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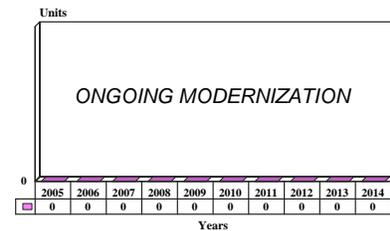
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Boeing C-135 Series - Archived 6/2005

Outlook

- Global Air Traffic Management effort pacing future funding
- USAF plans to equip 12 KC-135s with LAIRCM to counter IR missile threats

10 Year Unit Production Forecast
2005 - 2014



Orientation

Description. Four-engine tanker/transport. Similar to Boeing 707 airliner but without side windows and with a narrower fuselage, which is not fail-safe.

Sponsor. United States Air Force, Aeronautics Division.

Contractors. Boeing Military Airplanes, Wichita, KS, USA.

Status. Series production ended in 1966.

Total Produced. A total of 820 C-135s of all variants, including 732 KC-135As.

Application. Airborne refueling of U.S. military aircraft is by far this type's most common application.

Price Range. KC-135A to KC-135E engine upgrade, approximately \$4.1 million. KC-135A to KC-135R modification, approximately \$20.5 million.

Technical Data

(KC-135A Stratotanker)

	<u>Metric</u>	<u>U.S.</u>
Dimensions		
Length	41.53 m	136.22 ft
Height	11.68 m	38.31 ft
Wingspan	39.88 m	130.81 ft
Wing area	226.03 sq m	2,433 sq ft
Weight		
Operating weight empty	47,844 kg	105,476 lb
Fuel	86,430 kg	190,543 lb
Max taxi weight	136,805 kg	301,600 lb
Performance		
Max speed	966 kmph	521 kt
Service ceiling	12,195 m	40,000 ft

Propulsion

KC-135A	(4)	Pratt & Whitney J57-P-59W turbojets rated at (each) 61.2 kN (13,750 lbt). ^(a)
KC-135B/E	(4)	P&W TF33-3A turbofans rated at 80.1 kN (18,000 lbt) (and derivatives).
KC-135R	(4)	CFM56-2B-1 turbofans rated at 97.86 kN (22,000 lbt).

^(a) Water injection rating.



C-135FR AERIAL TANKER

Source: France's MoD

Variants/Upgrades

Major C-135 variants include:

KC-135A. Tanker/transport. Initial production C-135 version. First flown in August 1956, with initial deliveries in June 1957.

KC-135B. Produced for USAF Strategic Air Command for use as airborne command posts. Later redesignated.

EC-135C. Powered by TF33 turbofans.

KC-135E. KC-135As re-engined with JT3D engines.

KC-135Q. Carried JP-7 fuel for SR-71.

KC-135R. KC-135s re-engined with CFM56 engines.

C-135A. Long-range turbojet-powered transport version.

C-135B. Long-range turbofan-powered transport.

C-135F. Tanker/transport supplied to French Air Force. After re-engining with CFM56 engines, they are redesignated C-135FR.

EC-135A. Turbojet-powered backups for EC-135C.

EC-135C. SAC command posts.

EC-135G/H/K. Turbojet-powered command posts with more advanced equipment than on EC-135As.

EC-135J. Turbofan-powered derivative of EC-135H.

EC-135L. KC-135As equipped for dual use as command post and airborne communications relay station.

EC-135N. Advanced Range Instrumentation Aircraft (ARIA).

EC-135P. Communications/command posts.

JKC-135A. Special-purpose test aircraft.

NKC-135A. Systems Command fleet for ECM/ECCM, laser, missile vulnerability, ionosphere, icing, COMSAT, weightless and other research.

NC-135A. Used for USAF, NASA, and AEC above-ground nuclear testing and other studies.

RC-135A/B/C/D/E/M/S/T/U/V/W. Reconnaissance versions.

WC-135B. Long-range weather reconnaissance version.

Program Review

Background. In 1954, the U.S. Air Force announced that it intended to procure a number of tanker/ transports derived from the Boeing 367-80 prototype. The initial KC-135A, as the tanker/transport aircraft were designated, first flew in August 1956. Since that time, the C-135 has proven to be one of the most useful and dependable aircraft in the USAF inventory.

The USAF will remain dependent on several hundred KC-135s for its tanker requirements. To meet this need, 400 of the service's KC-135 fleet are being re-engined with CFM International CFM56-2B-1 turbofan engines (military designation F108-CF-100) and upgraded to the KC-135R configuration. In addition, as a near-term effort, 138 Air Force Reserve and Air National Guard KC-135s have been equipped with JT3D (TF33 USAF designation) engines that were removed from used commercial Boeing 707 aircraft purchased by the Air Force. (A few other USAF C-135s also were re-engined with JT3Ds.) This effort was completed in January 1988.

Global Air Traffic Management (GATM). Phase IV of the GATM upgrade adds communication, navigation, and surveillance equipment required for operation in oceanic airspace. The aeronautical SATCOM equipment provides a beyond-line-of-sight communications capability to support controller-pilot datalink communications, in-flight rerouting, weather diversions, etc., and automatic reporting of an aircraft's GPS-derived position.

The USAF plans to equip 490 aircraft between 2003 and 2016 for an estimated \$970 million.

LAIRCM. USAF plans to seek \$50.3 million in FY07 to begin refitting 12 KC-135s with the Large Aircraft IR Countermeasures (LAIRCM) system under development by Northrop Grumman.

Unlike traditional IR countermeasures, LAIRCM will counter incoming IR missiles without using self-protection flares.

Funding

Recent and requested funding is as follows:

	<u>U.S. FUNDING</u>							
	<u>FY03</u>		<u>FY04</u>		<u>FY05</u>		<u>FY06 (Req)</u>	
	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>
C-135 Mods		\$98.6		118.8		54.4		88.7

All \$ are in millions.

Recent Contracts

In December 2003, Boeing received a \$17.5 million increment for four RC-135 re-engine installations. Work will be completed by April 2005.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Jul	1954	First flight of Boeing 367-80 prototype
Aug	1956	First flight of initial KC-135
	1966	C/KC-135 production ends
Jan	1978	KC-135 re-engining study contract
Jan	1980	Air Force selects CFM56
Jan	1981	Re-engining development contract to Boeing

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
Sep	1981	KC-135/JT3D (TF33) contract to Boeing
Aug	1982	First flight of KC-135R
Jul	1984	First KC-135R delivered
Jul	1988	KC-135E re-engining ends
	1989	KC-135E re-engining restarted
	2005	USAF C/KC-135R conversions to be completed

Worldwide Distribution

(as of March 15, 2005)

<u>Region</u>	<u>Country</u>	<u>Total A/C</u>	<u>Type</u>	<u>Avg. Age (Yrs)</u>
Asia	Singapore	4	KC-135R	38
Europe	France	11	C-135FR	38; converted 1985-88
		3	KC-135R	37
North America	United States	3	C-135	39
		9	EC-135	38
		486	KC-135A/E/R	39
		17	RC-135	40
		2	WC-135B	38
		2	OC-135	37

Forecast Rationale

The GATM upgrade will comprise the bulk of future C/KC-135 upgrade funding. USAF plans to have 490 GATM-equipped C/KC-135 aircraft back in the inventory by 2016.

USAF also plans to request \$50.3 million in FY07 funds to install the Large Aircraft IR Countermeasures (LAIRCM) aboard 12 KC-135s. Northrop Grumman is developing the LAIRCM.

Ten-Year Outlook

No resumption of production.

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