



## Selected Acquisition Report (SAR)

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



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

As of FY 2018 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

This document contains information that may be exempt from mandatory disclosure under the FOIA.

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## Sensitivity Originator

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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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## 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 January 13, 2017

## 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

### Program Highlights Since Last Report

The EMD contract is 91% complete. Government funding has been stable with no government-driven engineering changes to the design. 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 KCR-0800 schedule rebaseline was incorporated into the November 2016 month-end Integrated Master Schedule (IMS), which was delivered in December 2016. The Program Office is completing a detailed review of the IMS. An Agreement-In-Principle for dealing with the breaches announced in 2016 was finalized in March 2017, and will be codified in a contract modification by July 2017.

In March 2016, the EMD-1 aircraft resumed flight testing after a planned non-flying status designed to bring the fuel system up to a type design configuration. Through spring and summer 2016, EMD-1 completed several blocks of Federal Aviation Administration (FAA) certification testing, to include Hot-Day Remote, Aero Stability and Control, Engine Fire Extinguishing Concentration, and Autolands. In late February 2016, during EMD-2 Milestone C demonstration flights between the KC-46A and C-17A receiver aircraft, the team discovered a boom axial load issue which halted Milestone C demonstration flights. Boeing formed a "Tiger Team" leveraging experts from across the company and the KC-46A Program Office to develop a Root-Cause Corrective Action plan. EMD-2 supported flight testing in April and May 2016 to gather data for the boom axial loads fix while concurrently completing Centerline Drogue System (CDS) control law development testing. After a planned non-flying status, EMD-2 completed On-Board Inert Gas Generation System and closed vent testing for FAA certification. In April 2016, the EMD-3 aircraft conducted its first flight in the 767-2C configuration, completed Nautical Air Miles testing, and completed all Environmental Control System testing required for the FAA Amended Type Certification. In October 2016, EMD-3 entered the Boeing finishing center to change configuration to a KC-46A aircraft. EMD-3 exited the Boeing finishing center and conducted its first flight in the KC-46A configuration on May 18, 2017. In March 2016, EMD-4 executed its first flight as a KC-46A. In July 2016, EMD-4 successfully completed Milestone C testing by conducting boom refueling on the C-17A, F-16C, and A-10 with the boom axial load hardware fix in-place. In May 2016, aircraft Line Number (L/N) 1091 completed its first flight in a 767-2C configuration, and initiated avionics ground and flight testing for FAA certification. L/N 1091 completed its final block of testing in the 767-2C configuration and entered the Boeing finishing center in March 2017. L/N 1092 will conduct a large block of Electro-Magnetic Effects (EME) testing through the summer of 2017. Aerial refueling testing and certification testing will start after the completion of fuel dock testing in May 2017. Remaining Aerial Refueling concerns include insufficient detail visible on the receiver, inability to judge receiver distance, and other visual system anomalies.

All ten Live Fire Test & Evaluation ballistic test series are complete. Ballistic test final reporting is on track, with an estimated completion date of November 2017. The team also continued thermal curtain test planning, an inherent hardness assessment, and a base escape study to assess aircraft survivability to nearby nuclear warhead detonation. These tests and analyses will ensure the KC-46A can support the nuclear mission.

The Air Force awarded Lot 3 (15 aircraft) in January 2017, bringing the total number of production KC-46As on contract to 34. Twenty aircraft are undergoing 767-2C build, 12 aircraft are in various stages of build within the supply chain, and two aircraft are supplementing developmental test, both of which will require refurbishment prior to delivery. Delays incorporating contractor-driven design changes into the 767-2C build have postponed the beginning of KC-46A conversion on the first five aircraft.

Overall, the aircraft development flight test program is 60% complete. Boeing is working to complete clearance paperwork with the FAA in order to open up additional test points for data collection flights. These flights will lead to eventual award of the Amended Type Certificate, Supplemental Type Certificate, and Military Type Certificate; as well as the closure of System Verification Review. Finally, the program is readying to begin tanker-receiver pair certification testing required to enter into Initial Operational Test & Evaluation (IOT&E).

