Selected Acquisition Report (SAR)

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

KC-46

As of September 30, 2011

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Designation And Nomenclature (Popular Name)

KC-46 Tanker Modernization Program (KC-46)

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 multiplex 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 new tanker aircraft 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

This quarterly exception SAR reflects the initial report for the KC-46 program.

The Air Force completed an Analysis of Alternatives (AoA) in April 2006 to determine the most appropriate strategy to recapitalize the aging fleet of KC-135 aerial refueling aircraft. Based on this analysis, the Air Force concluded that a strategy of full and open competition to select a commercial derivative replacement tanker would result in a best value tanker contract. Replacement of the legacy KC-135 fleet will take place in three stages, known as the KC-X, KC-Y, and the KC-Z. In the initial KC-X increment, the KC-46 will replace roughly a third of the current capability with the purchase of 179 aircraft. On September 24, 2009 a draft Request for Proposal (RFP) was released which led to the final RFP release on February 24, 2010. The source selection process concluded with contract award on February 24, 2011 to The Boeing Company. The Fixed Price Incentive 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 February 23, 2011, the USD(AT&L) conducted a successful Milestone B (MS B) Defense Acquisition Board (DAB). On August 24, 2011, the USD(AT&L) signed the Acquisition Program Baseline (APB) reflecting the MS B approval.

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 Air Force Service Cost Position (SCP) for MS B, approved February 23, 2011. The SCP is the Milestone Decision Authority-approved cost estimate baseline for the KC-46 program. The MS B Acquisition Decision Memorandum, dated February 24, 2011, directed the Air Force to fully fund the program to the February 2011 Air Force SCP. The Air Force committed to fund the program to the SCP in the FY 2013 President's Budget (PB).

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

The KC-46 Program Office and Boeing conducted a comprehensive Integrated Baseline Review (IBR) starting February 24, 2011 and extending through August 23, 2011. The IBR resulted in a mutual understanding between the KC-46 Directorate and Boeing of all the program's elements, to include:

- System requirements review ensuring all capabilities are understood and requirements are flowed down to Boeing's work packages and suppliers
- Properly phased Integrated Master Schedule
- Comprehensive risk assessment identifying all program risks and mitigation plans
- Contract budget and progress payment plan synchronized with the schedule and work to be accomplished
- Functioning Earned Value Management System

The IBR resulted in a well-understood and approved contract technical, cost, and schedule baseline from which the Government will measure and closely manage Boeing's progress during contract execution.

The KC-46 Directorate's near-term focus is now on achieving a KC-46 Firm Configuration and conducting a successful Preliminary Design Review on schedule by December 2011 and March 2012, respectively.

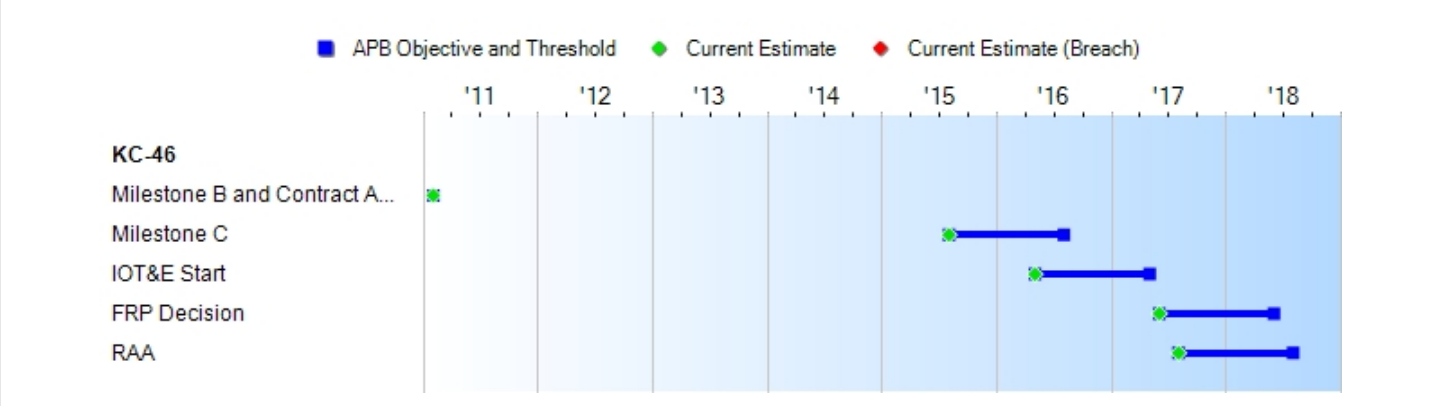
There are no significant software issues with this program at this time.

