Lockheed C-5 Galaxy

Outlook

- The U.S. Air Force C-5M conversion program was completed in August 2018
- Fifty-two USAF C-5s were converted to the C-5M configuration over the life of the program

Orientation

Description. Intercontinental-range, heavy-lift, military cargo/personnel transport aircraft.

Sponsor. U.S. Air Force Life Cycle Management Center, Wright-Patterson AFB, Ohio, USA; U.S. Air Force Air Mobility Command, Scott AFB, Illinois, USA.

Status. C-5A production ended in 1973, with 81 having been produced. C-5B production ended in 1989, with 50 having been built.

Total Produced/Active Inventory. Lockheed produced 134 C-5 Galaxy aircraft (including three prototypes) in two separate production lots. As of February 2019, the U.S. Air Force had 52 C-5Ms in its fleet.

Application. Strategic inter-theater transportation of personnel, aircraft, rotorcraft, and bulk, palletized, and vehicular cargo.

Price Range. The C-5B program cost was $7.38 billion. The FY87 unit cost of the C-5B was $92.25 million. Program unit cost was $147.6 million, including research and development and production line restart.

Lockheed C-5 Galaxy

C-5M

Source: Lockheed Martin

Contractors

Prime

Lockheed Martin Aeronautics - Marietta	http://www.lockheedmartin.com/us/aeronautics.html, 86 S Cobb Dr, Marietta, GA 30063 United States, Tel: + 1 (770) 494-4411, Fax: + 1 (770) 494-6263, Prime

Subcontractor

Bombardier Aerospace Business Aircraft	http://www.bombardier.com, 400 Côte-Vertu Rd W, Dorval, Quebec, Canada, Tel: + 1 (514) 855-5000, Fax: + 1 (514) 855-7401 (Aft Cargo Door; Aileron; Fairing; Leading Edge Slat; Slat Track; Wing Tip)
Collins Aerospace Systems	http://www.collinsaerospace.com, Four Coliseum Centre, 2730 W Tyvola Rd, Charlotte, NC 28217-4578 United States, Tel: + 1 (704) 423-7000, Fax: + 1 (704) 423-7002 (Carbon Disc Brakes; Tire; Wheels)
Curtiss-Wright Corp	http://www.curtisswright.com, 13925 Ballantyne Corporate Place, Ste 400, Charlotte, NC 28277 United States, Tel: + 1 (704) 869-4600, Fax: + 1 (973) 541-3699, Email: info@curtisswright.com (Main Landing Gear & Doors Actuator System; Nose Landing Gear Door Actuator System)
Eaton Aerospace, Fuel & Motion Control Systems Division	http://www.eaton.com, 23555 Euclid Ave, Cleveland, OH 44117-1795 United States, Tel: + 1 (216) 692-6000, Fax: + 1 (216) 692-6331 (Fuel Boost Pumps)
GE Aviation	http://www.geaviation.com, 1 Neumann Way, Cincinnati, OH 45215-6301 United States, Tel: + 1 (513) 243-2000 (TF39 Turbofan Engine; CF6-80C2 Turbofan Engine)
GE Aviation Systems, Power	http://www.geaviation.com/commercial/digital-systems/electrical-power, 740 E National Rd, Vandalia, OH 45377-3000 United States, Tel: + 1 (937) 898-5881, Fax: + 1 (937) 898-5819 (Generator/Alternator)
Moog Salt Lake Operations	http://www.moog.com, 2268 S 3270 W, Salt Lake City, UT 84119-1193 United States, Tel: + 1 (801) 973-4300, Fax: + 1 (801) 974-7581 (Spoiler Actuator)
Parker Aerospace, Gas Turbine Fuel Systems Division	http://www.parker.com, 14 Robbins Pond Rd, Devens, MA 01432-5641 United States, Tel: + 1 (978) 784-1200, Fax: + 1 (978) 784-1400 (Lubrication & Scavenge Pump)

