508 mph at 25,000 ft, range 2,760 miles with 169,000 lb payload.

COMMENTARY

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

Extant Variant(s)

C-20A/B: with advanced mission communications equipment and revised interior, delivered in 1988.

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

C-21 Learjet

Brief: 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.
Aircraft Location: JB Andrews, Md.; Peterson AFB, Colo.; Ramstein AB, Germany; Scott AFB, Ill.
Contractor: Gates Learjet.
Power Plant: 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. Upgraded included color weather radar, TACAN, and HF/VHF/UHF radios.

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: 13.
Contractor: L-3 Communications.
Power Plant: two Rolls Royce AE 2100-D2 turbofans, 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 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 Aleria G.222, selected in 2007 to fulfill the Joint Cargo Aircraft requirement. Acquired to support ground forces served only by the most basic airstrips or for missions where the C-130 would operate at half-load capacity. With USAF decision to discontinue all C-27Js, USSOCOM planned to take some, and Congress directed in the FY14 National Defense Authorization Act that the remainder go to Homeland Security for use by the Coast Guard.

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-32 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.

AirCraft Location: JB Andrews, Md.
Contractor: Boeing.
Power Plant: two Pratt & Whitney PW2040 turbofans, each 41,700 lb thrust.
Accommodation: crew; 16 (varies with mission). Load: up to 45 passengers.
Dimensions: span 124.6 ft, length 255.2 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 stateroom 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: JB Andrews, Md.; Hector Arpt., N.D.; Key Field, Miss.; MacDill AFB, Fla.
Contractor: Gulfstream.
Power Plant: two BMW/Rolls Royce BR710A1-10 turbofans, each 14,750 lb thrust.
Accommodation: crew: five. Load: up to 12 passengers.
Dimensions: span 93.5 ft, length 96.4 ft, height 28.0 ft.
Weight: max T-O 90,500 lb.
Ceiling: 51,000 ft.
Performance: speed 600 mph, range 6,300 miles.

COMMENTARY
Military versions of “ultralong range” Gulfstream business aircraft.

Extant Variant(s)

- C-37A. Military version of Gulfstream V Includes separate VIP and passenger areas and a communications system capable of worldwide clear and secure voice and data. Features include enhanced weather radar, autopilot, and advanced HUD.

C-37B. Military version of the Gulfstream 550, modified for VIP duties. Has Honeywell Plane-View flight deck. Upgrades include a directoirel IR countermeasures system.

C-38 Courier
Brief: A twin-engine transcontinental aircraft used to provide VIP transportation for congressional or high-ranking military members.
Function: VIP air transport and operational support.
Operator: ANG.
Production: two.
Inventory: two.
Aircraft Location: JB Andrews, Md.
Contractor: Tracor (Israel Aircraft Industries Ltd).
Power Plant: two AlliedSignal TFE731-40R-200G, each 4,250 lb thrust.
Accommodation: crew; two pilots. Load: up to eight passengers or, for AE role, two Spectrum 500 Life Support Units and two medical attendants; all seats removable for cargo.
Dimensions: span 54.6 ft, length 55.6 ft, height 18.2 ft.
Weight: max T-O 24,800 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-130 Hercules (ATC Rusty Frank)

C-130 Hercules

Brief: A rugged aircraft capable of operating from rough dirt strips to provide theater airlift and para-dropping of troops and equipment into hostile areas.

Function: Inter- and intratheater airlift.

Power Plant: Two General Electric CFM56-7 turbfans, each 27,000 lb thrust.

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

Dimensions: Span 195.7 ft, length 231.8 ft, height 41.7 ft.

Weight: Max T-O: 833,000 lb.

Ceiling: 45,100 ft.

Performance: Speed 630 mph, range 7,800 miles.

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), 28,000 ft (J-30).

