



Selected Acquisition Report (SAR)

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



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

As of FY 2016 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance
ACAT - Acquisition Category
ADM - Acquisition Decision Memorandum
APB - Acquisition Program Baseline
APPN - Appropriation
APUC - Average Procurement Unit Cost
\$B - Billions of Dollars
BA - Budget Authority/Budget Activity
Blk - Block
BY - Base Year
CAPE - Cost Assessment and Program Evaluation
CARD - Cost Analysis Requirements Description
CDD - Capability Development Document
CLIN - Contract Line Item Number
CPD - Capability Production Document
CY - Calendar Year
DAB - Defense Acquisition Board
DAE - Defense Acquisition Executive
DAMIR - Defense Acquisition Management Information Retrieval
DoD - Department of Defense
DSN - Defense Switched Network
EMD - Engineering and Manufacturing Development
EVM - Earned Value Management
FOC - Full Operational Capability
FMS - Foreign Military Sales
FRP - Full Rate Production
FY - Fiscal Year
FYDP - Future Years Defense Program
ICE - Independent Cost Estimate
IOC - Initial Operational Capability
Inc - Increment
JROC - Joint Requirements Oversight Council
\$K - Thousands of Dollars
KPP - Key Performance Parameter
LRIP - Low Rate Initial Production
\$M - Millions of Dollars
MDA - Milestone Decision Authority
MDAP - Major Defense Acquisition Program
MILCON - Military Construction
N/A - Not Applicable
O&M - Operations and Maintenance
ORD - Operational Requirements Document
OSD - Office of the Secretary of Defense
O&S - Operating and Support
PAUC - Program Acquisition Unit Cost

PB - President's Budget
PE - Program Element
PEO - Program Executive Officer
PM - Program Manager
POE - Program Office Estimate
RDT&E - Research, Development, Test, and Evaluation
SAR - Selected Acquisition Report
SCP - Service Cost Position
TBD - To Be Determined
TY - Then Year
UCR - Unit Cost Reporting
U.S. - United States
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

Program Information

Program Name

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

DoD Component

Air Force

Responsible Office

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Date

Assigned: September 26, 2014

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-46A Tanker Modernization (KC-46A) will replace the U.S. Air Force's aging fleet of Tankers which have been the primary refueling aircraft for more than 50 years. The KC-46A will have enhanced refueling capabilities with greater capacity, and both cargo and aeromedical evacuation with improved efficiency and increased capabilities. The KC-46A will provide aerial refueling support to the United States Air Force, Navy, and Marine Corps, as well as allied nation coalition aircraft.

The KC-46A will have the ability to refuel any fixed-wing receiver capable aircraft on any mission. The KC-46A will be equipped with a modernized KC-10 refueling boom integrated with a fly-by-wire control system, and will be capable of delivering a fuel offload rate required for large aircraft. Furthermore, a hose and drogue system will add additional mission capability which will be independently operable from the refueling boom system. The centerline drogue and wing aerial refueling pods (WARPs) will be used to refuel aircraft fitted with probes. All KC-46A aircraft will be configured for the installation of a Multi-Point Refueling System capable of refueling two receiver aircraft simultaneously from the WARPs mounted under the wings. One Aerial Refueling Operator will control the boom, centerline drogue, and WARPs during refueling operations. Panoramic displays will provide the Aerial Refueling Operator with wing-tip to wing-tip situational awareness.

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

The aircrew compartment will include 15 permanent seats for aircrew, which will include permanent seating for the Aerial Refueling Operators and an optional Aerial Refueling Instructor.

Two high-bypass turbofans, mounted under 34-degree swept wings, will power the KC-46A to take off at gross weights up to 415,000 pounds.

Executive Summary

The KC-46A Program is on track to meet all contractual performance, cost, and schedule requirements. EMD is approximately 61.5% complete. Government funding has been stable with no engineering changes to the design. CY 2014 culminated in a successful first flight of the EMD #1 aircraft, the fully-provisioned 767-2C, on December 28, 2014. This significant event commences the flight test phase of the KC-46A program. Manufacturing challenges related to the design and installation of wire bundles delayed this EMD #1 first flight six months later than originally planned, thereby absorbing nearly all schedule margin to the final contractual milestone, Required Assets Available (RAA), and placing increased pressure on all remaining Boeing internal milestones and test events. These delays and schedule pressures notwithstanding, the KC-46A program and strategy remain strong and the Government's maximum liability on the EMD contract with Boeing remains capped at the ceiling price of \$4.9B. The following paragraphs of this Executive Summary provide additional historical details and CY 2014 accomplishments.

On February 24, 2011, the USD(AT&L) approved Milestone B and certified (with waivers to provisions (a)(1)(B), (a)(1)(D), and (2)) the components set forth in section 2366b of Title 10, United States Code (USC). Pursuant to this code, the USD (AT&L) waived two provisions in its certification because of differences between the Air Force's SCP and the FYDP associated with the FY 2012 PB, and a third provision because Preliminary Design Review (PDR) had not yet occurred. PDR was completed on April 25, 2012. On July 7, 2014, the USD(AT&L) certified that the KC-46A program met the certification requirement for provisions (a)(1)(B), (a)(1)(D), and (2) pursuant to section 2366b of Title 10, USC. There are no remaining 2366b waivers associated with this program.

To date, the KC-46A Program has completed eight of the ten Live Fire Test and Evaluation (LFT&E) test series, with all results being favorable and aligned with models and predictions. The final two LFT&E test series, "Fuel/Fire 3C" Fuselage Dry Bay Fire and "Structural Test 2" Engine and Engine Pylon Vulnerability, are scheduled to begin in March 2015 and conclude prior to the end of CY 2015.

In April 2014 and again in February 2015, the Program Office, Boeing, and the Defense Contract Management Agency conducted a joint Integrated Risk Assessment (IRA) and Schedule Risk Assessment (SRA) to assess current risks and their impacts to the program. The data from the April 2014 IRA and SRA was used by the Program Office to complete its annual POE on October 31, 2014 for the Fixed-Price Incentive Firm (FPIF) KC-46A contract. While the Government's maximum liability on the EMD contract with Boeing remains capped at the ceiling price of \$4.9B, the Program Office estimates it could cost Boeing up to \$6.4B to complete their KC-46A efforts. The KC-46A Milestone C POE in 3rd Quarter FY 2015 will use data from both the 2014 and 2015 risk assessments.

The Program Office conducted a successful Test Readiness Review with Boeing and the Lead Development Test Organization during the week of October 27, 2014. Before the end of CY 2014, all 270 laboratories (Lab), ground, and flight test plans were approved and ready to support all remaining test events. Prior to the first flight of the EMD #2 aircraft, the first KC-46A, the team will conduct a "T-90" First Flight Readiness Review (FFRR) (i.e., 90-days prior) and a "T-30" FFRR, both slated for 2nd Quarter CY 2015.