Parker Aerospace, Stratoflex Products Division	http://www.parker.com, 700 Fourth St, Mansfield, TX 76063 United States, Tel: + 1 (817) 738-6543, Email: spdmarketing@parker.com (Hydraulic Hose)
Parker Hannifin Aerospace Group	http://www.parker.com, 14300 Alton Pkwy, Irvine, CA 92618 United States, Tel: + 1 (949) 833-3000, Fax: + 1 (949) 851-3277 (Accumulator; Actuator)

Contractors are invited to submit updated information to Editor, International Contractors, Forecast International, 22 Commerce Road, Newtown, CT 06470, USA; rich.pettibone@forecast1.com

Technical Data

(C-5M)

	Metric	U.S.
Dimensions		
Length	75.53 m	247.80 ft
Height	19.84 m	65.10 ft
Wingspan	67.91 m	222.80 ft
Weight		
Max takeoff weight	381,018 kg	840,000 lb
Max payload	129,274 kg	285,000 lb
Capacities		
Fuel capacity	150,819 kg	332,500 lb
Performance		
Normal cruise speed	Mach 0.77	Mach 0.77
Range with 120,000-lb payload	9,729 km	5,250 nm

Propulsion

C-5M (4) General Electric CF6-80C2 turbofan engines rated 225.0 kN (50,580 lbst) each.

Variants/Upgrades

C-5A. Original C-5 version designed in the mid-1960s and produced between 1969 and 1973. Eighty-one were built out of the originally planned 150. The C-5A was initially powered by four General Electric TF39-GE-1A turbofan engines rated 41,000 lbst each. However, the -1A engines were eventually upgraded to the TF39-GE-1C configuration. The -1C engine was rated at 43,000 lbst.

Two C-5As were later modified to a C-5C configuration.

C-5B. Improved version of the C-5A. The C-5B incorporated major improvements to the aircraft's flight controls, including simplification of the complex wing and tail control surface actuation system. The C-5B was powered by the TF39-GE-1C engine.

C-5N/X. At two different times during the 1980s, Lockheed proposed development of a C-5 model with significantly more range and payload capability. The first time occurred in 1980 when, in an attempt to preempt the U.S. Air Force C-17 program, Lockheed proposed a C-5X model powered by four as-yet-undeveloped General Electric CF6-80C2 turbofans.

Later, during production of the C-5B, Lockheed dusted off the C-5X proposal, redesignated it the C-5N, and again proposed the modified Galaxy as an alternative to the C-17. Both the C-5X and C-5N would have achieved the original maximum takeoff weight and payload goals of the C-5 program, and would have featured improved range and operating costs.

Lockheed C-5 Galaxy

Program Review

Background. The C-5 Galaxy was born of design studies begun in 1963 for the U.S. Air Force's CX-HLS (Cargo Experimental-Heavy Lift Strategic) requirement. In October 1965, Lockheed won a heated competition with Boeing and Douglas, and was selected as prime contractor for the aircraft. Construction began in 1966, and the first flight of a C-5 took place in June 1968.

Program History. The C-5 generated a great deal of negative press in its early years of development and operation. During full-scale engineering development, costs increased dramatically, leading to program overruns for which the U.S. government was ultimately responsible. In 1969, the Air Force decided to proceed with a second purchase but, due to the increase in price, the buy was limited to 27 units rather than the originally planned 57. A dispute then arose between Lockheed and the Air Force as to how the aircraft should be priced, and this situation was exacerbated by the discovery of cracks in the Galaxy wing spars. Lockheed had miscalculated wing loading and, eventually, ultimate wing fatigue life, culminating in a costly project to rewing the C-5As.

Major Wing Mod Program Instituted

Wing Modification Program. Because the Air Force was essentially operating 30,000-hour C-5A airframes with 7,100-hour wings, the service instituted a major wing modification program. Early attempts to strengthen the wing had not been successful so, in 1976, the Air Force called for modification studies under a $28.4 million contract. Original plans involved replacement of the center and inner wing boxes only, but USAF later decided to replace the outer wing box as well. The new wing added 7,712 kilograms (17,002 lb) to the empty weight of the aircraft, but increased the maximum gross takeoff weight by 32,206 kilograms (71,000 lb), thereby substantially improving the payload capacity.