Performance: speed 345 mph (E), 366 mph (H), 417 mph (J), 410 mph (J-30); range with 35,000 lb payload 1,438 miles (E), 1,496 miles (H), 1,841 miles (J), 2,417 miles (J-30).

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-AFAFRICA, ANG, AFRC.


IOC: Not available.

Production: 11.

Inventory: Four C-40B; seven C-40C.

Aircraft Location: JB Andrews, Md.; JB Pearl Harbor-Hickam, Hawaii; Ramsey 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 172.6 ft, length 97.8 ft, height 41.2 ft.

Weight: Max T-O: 171,000 lb.

Ceiling: 41,000 ft.

Performance: Speed 530 mph, range 5,750 miles.

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 para-dropping of troops and equipment into hostile areas.

Function: Inter- and intratheater airlift.

Power Plant: Two Allison T56-A-15 turboprops, each 4,200 shp; four Allison T56-A-7 turboprops to support Arctic and Antarctic operations.

Accommodation: E/H crew: two pilots, navigator, flight engineer, loadmaster. J-30 crew: two pilots, loadmaster. E/H/J load: up to 92 combat troops 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 97.8 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), 28,000 ft (J-30).

Performance: Speed 345 mph (E), 366 mph (H), 417 mph (J), 410 mph (J-30); range with 35,000 lb payload 1,438 miles (E), 1,496 miles (H), 1,841 miles (J), 2,417 miles (J-30).

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.

Delivered: August-December 1990.

IOC: Circa 1990.

Production: Two.

Inventory: Two.

Aircraft Location: JB Andrews, Md.

Contractor: Boeing.

Power Plant: Four General Electric CF6-80C2B1 turbfans, each 56,700 lb thrust.

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

Dimensions: Span 195.7 ft, length 231.8 ft, height 63.4 ft.

Weight: Max T-O 833,000 lb.

Ceiling: 45,100 ft.

Performance: Speed 630 mph, range 7,800 miles.


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 AFRC units began receiving J models in 1999, Active units in 2004. First wartime deployment in 2004.

VC-25 Air Force One (Photographer's Mate 2nd Class Daniel J. McLain)
HH-60 Pave Hawk

Brief: Specially modified helicopters used primarily for personnel recovery in hostile environments. Also conduct AE, civil search and rescue, mainly for personnel recovery in hostile environments.

Function: Personnel recovery medium-lift helicopter.

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


Delivered: from 1982.


Production: 105.

Inventory: 99.


Contractor: United Technologies/Sikorsky.

Power Plant: two General Electric T700-GE700/701C turboshafts, each 1,560-1,940 shp.

Accommodation: crew: two pilots, flight engineer; load: mission dependent.

Dimensions: rotor diameter 53.6 ft, overall length 64.7 ft, height 16.7 ft.

Weight: max T-O 22,000 lb.

Ceiling: 14,000 ft.

Performance: speed 184 mph; range 580 miles.

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

COMMENTARY

A highly modified Black Hawk helicopter, USAF acquired the HH-60G in the early 1980s and has been in continuous use by Active Duty, ANG, and AFRC air rescue units. Future plans call for a new Combat Rescue Helicopter, with contract award now expected in summer 2014.

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 countermeasures dispensing system, and two machine guns. FY15 funding would continue mission-critical avionics and safety of flight mods.

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 aircraft.

Function: Light-lift utility and training helicopter.

Operator: AETC, AFDF, AFSC, AFMC, AFSOC, AMC, PACAF.

First Flight: 1956.

Delivered: from September 1970 (UH-1N).


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

Inventory: 25 TH-1H; three UH-1H; 43 UH-1N.


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

Power Plant: TH-1H: one Honeywell T703-L-703 turboshaft, 1,800 shp; UH-1H: one Lycoming T53L-138 turboshaft, 1,400 shp.