November 2014 saw a number of program accomplishments. First, EMD #2 moved to the Boeing finishing center, well after originally planned, to complete aircraft electrical build and military component installations to become the first KC-46A aircraft. First flight of this aircraft is estimated for 2nd Quarter CY 2015. While the contractor has improved build rate performance relative to EMD #1, further schedule performance improvements are needed, as this KC-46A first flight was originally planned for January 2015.

Second, the Maintenance Training System team received Acquisition Strategy Panel and Source Selection Authority delegations on November 14, 2015. On January 12, 2015, the PEO approved the strategy. The program will release the Request for Proposal in March 2015 with contract award in late November 2015.

Third, the program successfully met entry criteria for and began formal Lab Verification Testing in the contractor System Integration Lab (SIL) facilities. The testing spans different capabilities and is conducted in a Lighting & Camera Lab, Wet

Fuels Lab, and two software SILs. Phase 1 testing started November 24, 2014 and is planned to complete in March 2015. The team has completed 19 of 20 tests to date with minor issues identified. Phase 2 testing began January 14, 2015, and is planned to complete in June 2015. The team has completed 8 of 28 Phase 2 tests.

In December 2014, Boeing focused effort on completing the first aircraft build-up, culminating in a successful EMD #1 first flight. During this period, the team completed first flight functional tests, fuel dock, final gauntlet, paint, and ground taxi tests. On December 28, 2014, EMD #1 flew the civilian configuration initial check-out flight (3.5 flight hours) with no significant findings.

The KC-46A Aircrew Training System (ATS) team and FlightSafety Services Corporation (FSSC) completed an Integrated Baseline Review which was approved by the System Program Manager on January 15, 2015. FSSC and the Program Office continue to work subsystem Critical Design Review (CDR) open-items related to receipt of aircraft and operational procedural data. The ATS team completed a successful Courseware In-Process Review on December 12, 2014. The ATS team is working towards a final system CDR in Spring 2015.

Throughout the year, the KC-46A Product Support Business Case Analysis (BCA) team finalized the ground rules and assumptions, developed the sustainment alternatives, and completed data collection on those alternatives, to include completion of all site visits and stakeholder engagements. The team is now finalizing their analysis and preparing for the final Gate Review in March 2015 with an outbrief to the Executive Steering Committee in April 2015. The BCA results will be used to inform the KC-46A long-term sustainment strategy.

An ongoing item of note for the KC-46A Program relates to OSD expenditure goals. The FPIF EMD progress payments will cause expenditures to not meet OSD goals. The application of the 20% progress payment withholds, loss ratio withholds, and funding above termination liability will cause expenditures to lag, making it incorrectly appear the KC-46A EMD Program is "forward financed." Continued engagement with Congress, OSD, and Air Staff will be required to prevent funding cuts.

This SAR reflects a total budget reduction of \$551.1M in RDT&E, Aircraft Procurement Air Force (APAF), and MILCON funding when compared to last year's SAR. These subsequent events include additional savings on the award of the ATS contract, the removal of APAF funding for the FY 2015 PB acceleration of aircraft procurement, reprogrammed MILCON funds, and DoD budgetary adjustments.

The Program Office has three 2015 focus areas: (1) achieving KC-46A EMD #2 first flight, (2) completing all Milestone C entrance criteria, and (3) initiating the implementation of the long-term sustainment strategy. Additionally, the KC-46A Program Office will continue to focus attention on maintaining program stability and returning margin back into the schedule for an on-time RAA. Program execution will be carefully managed to ensure Boeing delivers what is required by the contract and the Government maintains the competitively-negotiated program cost, schedule, and performance baselines.

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

Threshold Breaches

APB Breaches		Explanation of Breach
Schedule	<input type="checkbox"/>	The KC-46A previously reported an O&S cost growth breach in the December 2012 SAR. The breach was the result of Air Mobility Command's desire to maximize the benefits of the KC-46A capabilities and leverage that capability across the total force through increased flight hours and increased crew ratios.
Performance	<input type="checkbox"/>	
Cost	RDT&E <input type="checkbox"/>	
	Procurement <input type="checkbox"/>	
	MILCON <input type="checkbox"/>	
	Acq O&M <input type="checkbox"/>	The Program will continue to carry this O&S cost growth until the next Milestone is reached and a new APB is established. The Air Force has committed to staying within Total Obligation Authority during the transition from the KC-135 to the KC-46A aircraft.
O&S Cost	<input checked="" type="checkbox"/>	
Unit Cost	PAUC <input type="checkbox"/>	
	APUC <input type="checkbox"/>	

Nunn-McCurdy Breaches

On January 7, 2015 a Program Deviation Report outlining the above was approved.

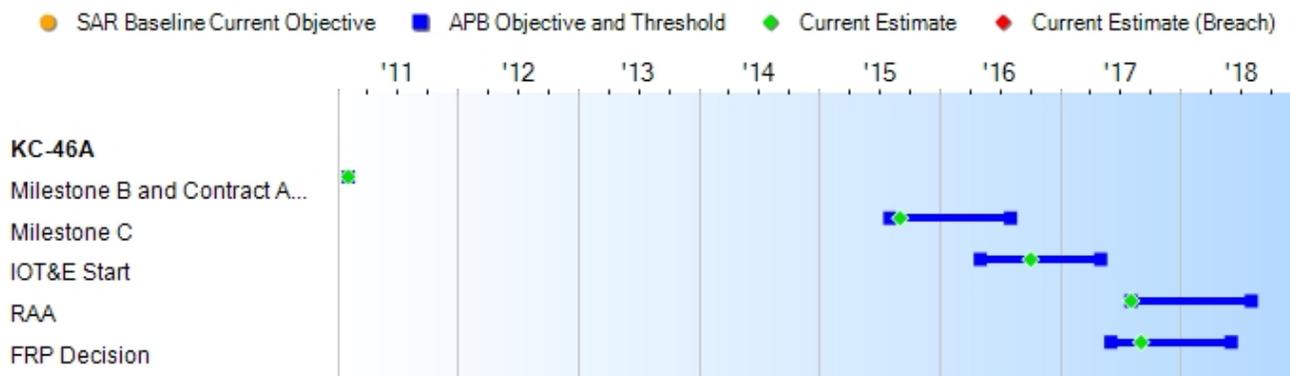
Current UCR Baseline

PAUC None
 APUC None

Original UCR Baseline

PAUC None
 APUC None

Schedule



Schedule Events					
Events	SAR Baseline Development Estimate	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	Sep 2015	(Ch-1)
IOT&E Start	May 2016	May 2016	May 2017	Oct 2016	(Ch-2)
RAA	Aug 2017	Aug 2017	Aug 2018	Aug 2017	
FRP Decision	Jun 2017	Jun 2017	Jun 2018	Sep 2017	(Ch-3)

Change Explanations

- (Ch-1) The current estimate for Milestone C has changed from August 2015 to September 2015 due to delays in aircraft build.
- (Ch-2) The current estimate for IOT&E Start has changed from May 2016 to October 2016 due to delays in aircraft build.
- (Ch-3) The current estimate for FRP Decision has changed from June 2017 to September 2017 due to a projected delay in IOT&E completion as a result of delayed aircraft build.