The Aircrew Training Systems (ATS) program continues to make progress on training device Hardware/Software Integration

(HSI). The ATS team conducted in-plant testing in May 2017. The "Data Tiger Team" has been successful so far in resolving data gaps that have been hindering completion of device development and HSI. However, this work is not complete and the Program Office is maintaining a strong focus on it. Data shortfalls will continue to add risk to the development schedule until critical data is received and integrated onto the devices and courseware. Courseware reviews are underway and will continue into early summer 2017. Finally, ATS is readying for Small Group Tryout in September 2017, and Ready For Training declaration in March 2018.

On July 6, 2016, a Firm Fixed Priced (FFP) contract was awarded to The Boeing Company (Training Systems Group – St Louis, MO) for the KC-46 Maintenance Training Systems (MTS) Program. The 78 month, \$75M (FFP options only) project will deliver a complete suite of KC-46 Augmented Hardware Training Devices, Virtual Maintenance Training System classrooms, associated KC-46 maintenance courseware, and full sustainment support to two Air Mobility Command Regional Maintenance Training Facilities located at McConnell AFB, KS, and yet-to-be determined Main Operating Base #4.

In late August 2016, a MTS Program Startup Workshop was held at McConnell AFB, KS. In October 2016, Boeing presented a draft IMS and conducted the first joint risk workshop. MTS development activities are on-going, including a Training Systems Requirements Analysis update.

The KC-46A Program Office is closely tracking Boeing's progress on five risk areas: 1) airworthiness certifications; 2) change incorporation; 3) EME testing; 4) system verification review; and 5) flight test efficiency. The KC-46A program is progressing, albeit slower than planned. The current schedule shows two months of schedule pressure, and Air Force, Boeing, and DCMA are conducting a Schedule Risk Assessment (SRA) that is expected to complete in June 2017.

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.

History of Significant Developments Since Program Initiation	
History of Significant Developments Since Program Initiation	
Date	Significant Development Description
February 2011	The USD(AT&L) conducted a successful Milestone B DAB.
February 2011	The USD(AT&L) signed the APB reflecting the Milestone B approval.
February 2011	The Boeing Company was awarded the KC-46A contract. The Fixed-Price Incentive Firm contract was awarded for the 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.
August 2011	The KC-46A Program Office and Boeing successfully concluded a comprehensive Integrated Baseline Review (IBR). The IBR approved a well-understood contract technical, cost, and schedule baseline from which the Government can measure and closely manage Boeing's progress during contract execution.
November 2011	The KC-46A Program Office and Boeing successfully concluded the System Functional Review (SFR). The KC-46A SFR assessed the allocation and traceability of all program requirements from the System Specification to lower-level hardware and software requirements.
December 2011	Boeing conducted a non-contractual KC-46A Firm Configuration review—an internal Boeing commercial best practice. The KC-46A Firm Configuration validated that the aircraft configuration is sufficiently mature and stable to initiate detailed design of the militarized KC-46A tanker.
April 2012	The KC-46A Preliminary Design Review (PDR) was successfully completed. The Government and Boeing successfully completed the first step of a two-step PDR process on March 21 -22, 2012, which consisted of a detailed review of the 89 contractual entrance criteria to PDR. The second step, conducted April 23 - 27 2012, consisted of a detailed review of the eight exit criteria and completion of all subsystem PDRs to Government satisfaction.
May 2012	The PEO signed the Post-PDR Report.
June 2012	Deputy Assistant Secretary of Defense, Systems Engineering, validated successful completion of PDR.
May 2013	The KC-46A Aircrew Training System (ATS) contract was awarded to FlightSafety Services Corporation.
June 2013	The KC-46A ATS Program conducted a Program Startup Workshop with the assistance from Defense Acquisition University at Wright-Patterson Air Force Base, Ohio.
June 2013	The KC-46A Operational Assessment-1 report was published, culminating a 7.5 month effort to assess the current weapon system design for Critical Design Review (CDR) and Initial Operational Test & Evaluation (IOT&E) for readiness. The Air Force Operational Test and Evaluation Center assessment of the KC-46A confirmed that the program was on track to meet effectiveness, suitability, and mission capability requirements.
June 2013	The EMD-1 aircraft began assembly, followed by EMD-2 on August 19, 2013, EMD-3 on October 17, 2013, and EMD-4 on January 16, 2014.
July 2013	The KC-46A Program successfully completed the planned Weapon System CDR at Boeing's Harbour Pointe facility. Overall design maturity was demonstrated to be at a high level, consistent with the commercial derivative nature of the design approach. All action items were complete, and the Weapon System CDR was officially closed on August 21, 2013, one month ahead of the contractual requirement of September 24, 2013.
September 2013	The KC-46A ATS conducted a System Requirement Review and SFR.
February 2014	The KC-46A Program Office received confirmation that the Senate Committee on Appropriations