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

Dimensions: TH-1H: rotor diameter 48.0 ft, length 57.7 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 search-and-rescue 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. USAF continues conversion/modernization of UH-1 models to TH-1H variant, providing a service life of at least 20 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-1N. 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 58th SOW at Kirtland for training purposes and by the 336th TRG at Fairchild for airlcrew 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.

Trainers

T-1A 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 CSOs.

Function: Advanced pilot training.

Operator: AETC, AFRC.

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


IOC: January 1993.

Production: 180.

Inventory: 178.

Aircraft Location: Columbus AFB, Miss.; Laughlin AFB and JBSDL-Randolph, Tex.; Vance AFB, Okla.; NAS Pensacola, Fla.

Contractor: Hawker Beechcraft.

Power Plant: two Pratt & Whitney Canada JT15D-5B turbfans, 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 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, JBSDL-Randolph, and Sheppard AFB, Tex.; Vance AFB, Okla. USA: NAS Corpus Christi, Tex.; NAS Whiting, 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/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

Trainer based on Swiss Pilatus PC-9 aircraft, modified to include a strengthened fuselage, zero/zero ejection seats, upgraded engine, increased fuel capacity, pressurized cockpit, bird-resistant canopy, and digital avionics.

Extant Variant(s)
T-38A and T-38C Talons (Bobbi Zapka)

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 inter-collegiate competitions.

Function: Training, competition.
Operator: AETF.
Delivered: 1970s.

Inventory: three.
Aircraft Location: USAFA, Colo.
Contractor: Cessna.

T-53A. The aircraft is equipped with modern avionics, GPS, and other equipment appropriate to its mission.

T-53

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

Function: Training.
Operator: AETF.
Delivered: 2012.

Inventory: 24.
Aircraft Location: USAFA, Colo.
Contractor: Cirrus.


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-15 Du Discur/Duo 2B

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

Function: Trainer/cross-country competition sailplane.
Operator: AETF.
Inventory: two (A); three (B).
Aircraft Location: USAFA, Colo.
Contractor: Schmepp-Hirth, Germany.

Accommodation: two-seat (A), single-seat (B).
Dimensions: span 65.6 ft (A), 42.2 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 Schmepp-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.

TG-16 Club

Brief: German-built glider used for training and aerobatic competition.

Function: Trainer/aerobatic glider.
Minuteman III (MSgt. Lorenzo Gaines)

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 Malmstrom, Minot, and Warren. Deactivation of a further 50 completed in July 2008.

Tactical Missiles and Weapons

ADM-160 Miniature Air Launched Decoy
Brief: Air-launched programmable air vehicle that stimulates, dilutes, and confuses the enemy’s integrated air defense system (IADS) by transmitting radio frequency energy that duplicates combat flight profiles and signatures of US and allied aircraft. Jammer version operates alone or in concert with other EW platforms.
Function: Aircraft decoy; close-in radar jammer.
Contractor: Raytheon.
Guidance: GPS/INS.
Dimensions: span 5.6 ft (extended), length 9.3 ft
Weight: less than 300 lb.
Performance: range up to 575 miles; endurance: 90 minutes (50 minutes on-station loiter).

COMMENTARY
MALD is a low-cost, state-of-the-art, modular, autonomous, and programmable flight vehicle that looks like US or allied aircraft to enemy IADS. MALD-J, the first stand-in jammer to enter production, adds radar-jamming capability to the basic decoy platform. F-16C/D or B-52 are lead employment aircraft. USAF capped MALD procurement in FY12, converting Lot 4 to the MALD-J variant. Plans call for a total of 3,000, with 2,400 in the jammer version.

