Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-387

KC-46A

As of December 31, 2011

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Designation And Nomenclature (Popular Name)

KC-46A Tanker Modernization Program (KC-46A)

DoD Component

Air Force

Responsible Office

Responsible Office

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Date Assigned July 29, 2009

References

SAR Baseline (Development Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated August 24, 2011

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated August 24, 2011

Mission and Description

The KC-46 will replace the U.S. Air Force's aging fleet of KC-135 Stratotankers which have been the primary refueling aircraft for more than 50 years.

With more refueling capacity and enhanced capabilities, improved efficiency and increased capabilities for cargo and aeromedical evacuation, the KC-46 will provide aerial refueling support to the Air Force, Navy, and Marine Corps as well as allied nation coalition force aircraft.

The KC-46 will be able to refuel any fixed-wing receiver capable aircraft on any mission. This aircraft is equipped with a modernized KC-10 refueling boom integrated with a proven fly-by-wire control system and capable of delivering a fuel offload rate required for large aircraft. Furthermore, the hose and drogue system adds additional mission capability that is independently operable from the refueling boom system.

Two high-bypass turbofans, mounted under 34-degree swept wings, power the KC-46 to take off at gross weights up to 415,000 pounds. The centerline drogue and wing aerial refueling pods are used to refuel aircraft fitted with probes. All aircraft will be configured for the installation of a Multi-Point Refueling System.

Multi-Point Refueling System configured aircraft will be capable of refueling two receiver aircraft simultaneously from special "pods" mounted under the wing. One Aerial Refueling Operator controls the boom, centerline drogue, and wing refueling pods during refueling operations. This new tanker utilizes an advanced KC-10 boom, a center mounted drogue and wing aerial refueling pods allowing it to refuel multiple types of receiver aircraft as well as foreign national aircraft on the same mission.

A cargo deck above the refueling system can accommodate a mixed load of passengers, patients, and cargo. The KC-46 can carry up to eighteen 463L cargo pallets. Seat tracks and the onboard cargo handling system make it possible to simultaneously carry palletized cargo, seats, and patient support pallets in a variety of combinations. The KC-46 offers significantly increased cargo and aeromedical evacuation capabilities compared to the KC-135R.

The aircrew compartment includes 15 permanent seats for aircrew which includes permanent seating for the Aerial Refueling Operator and an Aerial Refueling Instructor. Panoramic displays provide the Aerial Refueling Operator wing-tip to wing-tip situational awareness.

Executive Summary

On February 23, 2011, the USD(AT&L) conducted a successful Milestone B (MS B) Defense Acquisition Board (DAB). The USD(AT&L) certified (with waivers) the provisions set forth at section 2366b of title 10, United States Code. The USD(AT&L) waived certification provisions (a)(1)(B), (a)(1)(D), and (a)(2) of that section, in accordance with subsection (d). The USD(AT&L) will continue periodic reviews, in accordance with subsection (d)(2)(B), until a determination can be made that the certification elements waived have been satisfied. At this time, a determination has not yet been made for any of the three waived provisions. For provisions (a)(1)(B) and (a)(1)(D), the Air Force has committed to work in the out-year budgeting process to realign program funding in accordance with the Service Cost Position (SCP). For provision (a)(2), a Preliminary Design Review (PDR) is scheduled for March 2012.

This SAR reflects cost and funding data based on the FY 2013 President's Budget (PB). In accordance with the KC-46 Acquisition Decision Memorandum dated February 24, 2011, the KC-46 budget in the FY 2013 PB has been adjusted to reflect the Air Force Service Cost Position (SCP) and fact-of-life changes that include an on-going assessment and re-phasing of the MILCON budget.

On February 24, 2011, The Boeing Company was awarded the KC-46 contract. The Fixed Price Incentive (Target Firm) contract was awarded for the Engineering, Manufacturing, and Development (EMD) program phase, with Firm-Fixed-Price contract options for Low Rate Initial Production Lots 1 and 2, and Not-to-Exceed contract options with Economic Price Adjustment for Full Rate Production Lots 3 through 13.

On August 24, 2011, the USD(AT&L) signed the Acquisition Program Baseline (APB) reflecting the MS B approval.

Since MS B approval and contact award, the EMD program phase, which includes development of four EMD aircraft and extensive flight testing, is progressing well with no significant technical issues.

In August 2011, the KC-46 Directorate and Boeing successfully concluded a comprehensive Integrated Baseline Review (IBR). The IBR approved a well-understood contract technical, cost and schedule baseline from which the Government can measure and closely manage Boeing's progress during contract execution.

In November 2011, the KC-46 Directorate and Boeing successfully concluded the System Functional Review (SFR). The KC-46 SFR assessed the allocation and traceability of all program requirements from the System Specification to lower level hardware and software requirements.

In December 2011, Boeing conducted a non-contractual KC-46 Firm Configuration review--an internal Boeing commercial best practice. The KC-46 Firm Configuration validated that the aircraft configuration is sufficiently mature and stable to initiate detailed design of the militarized KC-46 tanker.

The KC-46 Directorate's near-term focus is now on kicking off the Preliminary Design Review on schedule in March 2012. In March 2012, the KC-46 Directorate and Boeing will start the PDR with a detail review of the 89 contractually required entrance criteria. The PDR will then conclude in April 2012 with a detailed system-level review to include final status of the eight contractually required exit criteria. The PDR will validate that the preliminary design has the highest likelihood of meeting contractual performance requirements.