In January 1980, the Air Force gave Lockheed a $5.9 million contract for procurement of long-lead-time material, and this was followed in July 1980 by a $68 million award for wing retrofit. Cost of rewinging the 77-aircraft fleet was $1.2 billion, and this program was completed in 1987.

Negotiations between Lockheed-Georgia and USAF resulted in a no-cost contract to evaluate the increased operational potential of the rewinged C-5A for worldwide contingency operations. The areas evaluated were operation of the aircraft at various heavy gross weights and the capability of the aircraft to back up and maneuver during ground operations. The 60-day effort ended in early 1985.

C-5B. The C-5B was put into production by the Reagan administration to help alleviate a shortfall in airlift capability. This shortfall had been specified in a congressionally mandated mobility study.

The B model differed from the original Galaxy in that the 30,000-hour-service-life wing modifications were incorporated, control surface systems were improved for lower overall maintenance, new avionics were fitted, and power was provided by improved GE TF39-GE-1C turbofans. USAF initially sought to develop the McDonnell Douglas C-17 to fill this requirement, but was forced to procure a KC-10/C-5B mix as a more immediate remedy.

NDAA. In December 1993, U.S. Secretary of Defense Les Aspin and Undersecretary of Defense for Acquisition John Deutch announced that USAF would procure only 40 C-17s (compared to the then-planned total of 120), with production then halted if McDonnell Douglas could not make sufficient improvement in the program. If the C-17 were to be canceled after production of the 40 aircraft, the Pentagon would provide additional airlift capacity by purchasing commercial widebody jets or by reviving C-5 production. A study was initiated to determine the best backup solution. This C-17 alternative became known as the Non-Developmental Airlift Aircraft (NDAA).

New Version Proposed

C-5D. For the NDAA requirement, Lockheed Martin planned to propose a new version of the C-5 called the C-5D. The new variant would have included a number of replacement parts to enhance reliability compared to the C-5B. The C-5D featured an improved airdrop capability that would have permitted the aircraft to drop troops and equipment from two doors simultaneously. Liquid crystal display (LCD) cockpit technology developed for the C-130J would have been applied to the C-5D.

The C-5D would have had the ability to carry the Pentagon's complete inventory of outsize cargo, and would have been powered by General Electric CF6-80C2 engines. The aircraft would also have had the ability to carry a 220,000-pound payload a distance of 3,200 nautical miles from an 8,000-foot runway.

Lockheed Martin estimated that non-recurring costs of approximately $600 million would be involved in re-opening the C-5 production line. The company said

that it could produce new C-5Bs for $185 million each, and could deliver the C-5D at or below that per-aircraft price.

Besides the C-5D, other potential NDAA candidates included the Boeing 747-400, the McDonnell Douglas MD-11, and a number of updated used freighters including the DC-10, the L-1011, and early 747 models. The NDAA was pursued on two tracks: a C-XX commercial aircraft derivative and a C-XY existing military transport. However, only one aircraft would have been chosen.

In November 1995, the Pentagon announced that the Defense Acquisition Board (DAB) had determined that planning for a buy of 120 C-17s provided the best value and the best means to improve the ability to rapidly apply U.S. military power throughout the world. The Pentagon would plan and budget for 120 C-17s. Further effort on a modified 747-400 NDAA was deferred.

Conversion Process

Between 2006 and 2012, a total of 52 USAF C-5s were converted to the C-5M Super Galaxy configuration. This total included one C-5A, 49 C-5Bs, and two C-5Cs.

The C-5M conversion was a two-stage effort; the first stage was completed in 2012. This initial stage was known as the Avionics Modernization Program (AMP), during which the analog avionics of 79 C-5s (including 27 aircraft not destined for C-5M conversion) were replaced with a digital avionics suite. Lockheed Martin was the prime contractor for the AMP.

The second stage of the conversion process was called the Reliability Enhancement and Re-engining Program (RERP). In December 2001, Lockheed Martin was awarded a $1.1 billion contract by the Air Force for the System Development and Demonstration (SDD) phase of the RERP. The RERP focused on upgrading the C-5 with new engines and systems and making minor structural enhancements to ensure that the C-5 fleet would be operationally viable until at least 2040.