Notes

IOT&E start represents the beginning of dedicated IOT&E, which will commence upon OSD approval of the Operational Test Readiness Review.

The Boeing contractual 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 IOC.

Acronyms and Abbreviations

IOT&E - Initial Operational Test and Evaluation
RAA - Required Assets Available

Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold	Demonstrated Performance	Current Estimate	
Tanker Air Refueling Capability				
The aircraft should be capable of accomplishing 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 with applicable air refueling manuals and standard agreements, of any compatible current and programmed tilt rotor receiver aircraft.	The aircraft should be capable of accomplishing 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 with applicable air refueling manuals and standard agreements, of any compatible current and programmed tilt rotor receiver aircraft.	The aircraft shall be capable of accomplishing 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 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.	TBD	Will meet or exceed Current APB Threshold. The aircraft shall be capable of accomplishing 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 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. The aircraft should be capable of exceeding the offload versus radius as depicted in

Figure 6.1.

Civil/Military CNS/ATM				
<p>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 communications.</p>	<p>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 communications.</p>	<p>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 communications.</p>	<p>TBD</p>	<p>Will meet or exceed Current APB Objective. 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 communications.</p>
Airlift Capability				
<p>The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System. The aircraft's entire main cargo deck must be convertible to an all cargo configuration that accommodates 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 configurations that fully and efficiently utilize all available main deck space.</p>	<p>The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System. The aircraft's entire main cargo deck must be convertible to an all cargo configuration that accommodates 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 configurations that fully and efficiently utilize all available main deck space.</p>	<p>The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System. The aircraft's entire main cargo deck must be convertible to an all cargo configuration that accommodates 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 configurations that fully and efficiently utilize all available main deck space.</p>	<p>TBD</p>	<p>Will meet or exceed Current APB Objective. The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System. The aircraft's entire main cargo deck must be convertible to an all cargo configuration that accommodates 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 configurations that fully and efficiently utilize all available main deck</p>

				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. 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	Will meet or exceed Current APB Objective. 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 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, authentication, confidentiality, 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, data	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, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and IA	The system must fully support execution of joint critical operational activities identified in the applicable joint and 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, authentication, confidentiality, and non-repudiation, and issuance of an IATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and IA	TBD	Will meet or exceed Current APB Objective. 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, authentication, confidentiality, and non-repudiation, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and IA

availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.	attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.		attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views.
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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 January 25, 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 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, June 2003. 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	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 January 25, 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 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, June 2003. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display	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 January 25, 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 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, June 2003. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display battle-	TBD	Will meet or exceed Current APB Threshold. 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 January 25, 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 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, June 2003. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with
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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.	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.	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.		on-board sensor data, 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.
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Simultaneous Multi-Point Refuelings

The aircraft shall be provisioned (including structural modifications, plumbing, electrical, etc.) for simultaneous multi-point drogue refueling.	The aircraft shall be provisioned (including structural modifications, plumbing, electrical, etc.) for simultaneous multi-point drogue refueling.	The aircraft shall be provisioned (including structural modifications, plumbing, electrical, etc.) for simultaneous multi-point drogue refueling.	TBD	Will meet or exceed Current APB Objective. The aircraft shall be provisioned (including structural modifications, plumbing, electrical, etc.) for simultaneous multi-point drogue refueling.
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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 APB Objective. Operational availability shall be not less than 89%.
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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. Break Rate shall be equal to or better than the 2006 KC-10 Six Sigma mean BR of 1.3 (breaks per 100 sorties).
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Requirements Reference

Capability Development Document (CDD) Version 7.0 dated December 27, 2006

Change Explanations

None

Notes

Tanker Air Refueling Capability: The 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-46A 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-46A EMD contract does not require the contractor to meet this portion of the objective.

OA: OA equals the 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. OA 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 JCIDS.

Mission Reliability: 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.

Acronyms and Abbreviations

AE - Aeromedical Evacuation
AF - Air Force
AFTTP - Air Force Tactics, Techniques, and Procedures
AMC - Air Mobility Command
APB - Acquisition Program Baseline
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
EMD - Engineering and Manufacturing Development
EMP - Electromagnetic Pulse
GIG - Global Information Grid
IA - Information Assurance
IATO - Interim Authority to Operate
IAW - In Accordance With
IR - Infrared
IT - Information Technology
JCIDS - Joint Capabilities Integration and Development System
KIP - Key Interface Profile
KPP - Key Performance Parameter
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 Systems
OA - Operational Availability
ORD - Operational Requirements Document
RF - Radio Frequency
SPM - Self-Protection Measures
STANAGs - Standard Agreements
TAI - Total Aircraft in the Inventory
TBD - To Be Determined
TV - Technical View
Vol - Volume

Track to Budget

RDT&E

Appn	BA	PE	
Air Force	3600	07	0401221F
	Project	Name	
	674927	KC-135 Replacement Tanker (Sunk)	
Air Force	3600	05	0605221F
	Project	Name	
	655271	KC-46	

Procurement

Appn	BA	PE	
Air Force	3010	06	0401221F
	Line Item	Name	
	KC046A	KC-46A Tanker	
Air Force	3010	02	0401221F
	Line Item	Name	
	KC046A	KC-46A Tanker	

Notes

In the FY 2016 PB, Procurement funds were realigned from BA 02 to BA 06. A new funding line for BA 06 was added to the Track to Budget.

MILCON

Appn	BA	PE	
Air Force	3300	01	0401221F
	Project	Name	
	VARIOUS	KC-46, MILCON	
Air Force	3730	01	0502576F
	Project	Name	
	VARIOUS	Facilities Restoration and Modernization - AFR (Shared)	
Air Force	3830	01	0501413F
	Project	Name	
	VARIOUS	KC-46, Air National Guard (ANG), MILCON	

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2011 \$M			BY 2011 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	6804.2	6804.2	7484.6	6253.9	7149.6	7149.6	6570.2
Procurement	33040.3	33040.3	36344.3	31334.9	40236.0	40236.0	39004.4
Flyaway	--	--	--	27862.4	--	--	34793.0
Recurring	--	--	--	27862.4	--	--	34793.0
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	3472.5	--	--	4211.4
Other Support	--	--	--	2536.3	--	--	3069.0
Initial Spares	--	--	--	936.2	--	--	1142.4
MILCON	3673.7	3673.7	4041.1	2699.7	4314.6	4314.6	3334.9
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	43518.2	43518.2	N/A	40288.5	51700.2	51700.2	48909.5

Confidence Level

Confidence Level of cost estimate for current APB: 55%

The Air Force Service Cost Position (SCP) for the KC-46A is at the mean of the cost estimate distribution (in this case the 55 percent 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.