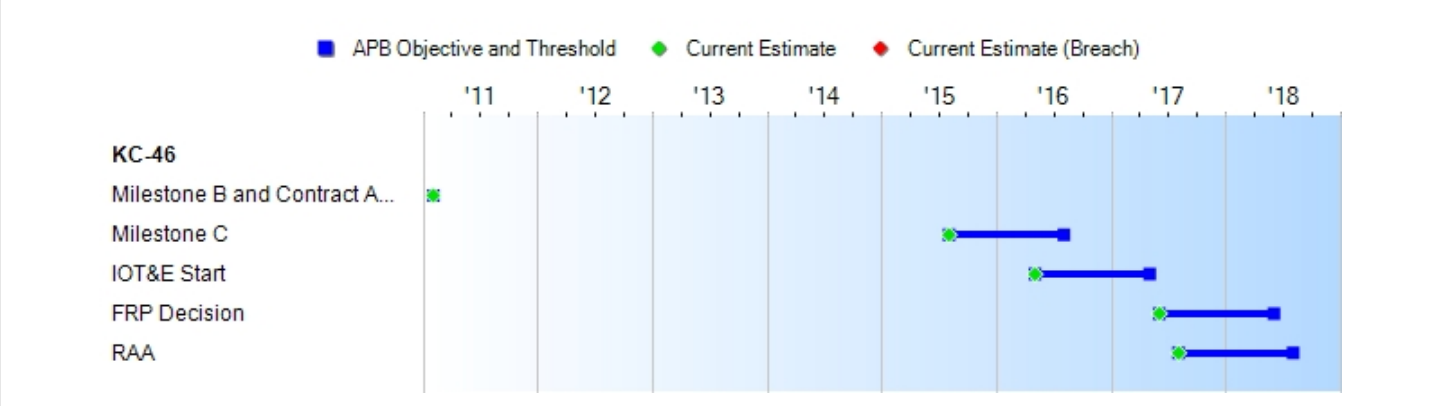
The KC-46 Directorate is closely tracking software as a program risk, but there are no significant software-related. issues with this program at this time.

Threshold Breaches

APB Breaches		
Schedule		☐
Performance		☐
Cost	RDT&E	☐
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

Schedule



Milestones	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate
Milestone B and Contract Award	FEB 2011	FEB 2011	FEB 2011	FEB 2011
Milestone C	AUG 2015	AUG 2015	AUG 2016	AUG 2015
IOT&E Start	MAY 2016	MAY 2016	MAY 2017	MAY 2016
FRP Decision	JUN 2017	JUN 2017	JUN 2018	JUN 2017
RAA	AUG 2017	AUG 2017	AUG 2018	AUG 2017

Acronyms And Abbreviations

FRP - Full Rate Production
IOT&E - Initial Operational Test and Evaluation
RAA - Required Assets Available

Change Explanations

None

Memo

IOT&E Start represents the beginning of Dedicated IOT&E, which will commence upon Office of the Secretary of Defense approval of the Operational Test Readiness Review.

The RAA date is directed to be no later than 78 months after contract award. RAA is defined as 18 aircraft meeting final production configuration with all required training equipment, support equipment, and sustainment support in place to support Initial Operational Capability.

Performance

Characteristics	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate	
Tanker Air Refueling Capability	The aircraft should be capable of accomplish-ing air refueling of all current and programmed tilt rotor receiver aircraft in accordance with technical guidance and STANAGs using current procedures and refueling airspeeds with no modification to existing receiver air refueling equipment and no restrictions to the refueling envelope at its maximum inflight gross weight. While engaged, the KC-X should be capable of maneuvering throughout the entire refueling envelope, in accordance	The aircraft should be capable of accomplish-ing air refueling of all current and programmed tilt rotor receiver aircraft in accordance with technical guidance and STANAGs using current procedures and refueling airspeeds with no modification to existing receiver air refueling equipment and no restrictions to the refueling envelope at its maximum inflight gross weight. While engaged, the KC-X should be capable of maneuvering throughout the entire refueling envelope, in accordance	The aircraft shall be capable of accomplish-ing air refueling of all current and programmed fixed-wing receiver aircraft in accordance with technical guidance and STANAGs using current procedures and refueling airspeeds with no modification to existing receiver air refueling equipment and no restrictions to the refueling envelope. The aircraft shall be able to effectively conduct (non-simultaneously) both boom and drogue air refuelings on the same mission. While engaged, the KC-X shall be	TBD	Will meet or exceed Current APB Threshold.	(Ch-1)

	with applicable air refueling manuals and standard agreements, of any compatible current and programmed tilt rotor receiver aircraft.	with applicable air refueling manuals and standard agreements, of any compatible current and programmed tilt rotor receiver aircraft.	capable of maneuvering throughout the entire refueling envelope, in accordance with applicable air refueling manuals and standard agreements, of any compatible current and programmed fixed wing receiver aircraft.		
Fuel Offload versus Radius	The aircraft should be capable of exceeding the offload versus radius as depicted in Figure 6.1.	The aircraft should be capable of exceeding the offload versus radius as depicted in Figure 6.1.	The aircraft shall be capable, as a minimum, of an offload versus radius as depicted in Figure 6.1.	TBD	Will meet or exceed Current APB Objective.
Civil/Military CNS/ATM	Aircraft shall be capable of worldwide flight operations at all times in all civil and military airspace at time of aircraft delivery, including known future CNS/ATM require-ments, with redundant systems. Capability to inhibit CNS/ATM emissions and prohibit transmission	Aircraft shall be capable of worldwide flight operations at all times in all civil and military airspace at time of aircraft delivery, including known future CNS/ATM require-ments, with redundant systems. Capability to inhibit CNS/ATM emissions and prohibit transmission	Aircraft shall be capable of worldwide flight operations at all times in all civil and military airspace at time of aircraft delivery, including known future CNS/ATM require-ments, with redundant systems. Capability to inhibit CNS/ATM emissions and prohibit transmission	TBD	Will meet or exceed Current APB Objective.