Original plans called for four C-5s to be modified for use as flight test aircraft during the SDD phase. The Air Force had intended that all four would be C-5Bs. However, Congress included a provision in the FY02 defense authorization bill requiring that at least one C-5A be included in the SDD phase.

Ultimately, only three aircraft were re-engined and used in the flight test effort: two C-5Bs and one C-5A.

Lockheed Martin was selected as prime contractor for the RERP in August 1999 and began evaluating proposals from potential engine suppliers. Competitors included General Electric with the CF6-80C2, Pratt & Whitney with the PW4000, and Rolls-Royce with the Trent 500.

In August 2000, Lockheed Martin selected the GE CF6-80C2 for the C-5 re-engining effort. According to Rick Johnson, Lockheed Martin's RERP program manager, the GE proposal had the best combination of price, warranty, ownership costs, and performance. The CF6-80C2 was rated at 60,000 lbst, but was derated to 50,580 lbst for the C-5.

General Electric was awarded a $126 million contract by Lockheed Martin in February 2002 to supply CF6-80C2 propulsion systems for use in the SDD phase. The propulsion system included the CF6-80C2 engine, the thrust reverser, and the nacelle. UTC Aerospace Systems (now Collins Aerospace Systems) supplied the nacelles to General Electric.

UTC Aerospace Systems also supplied pylon systems, auxiliary power units, and other system modifications for the RERP effort.

The first fully modified C-5M made its initial flight in its new configuration in June 2006. A second C-5M made its initial flight in November 2006. Both of these aircraft were originally C-5Bs. A third C-5M, a former C-5A, flew for the first time in March 2007. These three C-5Ms were used in the RERP flight test program, which was completed in August 2008. In September 2010, Lockheed Martin delivered the initial "production" C-5M (a former C-5B) to the Air Force.

Funding

U.S. FUNDING

	FY16 QTY	FY16 AMT	FY17 QTY	FY17 AMT	FY18 QTY	FY18 AMT	FY19 (Req) QTY	FY19 (Req) AMT
C-5M	-	-	-	-	-	6.8	-	-
C-5 Mods	-	-	-	24.2	-	21.7	-	77.8

All $ are in millions.

Lockheed C-5 Galaxy

Selected Acquisition Reports (SARs)

The Department of Defense (DoD) periodically releases Selected Acquisition Reports (SARs) that summarize the latest estimates of cost, schedule, and performance status for Major Defense Acquisition Programs (MDAP). These reports are prepared annually in conjunction with submission of the president's budget. (Subsequent quarterly exception reports are required only for those programs experiencing unit cost increases of at least 15 percent or schedule delays of at least six months.)

The total program cost estimates provided in the SARs include research and development, procurement, military construction, and acquisition-related operations and maintenance. Total program costs reflect actual costs to date as well as future anticipated costs.

See below for instructions on how to view the annual SAR related to this particular report.

Online and DVD Clients – Click link below.
Hard-Copy Clients – Insert the CD located in the sleeve at the front of the binder. (Electronic version updated quarterly.)