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

Cost and Funding

Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY\$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	4841.3	786.4	602.4	314.3	21.4	4.4	0.0	0.0	6570.2
Procurement	0.0	1573.2	2405.7	3084.2	3176.2	3242.4	3258.0	22264.7	39004.4
MILCON	260.8	187.3	54.5	184.0	313.4	424.6	34.6	1875.7	3334.9
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2016 Total	5102.1	2546.9	3062.6	3582.5	3511.0	3671.4	3292.6	24140.4	48909.5
PB 2015 Total	5153.0	2546.9	3075.2	4271.4	4026.4	3663.7	3388.9	23335.1	49460.6
Delta	-50.9	0.0	-12.6	-688.9	-515.4	7.7	-96.3	805.3	-551.1

Funding Notes

The "Prior" delta of (\$50.9M) is the result of numerous items which impacted the Program BA. First, a below threshold reprogramming of MILCON appropriated dollars in the amount of \$1.56M increased the Program FY 2010 BA. Second, an above threshold reprogramming of MILCON appropriations added \$0.6M of FY 2011 BA to the program. Finally, the Small Business Innovation Research Bill, communicated to the program on March 14, 2014, reduced the Program BA by (\$53.1M). This reduction impacted the RDT&E appropriation.

The FY 2016 PB included a Congressional increase of \$9.5M in FY 2015 RDT&E appropriations and a reduction of \$9.5M in FY 2015 Procurement appropriation. These offsetting transactions created a net zero dollar impact on the total FY 2015 BA.

The summation of the FY 2016 - FY 2020 deltas above represent total funding reductions of (\$1,305.5M) and are sourced from multiple appropriations as identified below:

- 1) The Aircrew Training Systems contract, competitively awarded on May 1, 2013, provides for a (\$122.5M) reduction to BA as savings are being returned to the Air Force (FY 2019 - FY 2020).
- 2) The FY 2016 PB position reduced FYDP funding by (\$1,139.4M) in the Aircraft Procurement Air Force (APAF) appropriation in both FY 2017 (\$655.2M) and FY 2018 (\$484.2M). This funding reduction is the result of the reversal of a FY 2015 PB position in which funding associated with five aircraft was accelerated into the FYDP. The FY 2017 buy-profile was decreased by three aircraft (from 18 to 15) and FY 2018 was reduced by two aircraft (from 17 to 15). The total KC-46 procurement remains at 175 aircraft and future year funding will be increased to reflect the increase of these five aircraft past the FYDP.
- 3) The FY 2016 PB position removed (\$6.7M) of RDT&E and (\$133.1M) of APAF funding through the FYDP (total reduction of \$139.8M) as a result of DoD related budgetary adjustments.
- 4) MILCON reflects funding increases of \$96.2M (FY 2016 - FY 2020) as the Air Force MILCON working group continues to realign funds to requirements.

The "To Complete" funding increase of \$805.3M is the result of the following:

- 1) As a result of the five aircraft being pushed into years beyond the FYDP, the APAF funding increased by \$1,139.4M.
- 2) The Aircrew Training Systems contract, competitively awarded on May 1, 2013, provides for a (\$324.1M) reduction to BA as savings are being returned to the Air Force (FY 2021 - FY 2024).
- 3) MILCON reductions of (\$10M) beyond FY 2020 are due to continued refinements in requirements as a result of the Air Force MILCON working group.

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	4	0	0	0	0	0	0	0	0	4
Production	0	0	7	12	15	15	15	15	96	175
PB 2016 Total	4	0	7	12	15	15	15	15	96	179
PB 2015 Total	4	0	7	12	18	17	15	15	91	179
Delta	0	0	0	0	-3	-2	0	0	5	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding							
3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	--	--	--	--	--	10.2
2006	--	--	--	--	--	--	10.1
2007	--	--	--	--	--	--	67.8
2008	--	--	--	--	--	--	16.7
2009	--	--	--	--	--	--	17.8
2010	--	--	--	--	--	--	305.1
2011	--	--	--	--	--	--	538.9
2012	--	--	--	--	--	--	818.9
2013	--	--	--	--	--	--	1550.3
2014	--	--	--	--	--	--	1505.5
2015	--	--	--	--	--	--	786.4
2016	--	--	--	--	--	--	602.4
2017	--	--	--	--	--	--	314.3
2018	--	--	--	--	--	--	21.4
2019	--	--	--	--	--	--	4.4
Subtotal	4	--	--	--	--	--	6570.2

Annual Funding							
3600 RDT&E Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2011 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	--	--	--	--	--	11.4
2006	--	--	--	--	--	--	10.9
2007	--	--	--	--	--	--	71.6
2008	--	--	--	--	--	--	17.3
2009	--	--	--	--	--	--	18.2
2010	--	--	--	--	--	--	307.7
2011	--	--	--	--	--	--	533.5
2012	--	--	--	--	--	--	796.6
2013	--	--	--	--	--	--	1482.4
2014	--	--	--	--	--	--	1417.7
2015	--	--	--	--	--	--	731.2
2016	--	--	--	--	--	--	550.7
2017	--	--	--	--	--	--	282.1
2018	--	--	--	--	--	--	18.8
2019	--	--	--	--	--	--	3.8
Subtotal	4	--	--	--	--	--	6253.9

Annual Funding								
3010 Procurement Aircraft Procurement, Air Force								
Fiscal Year	Quantity	TY \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2015	7	1308.6	--	--	1308.6	264.6	1573.2	
2016	12	2036.2	--	--	2036.2	369.5	2405.7	
2017	15	2541.0	--	--	2541.0	543.2	3084.2	
2018	15	2726.7	--	--	2726.7	449.5	3176.2	
2019	15	2732.3	--	--	2732.3	510.1	3242.4	
2020	15	2898.9	--	--	2898.9	359.1	3258.0	
2021	15	2955.2	--	--	2955.2	363.4	3318.6	
2022	15	3026.5	--	--	3026.5	308.7	3335.2	
2023	15	3113.0	--	--	3113.0	290.4	3403.4	
2024	15	3083.8	--	--	3083.8	362.4	3446.2	
2025	15	3281.0	--	--	3281.0	241.2	3522.2	
2026	15	3484.1	--	--	3484.1	105.5	3589.6	
2027	6	1605.7	--	--	1605.7	43.8	1649.5	
Subtotal	175	34793.0	--	--	34793.0	4211.4	39004.4	