	approved a below threshold reprogramming request in the amount of \$8.6M to purchase land necessary for the Tinker Air Force Base, Oklahoma weapon system support efforts. This request resulted in FY 2012 MILCON (3300) funds being reprogrammed into the KC-46A funding profile.
December 2014	KC-46A Production Spares, Support Equipment, and Interim Contractor Support efforts awarded.
December 2014	Successful first flight of the EMD-1 aircraft. This significant event started the flight test phase of the KC-46A program.
September 2015	EMD-2 completed a major milestone, KC-46A First Flight.
November 2015	EMD-2 deployed the boom and both drogue systems in flight for the first time.
January 2016	EMD-2 completed the first KC-46A aerial refueling by offloading 1,600 pounds of fuel to an F-16C.
February 2016	EMD-2 completed fuel transfer with F/A-18 aircraft.
February 2016	EMD-2 completed KC-10 fuel transfer conducted with KC-46A as a receiver.
May 2016	MDA notified of Milestone B APB schedule breach to IOT&E Start.
June 2016	KC-46A ATS successfully completed full system CDR.
July 2016	The KC-46A Maintenance Training System contract was awarded to The Boeing Company.
July 2016	EMD-4 completed fuel transfer to the F-16C, C-17A, and A-10C aircrafts with the boom axial load fix in place.
August 2016	Program accomplished Milestone C.
August 2016	Awarded Lots 1 and 2; totaling 19 aircraft.
December 2016	Boeing delivered new KCR-0800 schedule, Required Assets Available slipped to October 2018.
January 2017	Lot 3 (15 aircraft) awarded January 27, 2017.

## Threshold Breaches

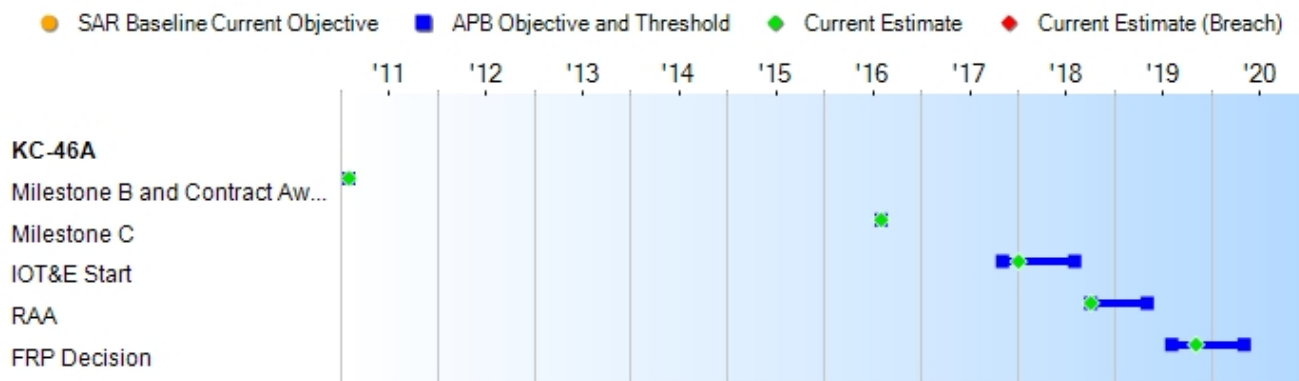
### APB Breaches

<b>Schedule</b>		<input type="checkbox"/>
<b>Performance</b>		<input type="checkbox"/>
<b>Cost</b>	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
<b>O&amp;S Cost</b>		<input type="checkbox"/>
<b>Unit Cost</b>	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

### Nunn-McCurdy Breaches

<b>Current UCR Baseline</b>		
	PAUC	None
	APUC	None
<b>Original UCR Baseline</b>		
	PAUC	None
	APUC	None