Contracts/Orders & Options

Contractor	Award ($ millions)	Date/Description
Lockheed Martin	1,115.0	Dec 2001 – Contract from USAF for the SDD phase of the C-5 RERP.
General Electric	126.0	Feb 2002 – Contract from Lockheed Martin to provide CF6-80C2 propulsion systems for the SDD phase of the USAF C-5 RERP. The propulsion system includes the CF6-80C2 engine, the thrust reverser, and the nacelle.
Lockheed Martin	20.3	Apr 2003 – Contract modification from USAF to provide for the C-5 Avionics Modernization Program (AMP).
Lockheed Martin	16.7	Jun 2003 – Contract modification from USAF to provide for the C-5 AMP engineering change proposal, an addition to the Integrated Standby Instrument System.
Lockheed Martin	42.8	Dec 2003 – Contract modification from USAF to exercise C-5 AMP option for 18 C-5 AMP kits.
Lockheed Martin	59.3	Jan 2005 – Contract modification from USAF to provide for C-5 AMP Production Lot III kits, installation option, spares, and support.
Lockheed Martin	33.3	Jan 2006 – Contract modification from USAF for C-5 AMP Production Lot IV kits, support, and spares.
Lockheed Martin	16.7	Dec 2006 – Contract modification from USAF to correct four of 14 AMP waivers, incorporate functionality from the AMP Block Cycle Change (BCC) 2006 software build, and address specific high-priority issues. This is a modification to the C-5 RERP.
Lockheed Martin	23.4	Mar 2007 – Contract modification from USAF to provide for C-5 AMP Production Lot V kits and spares.
Lockheed Martin	23.0	Apr 2007 – Contract from USAF to provide for advance procurement of long-lead items for Lot 1 of low-rate initial production of the C-5M RERP.
Lockheed Martin	133.3	Sep 2007 – Contract modification from USAF to provide for C-5 RERP System Development Re-baseline engineering change proposal.
Lockheed Martin	127.2	Apr 2008 – Contract modification from USAF for Lot 1 material/fabrication, initial spares, and Lot 2 C-5M RERP advance procurement.
Lockheed Martin	6.1	Nov 2008 – Contract modification from USAF to exercise an option for installation of five C-5 AMP kits.
Lockheed Martin	299.8	Feb 2009 – Contract modification from USAF to exercise options for Lot 3 for the C-5M RERP.
Lockheed Martin	13.3	Mar 2009 – Contract modification from USAF for the C-5 RERP SDD, contract change proposal.

Contractor	Award ($ millions)	Date/Description
Lockheed Martin	7.3	May 2009 – Contract modification from USAF to equip six C-5 aircraft with C-5 AMP kits and the consolidated load panel under a firm-fixed-price effort, and, under a time and material effort, acquire rapid response and repair for potential legacy issues that may arise during the AMP kit installation.
Lockheed Martin	143.2	Nov 2009 – Contract from USAF to provide C-5 AMP sustainment support.
Lockheed Martin	6.3	Jan 2010 – Contract from USAF to provide for C-5 RERP engine maintenance training device, integration effort, and contract change proposal.
Lockheed Martin	9.4	Feb 2010 – Contract from USAF to exercise an option for installation of eight C-5 aircraft with C-5 AMP kits and one lot of step van maintenance under a firm-fixed-price effort, and, under a time and material effort, install the consolidated load panel.
Lockheed Martin	86.2	Feb 2010 – Contract from USAF to provide for the C-5M RERP.
Lockheed Martin	7.1	Mar 2010 – Contract from USAF to provide C-5 AMP Lot VII components for one lot of C-5 avionics program kits, one lot of C-5 aircrew training device kits, one lot of readiness spares packages, and one lot of peacetime operating spares.
Lockheed Martin	5.7	Jun 2010 – Contract from USAF to provide for C-5M RERP low-rate initial production, contract change proposal support equipment, and forward operating bases.
Lockheed Martin	7.0	Jun 2010 – Contract modification from USAF for C-5 AMP Lot VIII components.
Lockheed Martin	8.2	Sep 2010 – Contract modification from USAF to provide C-5 Large Aircraft Infrared Countermeasures (LAIRCM) Group A hardware and kit assembly under Lot IV, and nine kits.
Lockheed Martin	162.9	Oct 2010 – Contract from USAF to provide for C-5M RERP full-rate production Lot 5 advance procurement.
Lockheed Martin	115.7	Oct 2010 – Contract modification from USAF to provide for C-5M RERP low-rate initial production Lot 3 installation.
Lockheed Martin	326.9	Oct 2010 – Contract modification from USAF for C-5M RERP low-rate initial production Lot 4 material and fabrication of material required to support the modification of the seven Lot 4 aircraft.
Lockheed Martin	29.2	Nov 2010 – Contract from USAF for C-5 AMP sustainment support.
Lockheed Martin	8.0	Nov 2010 – Contract from USAF to provide sustaining engineering efforts on systems, structures, products, or materials required to resolve technical or supportability efficiency, and technical order sustainment, on the C-5 aircraft.
Lockheed Martin	16.4	Dec 2010 – Contract from USAF for development, integration, and testing activities for the first C-5 Block Upgrade Program (BUP) 01 for aircraft modified under the AMP. This portion of the BUP is to establish a common software baseline between the BUP and the AMP, and install a third core processing module.
Lockheed Martin	518.9	Oct 2011 – Contract modification from USAF for C-5 RERP full-rate production Lot 5 material and fabrication. Work to be performed under this effort includes the acquisition of material items and fabrication of material items required to meet the needs for the modification of 11 Lot 5 C-5 RERP aircraft.
Lockheed Martin	160.0	Oct 2011 – Contract modification from USAF for C-5 RERP full-rate production Lot 6 advance procurement. Work to be performed under this effort includes the acquisition of long-lead items required to meet the needs for the modification of 11 Lot 6 C-5 RERP aircraft.
Lockheed Martin	126.7	Oct 2011 – Contract modification from USAF for C-5 RERP full-rate production Lot 4 installations. Work to be performed under this effort includes installation of enhanced engines on seven Lot 4 C-5 RERP aircraft.
Lockheed Martin	13.4	Nov 2011 – Contract modification from USAF to provide C-5 RERP full-rate production Lot 5 items required to meet the field needs for the use of 11 Lot 5 C-5M aircraft.
Lockheed Martin	8.0	Jan 2012 – Contract from USAF for procurement of C-5 LAIRCM System Group A hardware and assembly of Group B (government-furnished) parts with the Group A hardware into nine C-5 LAIRCM kits, and initial spare parts.