	of CNS/ATM-related data accumulated during the inhibited portion of the mission. Civil ATC data link media for LOS and BLOS communicat-ions.	of CNS/ATM-related data accumulated during the inhibited portion of the mission. Civil ATC data link media for LOS and BLOS communicat-ions.	of CNS/ATM-related data accumulated during the inhibited portion of the mission. Civil ATC data link media for LOS and BLOS communicat-ions.		
Airlift Capability	The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportat-ion System. The aircraft's entire main cargo deck must be convertible to an all cargo configuration that accommodat-es 463L pallets, an all passenger configuration (plus baggage) (or equivalent AE capability to include ambulatory and /or patient support pallets), and	The aircraft shall be capable of efficiently transport-ing equipment and personnel and fit seamlessly into the Defense Transportatio n System. The aircraft's entire main cargo deck must be convertible to an all cargo configurat-ion that accommodat-es 463L pallets, an all passenger configuration (plus baggage) (or equivalent AE capability to include ambulatory and /or patient support pallets), and	The aircraft shall be capable of efficiently transport-ing equipment and personnel and fit seamlessly into the Defense Transportatio n System. The aircraft's entire main cargo deck must be convertible to an all cargo configurat-ion that accommodat-es 463L pallets, an all passenger configuration (plus baggage) (or equivalent AE capability to include ambulatory and /or patient support pallets), and	TBD	Will meet or exceed Current APB Objective.

	must optimize a full range of palletized cargo, passengers, and AE configurat-ions that fully and efficiently utilize all available main deck space.	must optimize a full range of palletized cargo, passengers, and AE configurat-ions that fully and efficiently utilize all available main deck space.	must optimize a full range of palletized cargo, passengers, and AE configurat-ions that fully and efficiently utilize all available main deck space.		
Receiver Air Refueling Capability	The aircraft must be capable of receiver air refueling (IAW current technical directives) to its maximum inflight gross weight from any compatible tanker aircraft using current air refueling procedures.	The aircraft must be capable of receiver air refueling (IAW current technical directives) to its maximum inflight gross weight from any compatible tanker aircraft using current air refueling procedures.	The aircraft must be capable of receiver air refueling (IAW current technical directives) from any compatible tanker aircraft using current air refueling procedures.	TBD	Will meet or exceed Current APB Objective.
Force Protection	Aircraft shall be able to operate in chemical and biological environments	Aircraft shall be able to operate in chemical and biological environments	Aircraft shall be able to operate in chemical and biological environments	TBD	Will meet or exceed Current APB Objective.
Net-Ready	The system must fully support execution of all operational activities identified in the applicable joint and system integrated	The system must fully support execution of all operational activities identified in the applicable joint and system integrated	The system must fully support execution of joint critical operational activities identified in the applicable joint and system integrated	TBD	Will meet or exceed Current APB Objective.

	architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: 1) DISR-mandated GIG IT standards and profiles identified in the TV-1, 2) DISR-mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and IA attributes, data correctness,	architectures and the system must satisfy the technical requirements for Net-Centric military operations to include: 1) DISR-mandated GIG IT standards and profiles identified in the TV-1, 2) DISR-mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and IA attributes, data correctness,	architectures and the system must satisfy the technical requirements for transition to Net-Centric military operations to include: 1) DISR-mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services, 4) IA requirements including availability, integrity, authenticat-ion, confidential-ity, and non-repudiation, and issuance of an IATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and IAattributes, data		

	data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.			
Survivability	Aircraft SPM. Tanker aircraft shall be able to operate in hostile environments as discussed in Section 4 and AFTTP 3-3.22B. SPM shall provide automated protection against IR threats as described in AMC Annex to LAIRCM ORD 314-92 dated 25 Jan 2001. SPM shall provide automated protection against RF threats as described in the ASACM CDD, May 22, 2006, with the exception of Reduction in Lethality	Aircraft SPM. Tanker aircraft shall be able to operate in hostile environments as discussed in Section 4 and AFTTP 3-3.22B. SPM shall provide automated protection against IR threats as described in AMC Annex to LAIRCM ORD 314-92 dated 25 Jan 2001. SPM shall provide automated protection against RF threats as described in the ASACM CDD, May 22, 2006, with the exception of Reduction in Lethality	Aircraft SPM. Tanker aircraft shall be able to operate in hostile environments as discussed in Section 4 and AFTTP 3-3.22B. SPM shall provide automated protection against IR threats as described in AMC Annex to LAIRCM ORD 314-92 dated 25 Jan 2001. SPM shall provide automated protection against RF threats as described in the ASACM CDD, May 22, 2006, with the exception of Reduction in Lethality	TBD	Will meet or exceed Current APB Threshold.	(Ch-1)