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	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 standard agreements (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

	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.		envelope, in accordance with applicable air refueling manuals and standard agreements, of any compatible current and programmed tilt rotor receiver aircraft. See Note 1.
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	The aircraft should be capable of exceeding the offload versus radius as depicted in Figure 6.1. See Note 2.
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	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	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	TBD	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 requirements with redundant systems. Capability to inhibit CNS/ATM emissions and prohibit

	transmission of CNS/ATM-related data accumulated during the inhibited portion of the mission. Civil ATC data link media for LOS and BLOS communicat-ions.	transmission of CNS/ATM-related data accumulated during the inhibited portion of the mission. Civil ATC data link media for LOS and BLOS communicat-ions.	transmission of CNS/ATM-related data accumulated during the inhibited portion of the mission. Civil ATC data link media for LOS and BLOS communicat-ions.		transmission of CNS/ATMrelated data accumulated during the inhibited portion of the mission. Civil ATC data link media for LOS and BLOS commun-ications.
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	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	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	TBD	The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transport-ation System. The aircraft's entire main cargo deck must be convertible to an all cargo configuration that accomm-odates 463L pallets, an all passenger configuration (plus baggage) (or equivalent AE capability to include ambulatory and /or patient

	support pallets), and must optimize a full range of palletized cargo, passengers, and AE configurat-ions that fully and efficiently utilize all available main deck space.	support pallets), and must optimize a full range of palletized cargo, passengers, and AE configurat-ions that fully and efficiently utilize all available main deck space.	support pallets), and must optimize a full range of palletized cargo, passengers, and AE configurat-ions that fully and efficiently utilize all available main deck space.		support pallets), and must optimize a full range of palletized cargo, passengers, and AE config-urations 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	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.
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	Aircraft shall be able to operate in chemical and biological environments
Net-Ready	The system must fully support execution of all operational activities identified in the applicable joint and	The system must fully support execution of all operational activities identified in the applicable joint and	The system must fully support execution of joint critical operational activities identified in the applicable joint and	TBD	The system must fully support execution of all operational activities identified in the applicable joint and

	system integrated 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,	system integrated 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,	system integrated 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		system integrated 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) Information assurance requirements including availability, integrity, authen-tication, confidentiality and non-repudiation, and issuance of an Approval to Operate (ATO) by the Designated Approval Authority (DAA), and 5) Operationally effective information

	data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	IAattributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.		exchanges; and mission critical performance and information assurance attributes, data 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	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	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	TBD	Aircraft Self-Protection Measures (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

	threats as described in the ASACM CDD, May 22, 2006, with the exception of Reduction in Lethality 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,	threats as described in the ASACM CDD, May 22, 2006, with the exception of Reduction in Lethality 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,	threats as described in the ASACM CDD, May 22, 2006, with the exception of Reduction in Lethality 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,		protection against radio frequency (RF) threats as described in the Advanced Situational Awareness and Countermeasures (ASACM) CDD, 22 May 06, with the exception of Reduction in Lethality 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 (U), Jun 03

	display battle-space information to provide situational awareness, and assist in using countermeasures and defensive systems to avoid potential threats as discussed in the ASACM CDD. EMP protection for all mission components.	display battle-space information to provide situational awareness, and assist in using counter-measures and defensive systems to avoid potential threats as discussed in the ASACM CDD. EMP protection for all mission components.	display battle-space information to provide situational awareness, and assist in using counter-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.		(S//NF). Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display battlespace information to provide situational awareness, and assist in using counter-measures and defensive systems to avoid potential threats as discussed in the ASACM CDD. EMP protection for all mission components. See Note 3.
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	The aircraft shall be provisioned (including structural modifications plumbing, electrical, etc.) for simultaneous multipoint drogue refueling.
Operational Availability	Operational availability shall be not	Operational availability shall be not	Operational availability shall be not	TBD	Operational availability shall be not

	less than 89%.	less than 89%.	less than 80%.		less than 89%. See Note 4.
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	Break Rate shall be equal to or better than the 2006 KC-10 Six Sigma mean BR of 1.3 (breaks per 100 sorties). See Note 5.