Extant Variant(s)
ADM-160B MALD. DARPA initiated an ACTD program for MALD to respond to an ACC SEAD mission needs statement. First flight was Jan. 5, 1999.
ADM-160C MALD-J. Jammer version fills the stand-in jamming gap for the airborne electronic attack mission. Designed as an expendable, close-in jammer to degrade and deny an early warning or acquisition radar’s ability to establish a track on strike aircraft, it also maintains the ability to fulfill the basic decoy mission.
AIM-120 AMRAAM (Lockheed Martin photo/Paul Weatherman)

AGM-65 Maverick

**Brief:** A tactical, TV or IIR guided or laser guided air-to-surface missile carried by fighters and designed 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/H/K); 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 6.2 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.** A launch-and-leave, EO TV guided missile. Equipped with “scene magnification” TV seeker allowing pilot to identify and lock on to smaller or distant targets.
- **AGM-65D.** Employs an IIR seeker to overcome daylight-only, adverse weather limits of B variant. Became operational in 1986 on A-10 aircraft.
- **AGM-65E.** Laser guided version used by USAF and USMC. Employs heavyweight penetrator warhead.
- **AGM-65H.** Upgraded B variant to increase capability. Undergoing tracker upgrade.
- **AGM-65K.** Modified G variant, replacing IR guidance system with EOTV 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 semiactive 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:** HE 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 50/52s dedicated to SEAD mission.

**Extant Variant(s)**

- **AGM-88A.** Equipped with erasable and electronically programmable read-only memory, permitting in-field changes to missile memory.
- **AGM-88C.** Current production model. Has warhead more lethal than earlier variants. In late 2013 Raytheon began HARM Control Section Mod (HCSM) that will convert current models to new F model, with GPS and improved inertial measurement unit.

**AIM-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:** 2000-2005 (USAF).

**IOC:** 2000 (USAF).

**Contractor:** Raytheon.

**Guidance:** EO TV guided or IIR guidance.

**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, TV/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.

**Extant Variant(s)**

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

**AIM-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. turbofan (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 warhead; 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)**

- **AIM-158B JASSM.** Stealthy LO airframe equipped with GPS/INS guidance, IIR terminal seeker. Low operational support costs.
- **AIM-158J 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. Full rate production planned for FY15.

**AIM-9 Sidewinder**

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

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

**First Flight:** September 1953.

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

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

**Contractor:** Raytheon, Loral.

**Power Plant:** Thiokol Hercules and Bermite 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, adopted 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. FY15 budget request funds Block II full rate production.

**AIM-120 AMRAAM**

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

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

**First Flight:** December 1984.

**Delivered:** from 1988.

**IOC:** September 1991.

**Contractor:** Raytheon.

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

**Guidance:** active radar terminal/inertial mid-course.

**Warhead:** blast fragmentation.

**Dimensions:** span 1.7 ft, length 12ft, diameter 7in.

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

**COMMENTARY**

Joint USAF-Navy project, follow-on to AIM-7 Sparrow. Launch-and-maneuver capability.

**Extant Variant(s)**

- **AIM-120B.** Upgraded, reprogrammable variant of AIM-120A.
- **AIM-120C.** Weapon with smaller, clipped control surfaces to provide for internal carriage in F-22A and F-35 and involves high-angle off-boresight (HOBS) launch capability. In production.
- **AIM-120D.** Adds an enhanced electronic protection suite, two-way data link, improved HOBS, GPS-aided navigation, and increased range. Operational testing suspended in 2012 for software and hardware issues; testing resumed in May 2013 with completion expected in FY14. FY15 budget would fund production and improvements, including fusing and guidance.
CBU-87/103 Combined Effects Munition
Brief: An area munition effective against light armor, materiel, and personnel used by USAF and Navy fighters and bombers for interdiction.
Function: Area munition.
Contractor: Aerojet General, Honeywell, Alliant Tech.
Guidance: none (CBU-87).
Dimensions: length 7.7 ft, diameter 15 in.
Performance: dispenses 202 BLU-97 combined effects bomblets over an area roughly 800 ft x 400 ft.
COMMENTARY
A cluster-bomb family of weapons that can be delivered as low-accuracy free-fall weapon or with near precision, given installation of a simple tail kit.
Extant Variant(s)
■ CBU-103. Basic CBU-87 CEM with WCMD tail kit to increase accuracy when released from medium to high altitude.