Lockheed C-5 Galaxy

Contractor	Award ($ millions)	Date/Description
Lockheed Martin	221.8	Oct 2012 – Contract modification from USAF for the C-5 RERP Aircraft Lot 5 installation effort involving 11 aircraft.
Lockheed Martin	489.4	Oct 2012 – Contract modification from USAF for the C-5 RERP Lot 6 material and fabrication effort.
Lockheed Martin	56.7	Nov 2012 – Contract from USAF for C-5 sustaining engineering and technical support services.
Lockheed Martin	9.0	Nov 2012 – Contract modification from USAF for the C-5 RERP.
Lockheed Martin	8.4	Dec 2012 – Contract modification from USAF in support of the C-5 LAIRCM production program.
Lockheed Martin	9.4	Apr 2013 – Contract modification from USAF for C-5 RERP interim contractor support.
Lockheed Martin	45.7	Apr 2013 – Contract modification from USAF for C-5 RERP Lots 3, 4, and 5 Rapid Repair and Response legacy repair efforts.
Lockheed Martin	27.9	Jun 2013 – Contract from USAF for the sustainment of C-5 software and the software integration laboratory, engineering support, and provision of an emergency operational flight plan.
Lockheed Martin	84.3	Mar 2014 – Contract from USAF for the C-5 core mission computer/color weather radar engineering, manufacturing and development program.
Lockheed Martin	508.9	May 2014 – Contract modification from USAF for incorporation of the C-5 RERP Lot 7 material and fabrication effort.
Lockheed Martin	222.9	Jun 2014 – Contract modification from USAF for the C-5 RERP. Under this modification, a total of 11 C-5 aircraft will be modified with the RERP improvements.
Lockheed Martin	8.1	Jul 2014 – Contract modification from USAF to provide additional funding for Over and Above legacy work associated with C-5 RERP Lot 5 aircraft. This Over and Above work allows Lockheed Martin to complete necessary repairs related to legacy issues found during the course of the C-5 RERP aircraft modification.
Lockheed Martin	33.0	Sep 2014 – Contract modification from USAF for C-5 RERP Lot 6.
Lockheed Martin	23.5	Jan 2015 – Contract modification from USAF for continuation of contractor logistic services sustainment for the C-5 AMP and RERP.
Lockheed Martin	12.9	Jun 2015 – Contract from USAF for C-5 computer software update 02.
Lockheed Martin	240.5	Aug 2015 – Contract modification from USAF for the C-5 RERP Lot 7 installation. This will provide the final lot of 11 aircraft for the C-5M fleet.
Lockheed Martin	10.5	Aug 2015 – Contract from USAF for the Aircraft Communications Addressing and Reporting System for the C-5M fleet. The contractor is to provide a C-5M compatible aircraft operational flight program with supporting certification artifacts and documentation.
Lockheed Martin	32.5	Oct 2015 – Contract modification from USAF for the C-5 RERP Lot 7 Rapid Repair and Response Over and Above effort. This will provide for the final lot of 11 aircraft for the C-5M fleet.
Lockheed Martin	18.1	Apr 2016 – Contract from USAF for C-5 sustaining engineering services.
Lockheed Martin	14.9	Sep 2016 – Contract from USAF for C-5 contractor logistics support services, including supply chain management, repair, and technical support services.
Lockheed Martin	81.1	Dec 2016 – Contract from USAF for the C-5 Communications, Navigation, Surveillance and Air Traffic Management engineering and manufacturing development program. The contractor is to provide integration, design, development, installation, test, verification, and validation of new solutions that are to comply with the most current requirements via integrating software and hardware updates into the C-5M platform.
Lockheed Martin	17.2	Feb 2017 – Contract from USAF for C-5 contractor logistics support, including supply chain management, repair, and technical support services.
Lockheed Martin	14.7	Oct 2017 – Contract modification from USAF for the C-5 Communications, Navigation, Surveillance and Air Traffic Management engineering and manufacturing development program, incorporating Automatic Dependent Surveillance-Broadcast Out technology.
Lockheed Martin	7.6	Feb 2018 – Indefinite delivery/indefinite quantity contract from USAF for C-5 contractor logistics support services. This contract provides for supply chain management, repair, and technical support services.