### Schedule



Schedule Events				
Events	SAR Baseline Development Estimate	Current APB Production Objective/Threshold		Current Estimate
Milestone B and Contract Award	Feb 2011	Feb 2011	Feb 2011	Feb 2011
Milestone C	Aug 2015	Aug 2016	Aug 2016	Aug 2016
IOT&E Start	May 2016	Nov 2017	Aug 2018	Jan 2018 (Ch-1)
RAA	Aug 2017	Oct 2018	May 2019	Oct 2018 (Ch-2)
FRP Decision	Jun 2017	Aug 2019	May 2020	Nov 2019 (Ch-3)

#### Change Explanations

(Ch-1) The current estimate for IOT&E has changed from September 2017 (reported in our June 2016 SAR) to January 2018 due to additional risks associated with obtaining FAA certifications and an estimated delay to SVR.

(Ch-2) The current estimate for RAA remains at October 2018 (as reported in our June 2016 SAR).

(Ch-3) The current estimate for FRP has changed from March 2019 (reported in our June 2016 SAR) to November 2019 due to additional potential risks in obtaining FAA certifications, an estimated delay to SVR, and an estimated increase in the time required to incorporate changes and deliver EMD aircraft.

#### Notes

IOT&E Start represents the beginning of Dedicated IOT&E, which will commence upon the Air Force Program Executive Officer for Tankers approval of the Operational Test Readiness Review (OTRR).

The RAA date is defined as 18 aircraft in final production configuration, two spare engines, and nine ship sets of wing aerial refueling pods.

The IOT&E and FRP threshold dates are nine months beyond the respective objective dates and the RAA date is seven months beyond the respective objective date based on KC-46A Program Office schedule analysis of the contractor trends and past performance, to include risks.

**Acronyms and Abbreviations**

EME - Electromagnetic Effects

FAA - Federal Aviation Administration

IOT&E - Initial Operational Test and Evaluation

RAA - Required Assets Available

SVR - System Verification Review

## Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Production Objective/Threshold	Demonstrated Performance	Current Estimate	
<b>Tanker Air Refueling Capability</b>				
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 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 fixed-wing and 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. The aircraft shall be able to effectively conduct (non -simultaneously) both boom and drogue air refuelings on the same mission. While engaged, the KC-46A 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 fixed wing and 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-46A 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-46A 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.
<b>Fuel Offload versus Radius</b>				
The aircraft should be capable of exceeding the offload versus	The aircraft shall be capable, as a minimum, of an offload versus radius as depicted in	The aircraft shall be capable, as a minimum, of an offload versus radius as depicted in	TBD	Will meet or exceed Current APB Objective. The aircraft should be capable of exceeding



radius as depicted in Figure 6.1.	Figure 5.1; exceed offload/radius as depicted in Figure 5.1. Radius is defined as standard day takeoff, fly to the AR track, orbit for one hour, offload fuel, and return to original base with required reserve fuel. Aircraft should operate with maximum fuel efficiency within current aviation technology, without any degradation to mission/aircraft performance.	Figure 5.1. Radius is defined as standard day takeoff, fly to the AR track, orbit for one hour, offload fuel, and return to original base with required reserve fuel. Aircraft should operate with maximum fuel efficiency within current aviation technology, without any degradation to mission/aircraft performance.		the offload versus radius as depicted in Figure 5.1.
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### 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 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.	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.	(T=O) 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.	TBD	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.
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### Airlift Capability

The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System.	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	(T=O) 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	Completed the ground mobility demonstration, proving the ability to accommodate various configurations of 463L pallets, aero	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
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<p>-tion 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>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>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>-medical patient support pallets, and passenger pallets. The ability to use material handling equipment and processes employed by Air Mobility Command (AMC) on other airlift aircraft was also completed. With only minor issues encountered, KC-46A meets its cargo handling and interior configuration requirements for Milestone C. Demonstrated ability to use material handling equipment and processes employed by AMC on other airlift aircraft.</p>	<p>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>
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### Receiver Air Refueling Capability

<p>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.</p>	<p>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.</p>	<p>The aircraft must be capable of receiver air refueling (IAW current technical directives) from any compatible tanker aircraft using current air refueling procedures.</p>	<p>TBD</p>	<p>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.</p>
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### Force Protection