CBU-89/104 Gator
Brief: An anti-armor/anti-personnel mine dispenser used by USAF and Navy fighters and bombers for interdiction.
Function: Scatterable mines.
Contractor: Honeywell, Aerojet General, Olan, Alliant Tech.
Guidance: none (CBU-89).
Dimensions: length 7.7 ft, diameter 15 in.
COMMENTARY
Weapons system provides low-cost means to rapidly seed a battlefield with mines delivered from high-speed aircraft and able to destroy armor.
Extant Variant(s)
■ CBU-104. Basic CBU-89 with WCMD tail kit to increase accuracy when released from medium to high altitude.

CBU-105 Sensor Fuzed Weapon
Brief: An anti-armor munition used by fighters and bombers for multiple kills per pass against moving and stationary land combat vehicles.
Function: Wide-area munition.
First Flight: circa 1990.
Contractor: Textron Systems.
Guidance: IR sensors in each warhead search for targets, then detonate over them.
Dimensions: length 7.7 ft, diameter 15 in.
Performance: delivers 40 lethal projectiles over an area of about 500 ft x 1,200 ft.
COMMENTARY
Tactical munitions dispenser with a payload of 10 BLU-105/104 submunitions, each containing four skeets projectiles, for a total of 40 lethal projectiles that seek out their target. The skeet’s active laser and GPS guided warhead, equipped with an advanced laser guidance kit, used for striking and destroying hard and deeply buried targets.
Extant Variant(s)
■ CBU-105. Basic gravity-type CBU-97 with a WCMD kit for greater accuracy. Can be delivered from high altitude and in adverse weather. Combat debut came in April 2003 in Iraq.
■ CBU-107 Passive Attack Weapon
Brief: Provides the capability to attack nonhardened surface targets, with a minimum of collateral and environmental damage.
Function: Wide-area munition.
IOC: December 2002.
Contractor: General Dynamics, kinetic energy penetrator payload and canister; Lockheed Martin, WCMC; Textron, tactical munition dispenser kit.
Guidance: via WCMC.

GBU-28 Paveway III (USA)
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).
COMMENTARY
Improvised versions of the earlier fixed wing Paveway I.
Extant Variant(s)
■ GBU-12. Used primarily to strike fixed armor. Can operate in cloud ceilings down to 2,500 ft.
■ GBU-14. Features both laser guidance and onboard GPS for all-weather, precision delivery capability.
■ 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-24 Paveway III
Brief: An unpowered low-level LGB equipped with an advanced guidance kit.
Function: Air-to-surface penetrating glide bomb.
Contractor: Raytheon.
Guidance: semiautomatic laser.
Warhead: BLU-109 2,000-lb bomb.
Dimensions: span 6.7 ft, length 14.4 ft, diameter 18 in.
Performance: range more than 11 miles.
COMMENTARY
Precision weapon that is effective against a broad range of high-value targets. Can be dropped from low, medium, or high altitude.
Extant Variant(s)
GBU-43/B MOAB Bomb (USAF photo)
Satellite Systems

Advanced EHF Satellite System

Brief: Satcom system that provides global, secure, protected, and jam-resistant strategic and tactical communications.

Function: Communications.

Operator: AFSPC.

First Launch: August 2010.

IOC: 2015 (planned).

Constellation: four.

Design Life: 14 years.

Launch Vehicle: Atlas V.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: Geosynchronous at 22,000+ miles.

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 Variants(s)


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).

First Launch: May 23, 1962.

IOC: 1965.

Constellation: two low Earth orbit (LEO).

Design Life: 48 months.

Launch Vehicle: Delta IV; Atlas V.

Operational Location: NOAA Satellite Operations Facility, Sulliland, Md.

Orbit Altitude: approx 527 miles.