	values in Table 28. The aircraft system shall support use of existing night vision devices and laser eye protection devices. The aircraft shall be capable of takeoff, landing, and air refueling, as a tanker and receiver in an NVIS environment. KC-X must be capable of flying tanker tactical profiles as specified in MCM 3-1, Vol 22, AF Tactics, Training, Procedures, Jun 03. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display battle-space information to provide situational awareness, and assist in using countermeas	values in Table 28. The aircraft system shall support use of existing night vision devices and laser eye protection devices. The aircraft shall be capable of takeoff, landing, and air refueling, as a tanker and receiver in an NVIS environment. KC-X must be capable of flying tanker tactical profiles as specified in MCM 3-1, Vol 22, AF Tactics, Training, Procedures, Jun 03. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display battle-space information to provide situational awareness, and assist in using counter-	values in Table 28. The aircraft system shall support use of existing night vision devices and laser eye protection devices. The aircraft shall be capable of takeoff, landing, and air refueling, as a tanker and receiver in an NVIS environment. KC-X must be capable of flying tanker tactical profiles as specified in MCM 3-1, Vol 22, AF Tactics, Training, Procedures, Jun 03. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display battle-space information to provide situational awareness, and assist in using counter-		

	ures and defensive systems to avoid potential threats as discussed in the ASACM CDD. EMP protection for all mission components.	measures and defensive systems to avoid potential threats as discussed in the ASACM CDD. EMP protection for all mission components.	measures and defensive systems to avoid potential threats as discussed in the ASACM CDD. The KC-X fleet shall have EMP protection for flight-critical aircraft systems.		
Simultaneous Multi-Point Refuelings	The aircraft shall be provisioned (including structural modificat-ions, plumbing, electrical, etc.) for simultaneous multi-point drogue refueling.	The aircraft shall be provisioned (including structural modificat-ions, plumbing, electrical, etc.) for simultaneous multi-point drogue refueling.	The aircraft shall be provisioned (including structural modificat-ions, plumbing, electrical, etc.) for simultaneous multi-point drogue refueling.	TBD	Will meet or exceed Current APB Objective.
Operational Availability	Operational availability shall be not less than 89%.	Operational availability shall be not less than 89%.	Operational availability shall be not less than 80%.	TBD	Will meet or exceed Current APB Objective.
Mission Reliability	Break Rate shall be equal to or better than the 2006 KC-10 Six Sigma mean BR of 1.3 (breaks per 100 sorties).	Break Rate shall be equal to or better than the 2006 KC-10 Six Sigma mean BR of 1.3 (breaks per 100 sorties).	Break Rate shall be equal to or better than the 2006 KC-10 Six Sigma mean BR of 1.3 (breaks per 100 sorties).	TBD	Will meet or exceed Current APB Objective.

Requirements Source:
Capability Development Document (CDD) for KC-135 Replacement Aircraft, version 7.0, December 27, 2006.

Acronyms And Abbreviations

AE - Aeromedical Evacuation
AF - Air Force
AFTTP - Air Force Tactics, Techniques, and Procedures
AMC - Air Mobility Command
ASACM - Advanced Situational Awareness and Countermeasures
ATC - Air Traffic Control
ATO - Approval to Operate
BLOS - Beyond Line of Sight
BR - Break Rate
CDD - Capability Development Document
CNS/ATM - Communication Navigation Surveillance/Air Traffic Management
DAA - Designated Approval Authority
DISR - DoD IT Standards Registry
DoD - Department of Defense
EMP - Electromagnetic Pulse
GIG - Global Information Grid
IA - Information Assurance
IATO - Interim Authority to Operate
IAW - In Accordance With
IR - Infrared
IT - Information Technology
KIP - Key Interface Profile
LAIRCM - Large Aircraft Infrared Countermeasures
LOS - Line of Sight
MCM - Multi-Command Manual
NCOW RM - Net Centric Operations Warfare Reference Model
NVIS - Night Vision and Imaging System
ORD - Operational Requirements Document
RF - Radio Frequency
SPM - Self-Protection Measures
STANAGs - Standard Agreements
TBD - To Be Determined
TV - Technical View

Change Explanations

(Ch-1) In the quarterly exception SAR, the KC-46 program office included the Acquisition Program Baseline objective values as the default current estimate for performance characteristics noting that Boeing is contractually required to meet only the APB threshold values for two of these performance characteristics, Tanker Air Refueling Capability and Survivability. Now that the KC-46 System Requirement Review, Integrated Baseline Review and System Functional Review are complete with no changes to requirements or the contract baseline, the KC-46 program office has adjusted the current estimate for performance characteristics to be consistent with the below memo associated with the Tanker Air Refueling Capability and Survivability performance characteristics.

Memo

Tanker Air Refueling Capability: The Key Performance Parameter (KPP) objective includes the KPP threshold requirement. Therefore, the KPP objective requires air refueling of all current and programmed fixed-wing receiver aircraft and air refueling of all current and programmed tilt rotor receiver aircraft. The ability to refuel at maximum inflight gross weight portion of this KPP objective was not included as one of the contractually-required 372 mandatory requirements. Therefore, the KC-46 Engineering and Manufacturing Development (EMD) contract does not require the contractor to meet this portion of the objective.

Fuel Offload versus Radius: Figure 6.1, as referenced in the objective and threshold values, is located in the KC-X

CDD.