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
IATO - Interim Approval 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
NCOWRM - 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

None

Memo

Note 1. 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.

Note 2. Figure 6.1, as referenced in the objective and threshold values, is located in the KC-X CDD.

Note 3. 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.

Note 4. 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).

Note 5. 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 NA	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	6804.2	7149.6	7149.6	7149.6
Procurement	33040.3	33040.3	36344.3	33040.3	40236.0	40236.0	40236.0
Flyaway	27690.4	--	--	27690.4	33776.5	--	33776.5
Recurring	27690.4	--	--	27690.4	33776.5	--	33776.5
Non Recurring	0.0	--	--	0.0	0.0	--	0.0
Support	5349.9	--	--	5349.9	6459.5	--	6459.5
Other Support	2840.7	--	--	2840.7	3397.9	--	3397.9
Initial Spares	2509.2	--	--	2509.2	3061.6	--	3061.6
MILCON	3673.7	3673.7	4041.1	3673.7	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	43518.2	51700.2	51700.2	51700.2

This SAR reflects cost and funding data based on the KC-46 program's approved Service Cost Position (SCP) dated February 23, 2011. This SCP was developed in support of the KC-46 Milestone B (MS B) Defense Acquisition Board (DAB) and is an independent estimate of what the KC-46 program will cost. In accordance with the MS B Acquisition Decision Memorandum (ADM), dated February 24, 2011, the program was baselined to the approved SCP and is documented in the Acquisition Program Baseline (APB). The Air Force was directed to fully fund the KC-46 program to the Air Force SCP. These adjustments will be reflected in the FY 2013 President's Budget (PB).

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
SEP 2011 Exception SAR (TY $M)

Appropriation	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
RDT&E	137.6	694.3	877.1	1815.3	1579.2	1093.5	559.5	393.1	7149.6
Procurement	0.0	0.0	0.0	0.0	0.0	1636.3	2610.0	35989.7	40236.0
MILCON	0.0	0.0	0.0	699.2	316.4	225.6	266.2	2807.2	4314.6
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SEP 2011 Total	137.6	694.3	877.1	2514.5	1895.6	2955.4	3435.7	39190.0	51700.2
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Quantity	Undistributed	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
Development	4	0	0	0	0	0	0	0	0	4
Production	0	0	0	0	0	0	7	12	156	175
SEP 2011 Total	4	0	0	0	0	0	7	12	156	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	--	--	--	--	--	--	14.9
2011	--	--	--	--	--	--	694.3
2012	--	--	--	--	--	--	877.1
2013	--	--	--	--	--	--	1815.3
2014	--	--	--	--	--	--	1579.2
2015	--	--	--	--	--	--	1093.5
2016	--	--	--	--	--	--	559.5
2017	--	--	--	--	--	--	340.8
2018	--	--	--	--	--	--	52.3
Subtotal	**4**	**--**	**--**	**--**	**--**	**--**	**7149.6**

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	--	--	--	--	--	--	11.3
2006	--	--	--	--	--	--	10.9
2007	--	--	--	--	--	--	71.1
2008	--	--	--	--	--	--	17.2
2009	--	--	--	--	--	--	18.2
2010	--	--	--	--	--	--	15.0
2011	--	--	--	--	--	--	688.2
2012	--	--	--	--	--	--	856.6
2013	--	--	--	--	--	--	1744.3
2014	--	--	--	--	--	--	1492.1
2015	--	--	--	--	--	--	1015.9
2016	--	--	--	--	--	--	511.1
2017	--	--	--	--	--	--	306.1
2018	--	--	--	--	--	--	46.2
Subtotal	**4**	**--**	**--**	**--**	**--**	**--**	**6804.2**

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	1381.1	--	--	1381.1	255.2	1636.3
2016	12	2138.5	--	--	2138.5	471.5	2610.0
2017	15	2612.8	--	--	2612.8	666.1	3278.9
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**	**33776.5**	**--**	**--**	**33776.5**	**6459.5**	**40236.0**