Contractor: Lockheed Martin, Northrop Grumman.

Power Plant: solar arrays generating 1,200-1,300 watts.

Dimensions: length 25 ft (with array deployed), width 4 ft.

Weight: 2,545 lb, incl 772-lb sensor; 2,270 lb sensor payload.

Performance: polar orbits, cover Earth in about 6 hr, primary sensor scans 1,800+ wide area.

COMMENTARY

Provides timely and high-quality weather information to strategic and tactical combat units worldwide. Uses operational timescan sensor to image cloud cover in visible and thermal IR and analyze cloud patterns. Equipped with microwave imagers and sounders and a suite of space environment sensors that provide critical land, sea, and space environment data.

Extant Variant(s)

- Block 0.

- Block 3.

- Block 4.

AEHF (Lockheed Martin photo)

- GBU-57B. Integration testing for B-2A bomber completed June 2011.


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.


Constellation: five (III); 14 deployed/eight currently operational.

Design Life: 10 yr (III).

Launch Vehicle: Atlas II and EELV.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: 22,000+ miles in geosynchronous orbit.

Power Plant: Lockheed Martin.

Power Plant: solar arrays generating 1,269 watts, decreasing to 980 watts after 10 yr; 1,500 watts (SLEP).

Dimensions: rectangular body 6 x 6 x 7 ft, 38-ft span with solar arrays deployed.

Weight: 2,580 lb; 2,716 lb (SLEP).

Performance: employs six independent SHF transponder channels for secure voice and high-rate data communications.

COMMENTARY

Workhorse of US military’s SHF communications. Provides military communications to troops in the field and commanders worldwide. Extant Variant(s)

- DSCS III. Most recent configuration. Final (of 14) DSCS IIIIs launched in 2003. Final four satellites received SLEP, providing higher power amplifiers, more sensitive receivers, and increased antenna connection options. Also carries a single channel transponder to disseminate emergency action and force direction messages to nuclear-capable forces.

Defense Support Program

Brief: An early warning spacecraft in geosynchronous orbit that provides alert of possible ballistic missile attack on US forces or homeland.

Function: Strategic and tactical launch detection.

Operator: AFSPC.

First Launch: November 1970.


Constellation: classified.

Design Life: Three yr requirement and five yr 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.

COMMENTARY


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 location information and precision velocity and timing services to military and civilian users.

Function: Worldwide navigation, timing, and velocity data.

Operator: AFSPC.


Constellation: 27 spacecraft.

Design Life: 7.5 yr (I/IIA); 12 yr (II); 7.5 yr (IIR/ IIR-M); 15 yr (IIIA).

Launch Vehicle: Delta II; Delta IV.

Operational Location: Schriever AFB, Colo.

Orbit Altitude: 10,988 miles.

Contractor: Boeing (II, IIA, IIF), Lockheed Martin (IIR, IIR-M, IIIA).

Power Plant: solar panels generating 700 watts (II/ IIA); 1,136 watts (IIR/IIR-M); up to 2,900 watts (IIF).

Dimensions: (IIR/IIR-M) 5 x 6.3 x 6.3 25 ft, span incl solar panels 38 ft; (IIF) 6.9 ft x 6.5 ft x 12.9 ft, span incl solar panels 43.1 ft.

Weight: on orbit, 2,370 lb (IIR/IIR-M); 3,439 lb (IIF).

Performance: orbit the Earth every 12 hr, emitting continuous signals, providing time to within one-millionth of a second, velocity within a fraction of a mile per hr, and location to within a few ft.