Contractor	Award ($ millions)	Date/Description
Lockheed Martin	31.4	May 2018 – Indefinite delivery/indefinite quantity contract from USAF for software maintenance. This contract provides for software maintenance and updates, as well as Systems Integration Laboratory maintenance and engineering support, on the C-5M system.
Lockheed Martin	131.6	Jan 2019 – Contract from USAF for C-5 sustainment. This contract provides for sustaining engineering services.
Lockheed Martin	40.0	Jan 2019 – Contract modification from USAF for C-5 contractor logistics support services. The contract involves supply chain management, repair, and technical support services.

Timetable

Month	Year	Major Development
	1963	USAF design studies initiated on CX-HLS requirement
Oct	1965	Lockheed selected as prime contractor
Jun	1968	First flight
May	1973	Last of 81 C-5As delivered to USAF
Early	1976	Wing modification studies begun
Aug	1979	Ground test of new wings commences
Nov	1980	Ground and initial flight tests completed
Sep	1985	First flight of C-5B
Dec	1985	Initial C-5B delivery
Jul	1987	Last of rewinged C-5As delivered to USAF
Apr	1989	Last C-5B delivered to USAF
Jun	2006	First flight of initial C-5M flight test aircraft
Nov	2006	First flight of second C-5M flight test aircraft
Mar	2007	First flight of third C-5M flight test aircraft
Feb	2014	C-5M Initial Operational Capability (IOC)
Aug	2018	C-5M RERP modifications completed

Worldwide Distribution/Inventories

Operator	Designation	Quantity
U.S. Air Force	C-5M	52

Forecast Rationale

Lockheed Martin redelivered the last of 52 converted C-5M strategic transports to the U.S. Air Force in August 2018. The 52 aircraft had been converted from 49 C-5Bs, two C-5Cs, and a single C-5A.

The C-5M conversion process was conducted in two stages. The initial stage was known as the Avionics Modernization Program (AMP), and involved upgrading the avionics of 79 USAF C-5s.

Fifty-two of these aircraft then underwent the second stage of the C-5M program. This stage was called the Reliability Enhancement and Re-engining Program (RERP), and involved the incorporation of more than 70 modifications into the aircraft, including installation of GE CF6-80C2 turbofan engines; improvements to the aircraft's electrical, fuel, hydraulic, flight control, and environmental control systems; and upgrades to the aircraft's structure and landing gear.

After an aircraft completed the two stages, it received the C-5M designation. Lockheed Martin was the prime contractor for both the AMP and RERP.

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