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	1256.6	--	--	1256.6	232.2	1488.8
2016	12	1913.2	--	--	1913.2	421.8	2335.0
2017	15	2298.4	--	--	2298.4	586.0	2884.4
2018	15	2292.4	--	--	2292.4	459.4	2751.8
2019	15	2324.8	--	--	2324.8	701.0	3025.8
2020	15	2311.1	--	--	2311.1	461.3	2772.4
2021	15	2329.0	--	--	2329.0	443.7	2772.7
2022	15	2345.6	--	--	2345.6	388.0	2733.6
2023	15	2350.4	--	--	2350.4	376.7	2727.1
2024	15	2371.4	--	--	2371.4	483.9	2855.3
2025	15	2387.6	--	--	2387.6	385.8	2773.4
2026	15	2414.3	--	--	2414.3	279.7	2694.0
2027	6	1095.6	--	--	1095.6	130.4	1226.0
Subtotal	**175**	**27690.4**	**--**	**--**	**27690.4**	**5349.9**	**33040.3**

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

Fiscal Year	Total Program TY $M
2013	699.2
2014	316.4
2015	225.6
2016	266.2
2017	261.1
2018	72.0
2019	42.8
2020	291.8
2021	290.6
2022	766.5
2023	248.7
2024	424.5
2025	396.1
2026	13.1
Subtotal	**4314.6**

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

Fiscal Year	Total Program BY 2011 $M
2013	658.8
2014	293.1
2015	205.5
2016	238.4
2017	230.0
2018	62.4
2019	36.4
2020	244.3
2021	239.3
2022	620.5
2023	198.0
2024	332.3
2025	304.8
2026	9.9
Subtotal	**3673.7**

Low Rate Initial Production

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

Although above 10 percent of the total 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

There are no Foreign Military Sales data to display.

Nuclear Cost

There are no Nuclear Cost data to display.

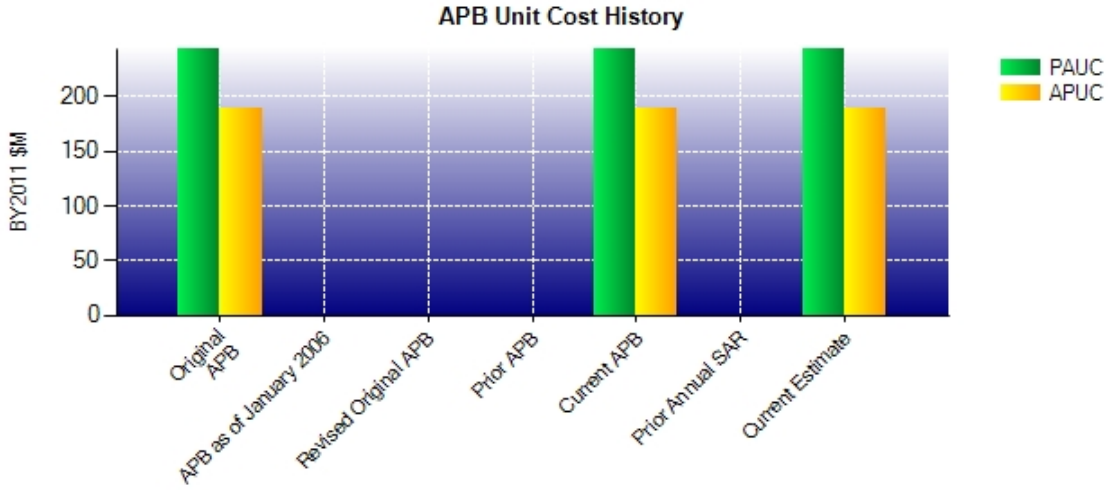
Unit Cost

Unit Cost Report

Unit Cost	BY2011 $M Current UCR Baseline (AUG 2011 APB)	BY2011 $M Current Estimate (SEP 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	43518.2	43518.2	
Quantity	179	179	
Unit Cost	243.118	243.118	0.00
Average Procurement Unit Cost (APUC)			
Cost	33040.3	33040.3	
Quantity	175	175	
Unit Cost	188.802	188.802	0.00