Annual Funding								
3010 Procurement Aircraft Procurement, Air Force								
Fiscal Year	Quantity	BY 2011 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2015	7	1185.0	--	--	1185.0	239.7	1424.7	
2016	12	1809.8	--	--	1809.8	328.4	2138.2	
2017	15	2215.1	--	--	2215.1	473.5	2688.6	
2018	15	2330.5	--	--	2330.5	384.2	2714.7	
2019	15	2289.5	--	--	2289.5	427.4	2716.9	
2020	15	2381.4	--	--	2381.4	295.1	2676.5	
2021	15	2380.1	--	--	2380.1	292.7	2672.8	
2022	15	2389.7	--	--	2389.7	243.8	2633.5	
2023	15	2409.8	--	--	2409.8	224.8	2634.6	
2024	15	2340.4	--	--	2340.4	275.1	2615.5	
2025	15	2441.3	--	--	2441.3	179.4	2620.7	
2026	15	2541.5	--	--	2541.5	77.0	2618.5	
2027	6	1148.3	--	--	1148.3	31.4	1179.7	
Subtotal	175	27862.4	--	--	27862.4	3472.5	31334.9	

Annual Funding 3300 MILCON Military Construction, Air Force	
Fiscal Year	TY \$M
	Total Program
2010	1.6
2011	0.6
2012	8.6
2013	--
2014	250.0
2015	145.4
2016	51.7
2017	34.9
2018	265.3
2019	401.5
2020	25.1
2021	439.5
2022	256.4
2023	368.2
2024	386.3
2025	273.4
2026	103.7
2027	37.3
2028	10.9
Subtotal	3060.4

Annual Funding 3300 MILCON Military Construction, Air Force	
Fiscal Year	BY 2011 \$M
	Total Program
2010	1.6
2011	0.6
2012	8.2
2013	--
2014	228.6
2015	130.6
2016	45.6
2017	30.2
2018	224.9
2019	333.7
2020	20.5
2021	351.1
2022	200.8
2023	282.7
2024	290.8
2025	201.8
2026	75.0
2027	26.5
2028	7.6
Subtotal	2460.8

Annual Funding 3830 MILCON Military Construction, Air National Guard	
Fiscal Year	TY \$M
	Total Program
2015	41.9
2016	2.8
2017	1.5
<hr/>	
Subtotal	46.2

Annual Funding 3830 MILCON Military Construction, Air National Guard	
Fiscal Year	BY 2011 \$M
	Total Program
2015	38.0
2016	2.5
2017	1.3
Subtotal	41.8

Annual Funding 3730 MILCON Military Construction, Air Force Reserve	
Fiscal Year	TY \$M
	Total Program
2017	147.6
2018	48.1
2019	23.1
2020	9.5
Subtotal	228.3

Annual Funding 3730 MILCON Military Construction, Air Force Reserve	
Fiscal Year	BY 2011 \$M
	Total Program
2017	128.8
2018	41.1
2019	19.4
2020	7.8
Subtotal	197.1

Low Rate Initial Production

Item	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

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the KC-46A Milestone B ADM approving a LRIP quantity of 19 aircraft which is necessary to develop a smooth ramp up to FRP.

Foreign Military Sales

Notes

The Government of Japan requested a System Capabilities Briefing, a Defensive Systems Briefing, and updated pricing on January 6, 2015. This supports ongoing requirements identification and program scope requirements for a tanker acquisition program. The Request For Proposal for tanker capability is expected 1st Quarter CY 2015.

The Republic of Korea (South Korea) continues to evaluate proposals from Airbus, Boeing, and Israeli Aerospace Industries for tanker capability. Several supplemental Requests for Information were answered with one defensive system information request in coordination as of January 7, 2015. Source selection for the South Korean tanker is expected April 2015. A potential Direct Commercial Sales/FMS hybrid case is expected thereafter.

In late December 2014, the European Tanker Consortium selected Airbus to procure aircraft sole source.

Additional FMS opportunities include Israel and Canada.

Nuclear Costs

None

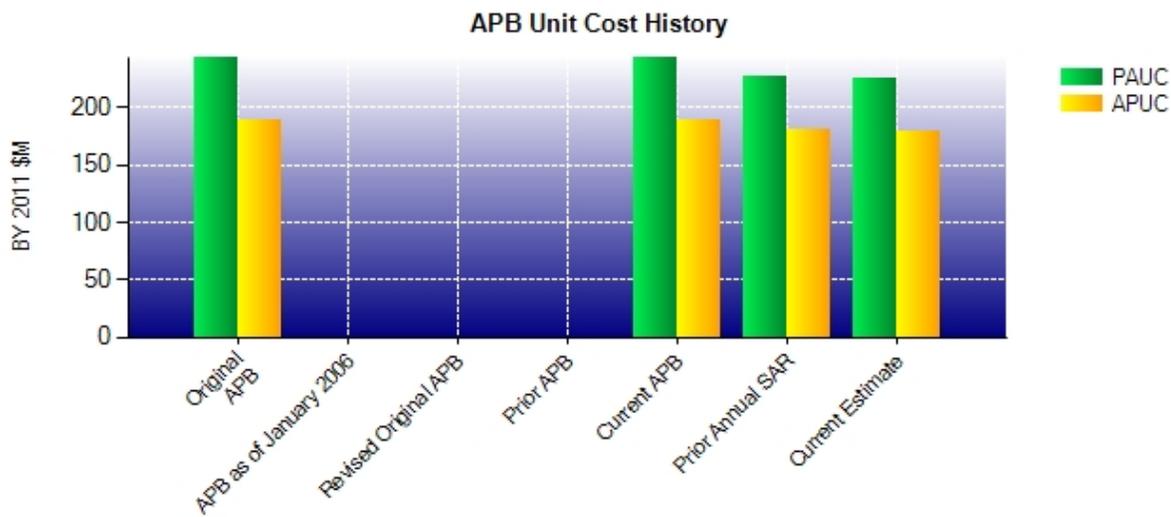
Unit Cost

Unit Cost Report

Item	BY 2011 \$M	BY 2011 \$M	% Change
	Current UCR Baseline (Aug 2011 APB)	Current Estimate (Dec 2014 SAR)	
Program Acquisition Unit Cost			
Cost	43518.2	40288.5	
Quantity	179	179	
Item	243.118	225.075	-7.42
Average Procurement Unit Cost			
Cost	33040.3	31334.9	
Quantity	175	175	
Unit Cost	188.802	179.057	-5.16