COMMENTARY

Fundamental contribution to precision bombing, CSAR, mapping, and rendezvous. Provides accurate three-dimensional (latitude, longitude, and
Milstar (Lockheed Martin illustration)

curate 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 launched to replace original GPS Block I series.
- **GPS Block IIF**: Follow-on to IIR-M: Upgrades include extended design life, faster processors, and improved anti-jam and accuracy, with a new military signal and a second and third dedicated civil signal. The first was launched in 2010, second in 2011, third in 2012, fourth in May 2013, and fifth on Feb. 20, 2014, leaving seven (one awaiting launch, five in storage, and one in temporary storage awaiting completion).
- **GPS Block IIR-M**: First launched in 2005 and last in 2009. Upgrades included two new signals, enhanced encryption and anti-jamming capabilities, and second civil signal.
- **GPS Block IIIA**: Future generation expected to provide improved accuracy, availability, integrity, and resistance to jamming. Lockheed Martin and Raytheon completed the first launch readiness exercise in September 2013. First launch slated for 2014.

**Milstar Satellite Communications System**
- **Brief**: A joint service satcom 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.

**Orbital Location**: Schriever AFB, Colo.

**Orbit Altitude**: Geosynchronous at 22,000+ miles.

**Contractor**: Lockheed Martin, Boeing, TRW (now Northrop Grumman).

**Power Plant**: solar arrays 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 bps 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.

**COMMENTARY**

Backbone of strategic-tactical/ODD 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 sats launched in the period 1994-95. Both still active.
- **Block II**: Four Milstar II sats 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 sensor payloads on host satellites in highly elliptical orbit (HEO) and four 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 (hosted).

**Design Life**: n/a.

**Launch Vehicle**: GEO, Atlas V.

**Orbital Location**: Buckley AFB and Schriever AFB, Colo.

**Orbit Altitude**: Geosynchronous and highly 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).

**COMMENTARY**

Follow-on to the Defense Support Program satellite. System includes GEO satellites, HEO hosted payloads, and ground assets. HEO sensor detects launch of submarine-launched ballistic missiles (SLBMs) from the North Polar region and can be tasked for other IR detection missions. GEO scanner IR sensor performs strategic 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 GEO-1**: GEO-1 and HEO-2 payloads went into operation in 2008 and 2009, respectively. USAF delivered GEO-3 to the host in June 2013, with delivery of HEO-4 expected in May 2015.
- **SBIRS GEO**: USAF launched the GEO-1 satellite in 2011; officials say the quality of its data is exceeding performance expectations. GEO-2 launched in March 2013 and was accepted for operations. Delivery of GEO-3 slated for September 2015 and GEO-4 in September 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.

**First Launch**: Sept. 25, 2010.

**IOC**: Aug. 17, 2012.

**Constellation**: one LEO satellite.

**Design Life**: seven years.

**Launch Vehicle**: Minotaur IV.

**Orbital 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.

**COMMENTARY**

Designed to track and collect optical signatures of Earth-orbiting objects, including space debris, from a space-based platform. First operational satellite (SBSS 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. AFSPC is working to extend SBSS service life to cover a potential four-year gap in coverage before it can launch a follow-on spacecraft in 2021—the earliest date based on projected funding.

**Widespread Global SATCOM**
- **Brief**: Satellites that provide high-capacity communications for deployed forces (air, land, and sea).

**Function**: Communications.

**Operator**: AFSPC.

**First Launch**: October 2007.

**IOC**: April 16, 2008.

**Constellation**: eight satellites.

**Design Life**: 14 years.

**Launch Vehicle**: Atlas V, Delta IV.

**Orbital 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 DSCS satellite.

**COMMENTARY**

Designed to provide worldwide communications coverage for tactical and fixed users, augmenting and then replacing DSCS 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**: Extends satellites modified to better support the airborne ISR mission. SV-4 satellite launched in January 2012 and became operational in July 2012, covering the Indian Ocean area. USAF launched SV-5 and SV-6 (purchased by Australia) in May and August 2013, respectively. The US also has entered into partnership with Canada, Denmark, Luxembourg, Netherlands, and New Zealand. Block II follow-on sats, SV-7 to SV-10, are expected to launch over FY15 to FY18 and be operational by 2019.