Unit Cost	BY2011 $M Original UCR Baseline (AUG 2011 APB)	BY2011 $M Current Estimate (SEP 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	43518.2	43518.2	
Quantity	179	179	
Unit Cost	243.118	243.118	0.00
Average Procurement Unit Cost (APUC)			
Cost	33040.3	33040.3	
Quantity	175	175	
Unit Cost	188.802	188.802	0.00

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	SEP 2011	243.118	188.802	288.828	229.920

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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	288.828

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	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	229.920

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	51700.2
Total Quantity	N/A	179	N/A	179
Prog. Acq. Unit Cost (PAUC)	N/A	288.828	N/A	288.828

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	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	--	--	--	--
Other	--	--	--	--
Support	--	--	--	--
Subtotal	--	--	--	--
Total Changes	--	--	--	--
CE - Cost Variance	7149.6	40236.0	4314.6	51700.2
CE - Cost & Funding	7149.6	40236.0	4314.6	51700.2

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	--	--	--	--
Engineering	--	--	--	--
Estimating	--	--	--	--
Other	--	--	--	--
Support	--	--	--	--
Subtotal	--	--	--	--
Total Changes	--	--	--	--
CE - Cost Variance	6804.2	33040.3	3673.7	43518.2
CE - Cost & Funding	6804.2	33040.3	3673.7	43518.2

Previous Estimate:

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 (8/25/2011)	+0.7	-3.6
Previous Cumulative Variances	--	--
Net Change	+0.7	-3.6

Cost And Schedule Variance Explanations

The favorable cumulative cost variance is due to the following:
Note: The sentence above is automatically inserted by the software that generates this report and it is inaccurate since the KC-46 currently has a favorable cumulative cost variance.
The favorable cumulative Cost variance is due to the following:
-Boeing has not yet placed a subcontractor on contract, but has established an Authority To Proceed.
-Reduced scope for near-term Ground Test.

The unfavorable cumulative schedule variance is due to the following:
-Late receipt of Subcontractor Data Requirements Lists due to supplier resource issues and Wing Aerial Refueling Pod layouts proceeding slower than expected.
-Air Vehicle System Engineering & Integration is behind schedule position, boom dynamic gust loads analytical tool incurring development issues, and a subcontractor is not yet on contract for Tactical Situational Awareness System.

Contract Comments

This is the first time this contract is being reported.

The Contractor's current Estimated Price at Completion reflects the existing contract scope. The contract was awarded on February 24, 2011.

The Program Manager's Most Likely Estimated Price at Completion for Engineering, Manufacturing, and Development (EMD) is $5.3B and the Contractor's Most Likely 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 estimate costs that exceed the contract ceiling price, the Government liability is limited to the contract ceiling price of $4.8B.

The KC-46 EMD contract consists of both Fixed Price Incentive Firm (FPIF) Contract Line Item Numbers (CLINs) and Firm Fixed Price (FFP) CLINs. The contract values reported in this section of the report represent the EMD contract's FPIF CLINs only. The EMD contract contains FFP CLINs that are not captured in the earned value data. In addition, the program has requested funding for Aircrew Trainers development, Maintenance Trainers development, Government Test and other Government costs.

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	51700.2	Years Appropriated	7
Expenditures To Date	553.7	Percent Years Appropriated	30.43%
Percent Expended	1.07%	Appropriated to Date	831.9
Total Funding Years	23	Percent Appropriated	1.61%

Expenditures identified as of September 30, 2011

Operating and Support Cost

Assumptions And Ground Rules

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 service cost position. This 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 based on a 40-year service life. No life cycle cost estimate was accomplished for the KC-135.

The usefulness of comparing the KC-46 and KC-135 O&S costs is limited because this comparison is not adjusted for the capability differences that exist between the two systems. The KC-46 not only has significantly more aerial refueling offload capability per aircraft compared to the KC-135, the KC-46 also 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. Therefore, the following table has been left blank.

Costs BY2011 $M		
Cost Element	**KC-46 Average Annual Cost per Aircraft**	**KC-135 Average Annual Cost per Aircraft**
Unit-Level Manpower	--	--
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 $)	0	0

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