Item	BY 2011 \$M	BY 2011 \$M	% Change
	Original UCR Baseline (Aug 2011 APB)	Current Estimate (Dec 2014 SAR)	
Program Acquisition Unit Cost			
Cost	43518.2	40288.5	
Quantity	179	179	
Unit Cost	243.118	225.075	-7.42
Average Procurement Unit Cost			
Cost	33040.3	31334.9	
Quantity	175	175	
Unit Cost	188.802	179.057	-5.16

Unit Cost History



Item	Date	BY 2011 \$M		TY \$M	
		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	Dec 2013	226.069	180.472	276.316	226.250
Current Estimate	Dec 2014	225.075	179.057	273.237	222.882

SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
288.828	5.791	0.000	-0.009	0.000	-8.039	0.000	-13.334	-15.591	273.237

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
229.920	5.075	0.000	-0.010	0.000	1.500	0.000	-13.603	-7.038	222.882

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	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	Sep 2015
RAA	N/A	Aug 2017	N/A	Aug 2017
Total Cost (TY \$M)	N/A	51700.2	N/A	48909.5
Total Quantity	N/A	179	N/A	179
PAUC	N/A	288.828	N/A	273.237

Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	7149.6	40236.0	4314.6	51700.2
Previous Changes				
Economic	+42.8	+1355.1	+153.1	+1551.0
Quantity	--	--	--	--
Schedule	--	-157.7	--	-157.7
Engineering	--	--	--	--
Estimating	-563.5	-1448.2	-1221.3	-3233.0
Other	--	--	--	--
Support	-8.4	-391.5	--	-399.9
Subtotal	-529.1	-642.3	-1068.2	-2239.6
Current Changes				
Economic	-20.4	-466.9	-27.1	-514.4
Quantity	--	--	--	--
Schedule	--	+156.0	--	+156.0
Engineering	--	--	--	--
Estimating	-32.2	+1710.7	+115.6	+1794.1
Other	--	--	--	--
Support	+2.3	-1989.1	--	-1986.8
Subtotal	-50.3	-589.3	+88.5	-551.1
Total Changes	-579.4	-1231.6	-979.7	-2790.7
CE - Cost Variance	6570.2	39004.4	3334.9	48909.5
CE - Cost & Funding	6570.2	39004.4	3334.9	48909.5

Summary BY 2011 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	6804.2	33040.3	3673.7	43518.2
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	+0.3	--	-53.4	-53.1
Engineering	--	--	--	--
Estimating	-511.6	-1166.7	-1019.0	-2697.3
Other	--	--	--	--
Support	-10.5	-291.0	--	-301.5
Subtotal	-521.8	-1457.7	-1072.4	-3051.9
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-30.7	+1338.7	+98.4	+1406.4
Other	--	--	--	--
Support	+2.2	-1586.4	--	-1584.2
Subtotal	-28.5	-247.7	+98.4	-177.8
Total Changes	-550.3	-1705.4	-974.0	-3229.7
CE - Cost Variance	6253.9	31334.9	2699.7	40288.5
CE - Cost & Funding	6253.9	31334.9	2699.7	40288.5

Previous Estimate: December 2013

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-20.4
Decrease in FY 2014 funding due to Small Business Innovation Research. (Estimating)	-50.1	-53.1
Revised estimate to reflect actual cost data. (Estimating)	-29.9	-33.3
Decrease in FY 2016 - FY 2019 as a result of DoD budgetary adjustments. (Estimating)	-6.1	-6.7
Revised estimate for the Aircrew Training Systems to align requirements with where work is expected to be accomplished. (Estimating)	-2.0	-2.4
Realigned funding from FY 2014 to FY 2015 for the Aircrew Training Systems to align with termination liability funding. (Estimating)	0.0	0.0
Increase in FY 2015 funding as a result of a Congressional plus up. (Estimating)	+8.8	+9.5
Revised estimate to reflect application of new outyear escalation indices. (Estimating)	+8.9	+9.8
Adjustment for current and prior escalation. (Estimating)	+9.9	+10.6
Revised estimate for Maintenance Training Systems to reflect current acquisition strategy outlined in draft Request for Proposal. (Estimating)	+29.8	+33.4
Increase in Other Support for Direct Mission Support costs to reflect prior year actuals. (Support)	+2.2	+2.3
RDT&E Subtotal	-28.5	-50.3

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-466.9
Stretch-out of procurement buy profile from FY 2017- FY 2018 to FY 2025 - FY 2026 due to five aircraft being pushed beyond the FYDP. (Schedule)	0.0	+156.0
Decrease in FY 2016 - FY 2020 as a result of DoD budgetary adjustments. (Estimating)	-109.2	-127.6
Decrease in FY 2015 funding as a result of Congressional reductions. (Estimating)	-8.6	-9.5
Adjustment for current and prior escalation. (Estimating)	+12.4	+13.9
Revised estimate to reflect the application of new outyear escalation indices. (Estimating)	+303.8	+381.1
Revised estimate to reflect an increase in program flyaway costs associated with the latest acquisition strategy. (Estimating)	+1140.3	+1452.8
Decrease in Initial Spares due to DoD budgetary adjustments, a reduction in the estimated spares requirement, and the application of new outyear escalation indices. (Support)	-1486.9	-1863.4
Decrease in Other Support due to reductions in aircrew and maintenance training systems, re-phasing of support equipment and operational site activation costs, increased interim contractor support, a revised estimate for program management administration, and the application of new outyear escalation indices. (Support)	-102.1	-128.4
Adjustment for current and prior escalation. (Support)	+2.6	+2.7
Procurement Subtotal	-247.7	-589.3

MILCON	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-27.1
Revised estimate to reflect continued Air Force working group refinements to include site	-96.8	-110.7

surveys for initial bases, reprogramming funds to other MILCON appropriations and overall knowledge gained (Air Force). (Estimating)		
Increase in FY 2011 funding as a result of an above threshold reprogramming (Air Force). (Estimating)	+0.6	+0.6
Revised estimate to reflect application of new outyear escalation indices (Air Force Reserve Command). (Estimating)	+0.6	+0.7
Increase in FY 2010 funding as a result of a below threshold reprogramming (Air Force). (Estimating)	+1.6	+1.6
Adjustment for current and prior escalation. (Estimating)	+2.6	+2.8
Increase in FY 2016 funding for work efforts at Main Operating Base (MOB) # 2 (Air Force). (Estimating)	+14.8	+16.8
Revised estimate to reflect the application of new outyear escalation indices (Air Force). (Estimating)	+18.9	+23.6
Increase in FY 2017, FY 2019 - FY 2020 funding as a result of MOB # 3 facility projects (Air Force Reserve Command). (Estimating)	+156.1	+180.2
<hr/> MILCON Subtotal	<hr/> +98.4	<hr/> +88.5