Survivability: Section 4, as referenced in the objective and threshold values, is located in the KC-X CDD. The Electromagnetic Pulse protection for all mission components portion of this KPP objective was not included as one of the contractually-required 372 mandatory requirements. Therefore, the KC-46 EMD contract does not require the contractor to meet this portion of the objective.

Operational Availability: Operational Availability equals the total aircraft in the inventory (TAI) less the number of depot possessed aircraft (including programmed depot maintenance and unscheduled depot maintenance) less the number of aircraft that are not mission capable divided by TAI. Operational Availability as stated in the CDD is equivalent to and meets the requirement for Materiel Availability as required by the Manual for the Operation of the Joint Capabilities Integration and Development System (JCIDS).

Mission Reliability: Break Rate (BR) is defined in Air Force Instruction 21-101 and is the percentage of aircraft that land in “Code-3”, or “Alpha-3” for Mobility AF, status. BR (%) equals number of sorties that land in “Code-3” divided by total sorties flown times 100. Mission Reliability as stated in the CDD meets the requirement for Materiel Reliability as required by the Manual for the Operation of JCIDS.

Track To Budget

RDT&E				
APPN 3600	BA 07	PE 0401221F	(Air Force)	
	Project 674927	KC-135 Replacement Tanker		(Sunk)
APPN 3600	BA 05	PE 0605221F	(Air Force)	
	Project 655271	KC-46, Next Generation Aerial Refueling Aircraft		
Procurement				
APPN 3010	BA 02	PE 0401221F	(Air Force)	
	ICN KC135R	Tanker Replacement		
MILCON				
APPN 3300	BA 01	PE 0401221F	(Air Force)	
	Project WAMCXX0X	KC-46, MILCON		

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY2011 $M			BY2011 $M	TY $M		
Appropriation	SAR Baseline Dev Est	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Dev Est	Current APB Development Objective	Current Estimate
RDT&E	6804.2	6804.2	7484.6	6915.3	7149.6	7149.6	7299.1
Procurement	33040.3	33040.3	36344.3	32724.3	40236.0	40236.0	40363.3
Flyaway	27690.4	--	--	27441.6	33776.5	--	33904.8
Recurring	27690.4	--	--	27441.6	33776.5	--	33904.8
Non Recurring	0.0	--	--	0.0	0.0	--	0.0
Support	5349.9	--	--	5282.7	6459.5	--	6458.5
Other Support	2840.7	--	--	2806.3	3397.9	--	3396.9
Initial Spares	2509.2	--	--	2476.4	3061.6	--	3061.6
MILCON	3673.7	3673.7	4041.1	3572.0	4314.6	4314.6	4314.6
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	43518.2	43518.2	N/A	43211.6	51700.2	51700.2	51977.0

In accordance with the KC-46 Acquisition Decision Memorandum dated February 24, 2011, the KC-46 FY 2013 President's Budget has been adjusted to reflect the Air Force Service Cost Position (SCP) and fact-of-life changes.

The Air Force SCP position for the KC-46 is at the mean of the cost estimate distribution (in this case the 55% confidence level). It takes into consideration all relevant program risks, providing sufficient resources to execute the program under normal conditions encountering average levels of technical, schedule, and programmatic risk and external influence

Quantity	SAR Baseline Dev Est	Current APB Development	Current Estimate
RDT&E	4	4	4
Procurement	175	175	175
Total	179	179	179

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2013 President's Budget / December 2011 SAR (TY$ M)

Appropriation	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
RDT&E	967.9	877.1	1815.6	1576.1	1098.0	567.1	345.0	52.3	7299.1
Procurement	0.0	0.0	0.0	0.0	1657.0	2660.2	3335.3	32710.8	40363.3
MILCON	0.0	0.0	0.0	255.7	263.8	306.2	261.2	3227.7	4314.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2013 Total	967.9	877.1	1815.6	1831.8	3018.8	3533.5	3941.5	35990.8	51977.0
	--	--	--	--	--	--	--	--	--

Quantity	Undistributed	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
Development	4	0	0	0	0	0	0	0	0	4
Production	0	0	0	0	0	7	12	15	141	175
PB 2013 Total	4	0	0	0	0	7	12	15	141	179
	--	--	--	--	--	--	--	--	--	--

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2005	--	--	--	--	--	--	10.2
2006	--	--	--	--	--	--	10.1
2007	--	--	--	--	--	--	67.8
2008	--	--	--	--	--	--	16.7
2009	--	--	--	--	--	--	17.9
2010	--	--	--	--	--	--	306.3
2011	--	--	--	--	--	--	538.9
2012	--	--	--	--	--	--	877.1
2013	--	--	--	--	--	--	1815.6
2014	--	--	--	--	--	--	1576.1
2015	--	--	--	--	--	--	1098.0
2016	--	--	--	--	--	--	567.1
2017	--	--	--	--	--	--	345.0
2018	--	--	--	--	--	--	52.3
Subtotal	**4**	**--**	**--**	**--**	**--**	**--**	**7299.1**