Contracts

Contract Identification

Appropriation: RDT&E
Contract Name: KC-46A Engineering and Manufacturing Development
Contractor: The Boeing Company
Contractor Location: 7755 E Marginal Way S
 Seattle, WA 98108-4002
Contract Number: FA8625-11-C-6600
Contract Type: Fixed Price Incentive(Firm Target) (FPIF)
Award Date: February 24, 2011
Definitization Date: February 24, 2011

Contract Price							
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	4321.4	4824.5	4	4824.5	4824.5

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a contractual modification (P00033) signed by the Program Office and the Contractor on March 31, 2014. This contractual modification reduced the target price by \$5.9M and reduced the ceiling price by \$6.5M, due to the removal of certain Live Fire Test Assets. This contractual modification was updated in the Earned Value data and reduced the ceiling price of the FPIF contract from \$4,831M to \$4,824.5M.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (1/29/2015)	-320.6	-802.0
Previous Cumulative Variances	-170.4	-362.2
Net Change	-150.2	-439.8

Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to the Auxiliary Equipment, System Test and Evaluation, Crew Station and Systems Engineering and Integration program elements. The increased engineering design and integration complexities of the main aerial refueling systems have required more engineering and program management resources than planned.

The unfavorable net change in the schedule variance is due to four specific areas of the program: 767-2C, Auxiliary Equipment, System Test and Evaluation – Development Test and Evaluation and Mock-ups/Systems Integration Labs, and Flight Management Systems. The 767-2C Boeing Commercial cumulative schedule variance was due to the delayed completion of 23 internal milestones, paced by the extensive unplanned effort required to incorporate electrical block point design changes into the aircraft. This delayed completion of "Power On", which directly impacted the ability to begin factory functional testing. Progress on factory functional testing has taken significantly longer than planned due to: (1) significantly higher than anticipated non-conformances (2) execution of functional test prior to completion of the electrical build on the aircraft and (3) issues with the test procedures and other test assets resulting from configuration updates to the aircraft that were not captured in revised test assets.

Notes

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

Contract Identification

Appropriation: RDT&E
Contract Name: KC-46A Engineering and Manufacturing Development
Contractor: The Boeing Company
Contractor Location: 7755 E Marginal Way S
 Seattle, WA 98108-4002
Contract Number: FA8625-11-C-6600/1
Contract Type: Firm Fixed Price (FFP)
Award Date: February 24, 2011
Definitization Date: February 24, 2011

Contract Price							
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	71.8	N/A	N/A	71.8	71.8

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to a contract modification, accomplished on January 14, 2013 adding \$2.1M to the FFP contract. The modification was processed for Contract Line Item Number 0003 (Studies). This modification increased the target and negotiated price of the FFP contract from \$66.6M to \$68.7M.

On October 6, 2014, a modification (P00049) was issued in the amount of \$3.1M for the Hi-Strength Pallet Locks and Movable Smoke Barrier Verification / Certification Engineering study, increasing the contract price of this FFP contract from \$68.7M to \$71.8M

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Contract Identification

Appropriation: Procurement
Contract Name: KC-46A Production Contract
Contractor: Boeing
Contractor Location: P.O. Box 3707
 Seattle, WA 98214
Contract Number: FA8625-11-C-6600/3
Contract Type: Firm Fixed Price (FFP)
Award Date: February 24, 2011
Definitization Date: December 10, 2014

Contract Price								
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)		
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager	
119.4	N/A	0	119.4	N/A	0	119.4	119.4	

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

This is the first time this contract is being reported.

On December 10, 2014, contract modification P00054 was signed by both the Program Office and the Contractor. This contractual modification in the amount of \$84.5M represents the Undefined Contract Action to purchase Support Equipment and Production Spares in advance of Milestone C as approved in the ADM signed on October 17, 2014.

On December 17, 2014, contract modification P00057 was signed by both the Program Office and the Contractor. This contractual modification in the amount of \$34.9M represents the Interim Contractor Support Year 1 option.

Contract Identification

Appropriation: RDT&E
Contract Name: KC-46A Aircrew Training Systems - Engineering and Manufacturing Development
Contractor: FlightSafety Services Corporation
Contractor Location: 10770 E. Briarwood Ave. Suite 100
 Centennial, CO 80112-3807
Contract Number: FA8621-13-C-6247/0
Contract Type: Fixed Price Incentive(Firm Target) (FPIF), Firm Fixed Price (FFP)
Award Date: May 01, 2013
Definitization Date: May 01, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
78.4	86.6	N/A	78.4	86.6	N/A	86.6	86.6

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2014)	-1.7	-3.1
Previous Cumulative Variances	0.0	0.0
Net Change	-1.7	-3.1

Cost and Schedule Variance Explanations

The unfavorable cumulative cost variance is due to a lack of mature aircraft data, primarily for the Weapons System Trainer subsystems such as the cockpit student station, computer systems, and aircraft systems. Additional costs to develop alternative solutions were incurred to maintain schedule. Additionally, the Contractor has elected to include their FFP CLIN efforts for program management in the program baseline and additional cost overruns have been associated with this effort.

The unfavorable cumulative schedule variance is due to a lack of mature aircraft data and defined operational procedures needed for design and engineering efforts. The Boom Operator Training device subsystem development is a significant contributor to this variance. The Weapon System Training sub-systems contribute to this variance as well. A scheduling error related to Air Refueling Airplane Simulation Qualification is also a factor.

Notes

The Aircrew Training System contract (FA8621-13-C-6247) contains both FPIF and FFP CLINs. While Earned Value data is not required on the FFP efforts, the Contractor has included actual performance in the monthly Earned Value data. In an effort to ensure the Earned Value source data aligns with the contract, both contract efforts have been consolidated for reporting purposes. The "Initial Contract Price (\$M)" in the Contract Price table above have been updated as follows: Target Price has increased from \$70.9M to \$78.4M and Ceiling Price has increased from \$79.1M to \$86.6M when compared to the KC-46A prior year SAR.

Contract Identification

Appropriation: MILCON
Contract Name: KC-46A MILCON (McConnell AFB)
Contractor: Archer Western Aviation Partners
Contractor Location: 929 W. Adams St.
 Chicago, IL 60607-3021
Contract Number: W912DQ-14-C-4006
Contract Type: Firm Fixed Price (FFP)
Award Date: May 22, 2014
Definitization Date: May 22, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
143.7	N/A	N/A	143.7	N/A	N/A	143.7	143.7

Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

Notes

This is the first time this contract is being reported.

This contract will be a Design-Bid-Build of the 3-Bay General Purpose Hangar, Aircraft Parking Apron, 2-bay Corrosion Control/Fuel Cell Hangar and General Maintenance Hangar located at McConnell AFB Kansas.

Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	4	0.00%
Production	0	0	175	0.00%
Total Program Quantity Delivered	0	0	179	0.00%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	48909.5	Years Appropriated	11
Expended to Date	3769.9	Percent Years Appropriated	45.83%
Percent Expended	7.71%	Appropriated to Date	7649.0
Total Funding Years	24	Percent Appropriated	15.64%

The above data is current as of January 31, 2015.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	October 31, 2014
Source of Estimate:	POE
Quantity to Sustain:	168
Unit of Measure:	Aircraft
Service Life per Unit:	40.00 Years
Fiscal Years in Service:	FY 2016 - FY 2069

In support of the Milestone B decision in February 2011, the Air Force developed a SCP. The MDA approved baselining the KC-46A program to this SCP. In October 2014, the KC-46A Division accomplished an update to this SCP in its third POE. This SAR reflects the POE update.

The KC-46A Program has 168 Primary Aircraft Authorized (PAA) and 11 back-up aircraft. The O&S estimate is based on the 168 PAA.

Sustainment Strategy

The KC-46A product support strategy will use logistics support concepts that emphasize increased availability and a reduced logistics footprint, supported by the current United States Air Force (USAF) maintenance and logistics support structure. The product support strategy will use a Contractor Supported Weapons System concept during Engineering, Manufacturing, and Development transitioning to 100 percent organically-managed/performance-based logistics posture as soon as viable during production. The KC-46A will be maintained as a Federal Aviation Administration certified aircraft at least during Interim Contractor Support. A Sustainment Strategy Decision at Milestone C, based upon a business case analysis, will determine the long-term sustainment strategy. The USAF has identified the three Air Logistics Complexes as the location for the organic depots.

Antecedent Information

KC-135R&T is the antecedent system.

KC-135R&T costs have been normalized to reflect the average of 670 annual flying hours per aircraft in the KC-46A POE. KC-135R&T average annual cost per aircraft reflects actual FY 2014 costs reported in the Air Force Total Ownership Cost system (budget constrained). Most FY 2014 costs reflect the current state of KC-135R&T; however, there are a few exceptions, such as modification costs in Continuing System Improvements, where the FY 2014 KC-135R&T costs are lower than in previous years.

Annual O&S Costs BY2011 \$M			
Cost Element	KC-46A		KC-135R&T (Antecedent)
	Average Annual Cost Per Aircraft		Average Annual Cost Per Aircraft
Unit-Level Manpower	4.452		3.234
Unit Operations	4.069		3.969
Maintenance	3.045		3.793
Sustaining Support	0.512		0.189
Continuing System Improvements	0.894		0.072
Indirect Support	--		--
Other	--		--
Total	12.972		11.257

KC-46A costs shown in comparison with actual costs for the antecedent system, KC-135 R&T, reflect estimated average annual cost per aircraft. KC-46A costs are from the October 2014 POE.

The "Annual O&S Costs BY2011\$M" comparison above excludes "Indirect Support" costs because these costs are not allocated to KC-135 R&T-specific Program Elements in the Air Force Total Ownership Cost system. However, these costs are included in the KC-46A Total O&S costs.

While the comparison is to FY 2014 actual KC-135 R&T costs, the Air Force projects KC-135 R&T O&S costs to increase, surpassing projected KC-46A O&S costs by FY 2020. This projected increase is not reflected in the "Annual O&S Costs BY2011 \$M" table above. This comparison is also not adjusted for the capability differences that exist between the two systems nor does it recognize the cost savings that may be realized due to the commerciality of the KC-46A aircraft (the KC-46A is derived from a commercial Boeing 767 variant). 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-46A. In addition, the KC-46A has significantly more aerial refueling offload capability per aircraft compared to the KC-135 R&T and is a multi-role aircraft with significant secondary missions associated with airlift and aeromedical evacuation. The KC-46A can also provide boom/drogue refueling on the same sortie, and has enhanced net ready and survivability capabilities.

Item	Total O&S Cost \$M			
	KC-46A		KC-135R&T (Antecedent)	
	Current Development APB Objective/Threshold	Current Estimate		
Base Year	92720.6	101992.7	104428.4¹	N/A
Then Year	182877.7	N/A	184068.6	N/A

¹ APB O&S Cost Breach

KC-46A total O&S cost (\$M) in the "Total O&S Cost \$M" table above reflects the October 2014 POE total O&S costs for FY 2016 - FY 2069. Total KC-46A O&S cost is not a simple extrapolation of the KC-46A average annual cost per aircraft shown in the preceding "Annual O&S Costs BY2011 \$M" table due to the exclusion of "Indirect Costs" associated with the KC-135 R&T. The KC-46A POE reflects the following assumptions: 168 PAA, 40-year service life, steady state beginning in FY 2029, and peacetime operations tempo with average annual flying hours of 489 hours per PAA through FY 2019, and 670 hours per PAA from FY 2020 and beyond. The KC-46A POE is based on legacy fleet history where KC-46A specific data is not available. A comparable total O&S cost for the antecedent system, KC-135 R&T, is not available.

Equation to Translate Annual Cost to Total Cost

Total KC-46A Aircraft O&S (BY 2011\$M) = [unitized cost (\$12.972M) x 40 operational aircraft years x 168 PAA] + Total O&S Indirect Support costs (excluded from the unitized cost comparison above to allow for a normalized comparison) + phase-in and phase-out costs (as aircraft are fielded and later retired).

O&S Cost Variance		
Category	BY 2011 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2013 SAR	103603.1	
Programmatic/Planning Factors	142.6	Accelerated the start of Consumables and DLRs funding from FY 2018 to FY 2016. Modifications start date moved from FY 2020 to FY 2017. Software Maintenance manpower and Depot C-Check estimates updated.
Cost Estimating Methodology	0.0	
Cost Data Update	868.8	Refinements to the following estimate areas: landing gear maintenance, engine overhauls, simulator support, and installation/personnel support.
Labor Rate	-197.1	Overall decrease in published labor rates.
Energy Rate	0.0	
Technical Input	11.0	New program specific requirements approved in 2014. This includes: IETM Software Annual Fees, Tech Order Database Manager, and Hardware/Software Support
Other	0.0	
Total Changes	825.3	
Current Estimate	104428.4	

Disposal Estimate Details

Date of Estimate: October 31, 2014
Source of Estimate: POE
Disposal/Demilitarization Total Cost (BY 2011 \$M): Total costs for disposal of all Aircraft are 14.8

The KC-46A POE assumed that upon retirement at the end of the 40-year service life, each KC-46A aircraft would enter flyable storage at the Aircraft Maintenance and Regeneration Group and will be disposed after a period of five years.