Annual Funding BY$
3600 | RDT&E | Research, Development, Test, and Evaluation, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2011 $M	Non End Item Recurring Flyaway BY 2011 $M	Non Recurring Flyaway BY 2011 $M	Total Flyaway BY 2011 $M	Total Support BY 2011 $M	Total Program BY 2011 $M
2005	--	--	--	--	--	--	11.4
2006	--	--	--	--	--	--	10.9
2007	--	--	--	--	--	--	71.6
2008	--	--	--	--	--	--	17.3
2009	--	--	--	--	--	--	18.3
2010	--	--	--	--	--	--	308.9
2011	--	--	--	--	--	--	532.6
2012	--	--	--	--	--	--	851.5
2013	--	--	--	--	--	--	1733.6
2014	--	--	--	--	--	--	1479.9
2015	--	--	--	--	--	--	1012.7
2016	--	--	--	--	--	--	513.8
2017	--	--	--	--	--	--	307.1
2018	--	--	--	--	--	--	45.7
Subtotal	**4**	**--**	**--**	**--**	**--**	**--**	**6915.3**

Annual Funding TY$
3010 | Procurement | Aircraft Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2015	7	1401.8	--	--	1401.8	255.2	1657.0
2016	12	2188.7	--	--	2188.7	471.5	2660.2
2017	15	2670.2	--	--	2670.2	665.1	3335.3
2018	15	2650.2	--	--	2650.2	531.2	3181.4
2019	15	2733.4	--	--	2733.4	824.2	3557.6
2020	15	2763.5	--	--	2763.5	551.6	3315.1
2021	15	2832.2	--	--	2832.2	539.6	3371.8
2022	15	2900.9	--	--	2900.9	479.8	3380.7
2023	15	2956.3	--	--	2956.3	473.8	3430.1
2024	15	3033.4	--	--	3033.4	619.0	3652.4
2025	15	3106.0	--	--	3106.0	501.9	3607.9
2026	15	3194.1	--	--	3194.1	370.1	3564.2
2027	6	1474.1	--	--	1474.1	175.5	1649.6
Subtotal	**175**	**33904.8**	**--**	**--**	**33904.8**	**6458.5**	**40363.3**

Annual Funding BY$
3010 | Procurement | Aircraft Procurement, Air Force

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2011 $M	Non End Item Recurring Flyaway BY 2011 $M	Non Recurring Flyaway BY 2011 $M	Total Flyaway BY 2011 $M	Total Support BY 2011 $M	Total Program BY 2011 $M
2015	7	1266.3	--	--	1266.3	230.5	1496.8
2016	12	1942.2	--	--	1942.2	418.4	2360.6
2017	15	2327.5	--	--	2327.5	579.8	2907.3
2018	15	2269.2	--	--	2269.2	454.9	2724.1
2019	15	2299.1	--	--	2299.1	693.3	2992.4
2020	15	2283.3	--	--	2283.3	455.8	2739.1
2021	15	2298.7	--	--	2298.7	438.0	2736.7
2022	15	2312.8	--	--	2312.8	382.6	2695.4
2023	15	2315.3	--	--	2315.3	371.1	2686.4
2024	15	2333.7	--	--	2333.7	476.2	2809.9
2025	15	2347.3	--	--	2347.3	379.3	2726.6
2026	15	2371.2	--	--	2371.2	274.8	2646.0
2027	6	1075.0	--	--	1075.0	128.0	1203.0
Subtotal	**175**	**27441.6**	**--**	**--**	**27441.6**	**5282.7**	**32724.3**

Annual Funding TY$
3300 | MILCON | Military Construction, Air Force

Fiscal Year	Total Program TY $M
2014	255.7
2015	263.8
2016	306.2
2017	261.2
2018	413.2
2019	613.5
2020	431.2
2021	198.1
2022	332.1
2023	350.8
2024	419.7
2025	398.8
2026	70.3
Subtotal	**4314.6**

Annual Funding BY$
3300 | MILCON | Military Construction, Air Force

Fiscal Year	Total Program BY 2011 $M
2014	234.9
2015	238.1
2016	271.4
2017	227.4
2018	353.4
2019	515.5
2020	355.9
2021	160.6
2022	264.5
2023	274.5
2024	322.6
2025	301.1
2026	52.1
Subtotal	**3572.0**

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	2/24/2011	2/24/2011
Approved Quantity	19	19
Reference	Milestone B ADM	Milestone B ADM
Start Year	2015	2015
End Year	2016	2016

Although above 10% of the total production quantity, the KC-46 Milestone B Acquisition Decision Memorandum (ADM) approves a Low Rate Initial Production quantity of 19 aircraft as being necessary to develop an incremental quantity increase to Full Rate Production.

Foreign Military Sales

None

Nuclear Cost

None

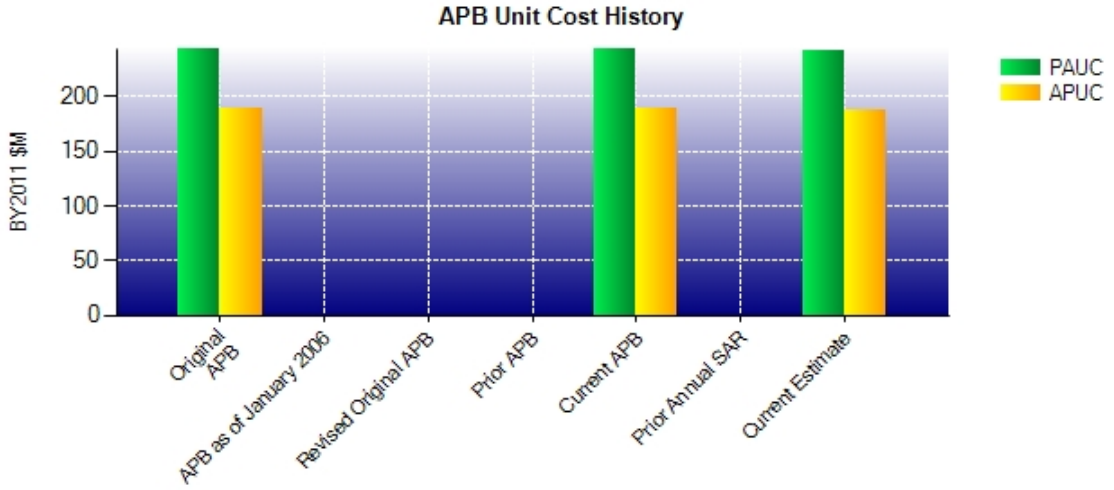
Unit Cost

Unit Cost Report

Unit Cost	BY2011 $M Current UCR Baseline (AUG 2011 APB)	BY2011 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	43518.2	43211.6	
Quantity	179	179	
Unit Cost	243.118	241.406	-0.70
Average Procurement Unit Cost (APUC)			
Cost	33040.3	32724.3	
Quantity	175	175	
Unit Cost	188.802	186.996	-0.96

Unit Cost	BY2011 $M Original UCR Baseline (AUG 2011 APB)	BY2011 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	43518.2	43211.6	
Quantity	179	179	
Unit Cost	243.118	241.406	-0.70
Average Procurement Unit Cost (APUC)			
Cost	33040.3	32724.3	
Quantity	175	175	
Unit Cost	188.802	186.996	-0.96

Unit Cost History



		BY2011 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	AUG 2011	243.118	188.802	288.828	229.920
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	AUG 2011	243.118	188.802	288.828	229.920
Prior Annual SAR	N/A	N/A	N/A	N/A	N/A
Current Estimate	DEC 2011	241.406	186.996	290.374	230.647

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY $M)

Initial PAUC Dev Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
288.828	3.574	0.000	0.000	0.000	-1.298	0.000	-0.730	1.546	290.374

Current SAR Baseline to Current Estimate (TY $M)

Initial APUC Dev Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
229.920	3.070	0.000	0.000	0.000	-1.863	0.000	-0.480	0.727	230.647

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	FEB 2011	N/A	FEB 2011
Milestone C	N/A	AUG 2015	N/A	AUG 2015
RAA	N/A	AUG 2017	N/A	AUG 2017
Total Cost (TY $M)	N/A	51700.2	N/A	51977.0
Total Quantity	N/A	179	N/A	179
Prog. Acq. Unit Cost (PAUC)	N/A	288.828	N/A	290.374

Cost Variance

Cost Variance Summary

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	7149.6	40236.0	4314.6	51700.2
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	--	--	--
Other	--	--	--	--
Support	--	--	--	--
Subtotal	--	--	--	--
Current Changes				
Economic	+44.0	+537.3	+58.6	+639.9
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+152.2	-326.0	-58.6	-232.4
Other	--	--	--	--
Support	-46.7	-84.0	--	-130.7
Subtotal	+149.5	+127.3	--	+276.8
Total Changes	+149.5	+127.3	--	+276.8
CE - Cost Variance	7299.1	40363.3	4314.6	51977.0
CE - Cost & Funding	7299.1	40363.3	4314.6	51977.0

Summary Base Year 2011 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Dev Est)	6804.2	33040.3	3673.7	43518.2
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	--	--	--
Other	--	--	--	--
Support	--	--	--	--
Subtotal	--	--	--	--
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	+0.3	--	-53.4	-53.1
Engineering	--	--	--	--
Estimating	+156.2	-248.8	-48.3	-140.9
Other	--	--	--	--
Support	-45.4	-67.2	--	-112.6
Subtotal	+111.1	-316.0	-101.7	-306.6
Total Changes	+111.1	-316.0	-101.7	-306.6
CE - Cost Variance	6915.3	32724.3	3572.0	43211.6
CE - Cost & Funding	6915.3	32724.3	3572.0	43211.6

Previous Estimate: September 2011

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+44.0
Revised Program Office Estimate to reflect program realignments resulting from execution changes. (Estimating)	+35.8	+37.1
Adjustment for current and prior escalation. (Estimating)	-6.3	-6.5
Decrease in Aircrew Training Devices due to revised Air Mobility Command requirements. (Support)	-19.7	-20.2
Change in estimating assumptions resulting from inflationary guidance related to non-pay and non-fuel. (Estimating)	-35.0	-37.5
Decrease in Direct Mission Support costs due to execution changes. (Support)	-1.9	-1.9
Revised Test and Evaluation schedule to align with the current contract schedule. (Schedule)	+0.3	0.0
Revised estimate to reflect additional FY 2010 and FY 2011 funding received through the Tanker Replacement Transfer Fund. (Estimating)	+140.4	+136.0
Increased funding from FY 2013 - FY 2017 due to DoD budget adjustment (Estimating)	+21.3	+23.1
Decrease in Program Office Support due to execution changes. (Support)	-23.8	-24.6
RDT&E Subtotal	+111.1	+149.5

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+537.3
Change in estimating asumptions resulting from inflationary guidance related to non-pay and non-fuel. (Subtotal)	-428.4	-537.4
Change in estimating assumptions resulting from inflationary guidance related to non-pay and non-fuel. (Estimating)	(-361.2)	(-453.4)
Decrease in Other Support. (Support)	(-34.4)	(-42.8)
Decrease in Initial Spares. (Support)	(-32.8)	(-41.2)
Increased funding from FY 2015 - FY 2017 due to DoD budget adjustment. (Estimating)	+113.3	+128.4
Refined estimate for Program Office Support. (Estimating)	-0.9	-1.0
Procurement Subtotal	-316.0	+127.3

MILCON	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+58.6
Decrease due to rephasing of MILCON requirements. (Schedule)	-53.4	0.0
Change in estimating assumptions resulting from inflationary guidance related to non-pay and non-fuel. (Estimating)	-48.3	-58.6
MILCON Subtotal	-101.7	0.0

Contracts

Appropriation: RDT&E

Contract Name	**KC-46 Engineering and Manufacturing Development**
Contractor	The Boeing Company
Contractor Location	7755 E Marginal Way S Seattle, WA 98108-4002
Contract Number, Type	FA8625-11-C-6600, FPIF
Award Date	February 24, 2011
Definitization Date	February 24, 2011

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
4327.3	4831.0	4	4327.3	4831.0	4	5096.9	5284.4

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	+1.5	-9.3
Previous Cumulative Variances	+0.7	-3.6
Net Change	+0.8	-5.7

Cost And Schedule Variance Explanations

The favorable net change in the cost variance is due to a lower than expected labor cost and efficiencies gained in developing and populating the hazardous material database.

The unfavorable net change in the schedule variance is due to the following:
-Delay in the wing and fuselage layouts
-Delay in the completion of the Control Sticks Hardware Preliminary Design reveiw

Contract Comments

The Contractor's current Estimated Price at Completion reflects the existing contract scope.

The Program Manager's Estimated Price at Completion for Engineering, Manufacturing, and Development (EMD) is $5.3B and the Contractor's Estimated Price at Completion for EMD is $5.1B. The Government estimate is higher than the contractor's estimate due to the inclusion of schedule risk associated with the remainder of the development effort. Although the Contractor and Program Manager estimated costs exceed the contract ceiling price, the Government liability is limited to the contract ceiling price of $4.8B.

Appropriation: RDT&E

Contract Name	**KC-46 Engineering and Manufacturing Development**
Contractor	The Boeing Company
Contractor Location	7755 E Marginal Way S Seattle, WA 98108-4002
Contract Number, Type	FA8625-11-C-6600/1, FFP
Award Date	February 24, 2011
Definitization Date	February 24, 2011

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
66.6	N/A	N/A	66.6	N/A	N/A	66.6	66.6

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

This is the first time this contract is being reported.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	0	0	4	0.00%
Production	0	0	175	0.00%
Total Program Quantities Delivered	0	0	179	0.00%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	51977.0	Years Appropriated	8
Expenditures To Date	630.0	Percent Years Appropriated	34.78%
Percent Expended	1.21%	Appropriated to Date	1845.0
Total Funding Years	23	Percent Appropriated	3.55%

Expenditures identified as of December 31, 2011.

Operating and Support Cost

Assumptions And Ground Rules

In support of the Milestone B decision in February 2011, the Air Force developed a Service Cost Position (SCP). The Milestone Decision Authority approved baselining the KC-46 program to this SCP. The SCP was a life cycle cost estimate for a fleet of 179 aircraft that included an estimate of the KC-46 Operations and Support (O&S) costs of $92,721 (BY11$M), based on a 40-year service life. The KC-46 SCP did not include de-militarization or disposal costs. No life cycle cost estimate was accomplished for the KC-135.

Meaningful comparisons of estimated KC-46 O&S costs to KC-135 O&S costs cannot be made at this time. Currently, the KC-46 estimated average annual cost per aircraft is $14.133 BY11$M and the KC-135 average annual cost per aircraft is $8.866 BY11$M.

This comparison is not adjusted for the capability differences that exist between the two systems nor does it recognize the cost savings that can be made due to the commerciality of the KC-46 aircraft. The KC-46 not only has significantly more aerial refueling offload capability per aircraft compared to the KC-135, but it is also a multi-role aircraft that has significant secondary missions associated with airlift and aeromedical evacuation. In addition, the KC-46 also provides boom/drogue refueling on the same sortie, net ready and survivability capabilities. Furthermore, the KC-46 is derived from a commercial Boeing 767 variant aircraft. Because the 767 was designed to be cost competitive in the commercial marketplace, it is anticipated that the aircraft's commercial efficiencies will facilitate improvement in the military operational costs for the KC-46.

The Air Force is in the process of updating the KC-46 O&S estimate to adjust key assumptions for knowledge gained since awarding the KC-46 contract. The KC-46 O&S cost estimate will be refined in the future to incorporate cost data that leverages commercial efficiencies to improve military operational costs. Additionally, the KC-46 O&S cost estimate will be updated upon Air Mobility Command's finalization of its basing strategy and associated manpower requirements.

Costs BY2011 $M		
Cost Element	**KC-46 Average Annual Cost per Aircraft**	**KC-135 Average Annual Cost per Aircraft**
Unit-Level Manpower	0	0
Unit Operations	0	0
Maintenance	0	0
Sustaining Support	0	0
Continuing System Improvements	0	0
Indirect Support	0	0
Other	0	0
Total Unitized Cost (Base Year 2011 $)	--	--

Total O&S Costs $M	KC-46	KC-135
Base Year	0.0	--
Then Year	0.0	--