<p>Aircraft shall be able to operate in chemical and biological environments</p>	<p>Aircraft shall be able to operate in chemical and biological environments.</p>	<p>(T=O) Aircraft shall be able to operate in chemical and biological environments.</p>	<p>TBD</p>	<p>Will meet or exceed Current APB Objective. Aircraft shall be able to operate in chemical and biological environments.</p>
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### Net-Ready

<p>The system must fully support</p>	<p>The KC-46 Program Office will provide</p>	<p>(T=O) The KC-46 Program Office will</p>	<p>TBD</p>	<p>Will meet or exceed Current APB Objective.</p>
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<p>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 availability, and consistent data processing specified in the applicable joint and system integrated architecture views.</p>	<p>installed performance values to the Joint Interoperability Test Command at the Operational Test Readiness Review upon completion of developmental testing and evaluation. These installed performance values will facilitate JITC's joint interoperability certification during Initial Operational Testing and Evaluation. The NR-KPP shall be satisfied following a performance assessment of the system capability as defined in the CPD NR-KPP attribute table.</p>	<p>provide installed performance values to the Joint Interoperability Test Command at the Operational Test Readiness Review upon completion of developmental testing and evaluation. These installed performance values will facilitate JITC's joint interoperability certification during Initial Operational Testing and Evaluation. The NR-KPP shall be satisfied following a performance assessment of the system capability as defined in the CPD NR-KPP attribute table.</p>	<p>The KC-46 Program Office will provide installed performance values to the Joint Interoperability Test Command at the Operational Test Readiness Review upon completion of developmental testing and evaluation. These installed performance values will facilitate JITC's joint interoperability certification during Initial Operational Testing and Evaluation. The NR-KPP shall be satisfied following a performance assessment of the system capability as defined in the CPD NR-KPP attribute table.</p>
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### Survivability

<p>Aircraft SPM. Tanker aircraft shall be able to operate in hostile environments as discussed in Section 4 and</p>	<p>Aircraft Self-Protection Measures (SPM). Tanker aircraft shall be able to operate in hostile environments as discussed in section 2 and AFTTP 3-3.22B.</p>	<p>(T=O) Aircraft Self-Protection Measures (SPM). Tanker aircraft shall be able to operate in hostile environments as discussed in section 2 and AFTTP 3-3.22B.</p>	<p>TBD</p>	<p>Will meet or exceed Current APB Threshold. Tanker aircraft shall be able to operate in hostile environments as discussed in section 2 and AFTTP 3-3.22B.</p>
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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 situational awareness, and assist in using counter-measures

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 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. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display battle-space information to provide situational awareness, and assist in using countermeasures and DS to avoid potential threats as discussed in ASACM CDD. The aircraft system shall support use of existing night vision devices and laser eye protection devices. KC-46A must be capable of flying tanker tactical profiles as specified in MCM 3-1, Vol 22, AF Tactics, Training, Procedures (U), Jun 03 (S//NF). The aircraft shall be capable of takeoff, landing, and air refueling, as a tanker and receiver in an NVIS environment. The KC-46A fleet shall have EMP protection for flight-critical aircraft systems.

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 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. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display battle-space information to provide situational awareness, and assist in using countermeasures and DS to avoid potential threats as discussed in ASACM CDD. The aircraft system shall support use of existing night vision devices and laser eye protection devices. KC-46A must be capable of flying tanker tactical profiles as specified in MCM 3-1, Vol 22, AF Tactics, Training, Procedures (U), Jun 03 (S//NF). The aircraft shall be capable of takeoff, landing, and air refueling, as a tanker and receiver in an NVIS environment. The KC-46A fleet shall have EMP protection for flight-critical aircraft systems.

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 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. Aircraft shall have the capability to receive off-board situational awareness data, correlate this data with on-board sensor data, display battle-space information to provide situational awareness, and assist in using countermeasures and DS to avoid potential threats as discussed in ASACM CDD. The aircraft system shall support use of existing night vision devices and laser eye protection devices. KC-46A must be capable of flying tanker tactical profiles as specified in MCM 3-1, Vol 22, AF Tactics, Training, Procedures (U), Jun 03 (S//NF). The aircraft shall be capable of takeoff, landing, and air refueling, as a tanker and receiver in an NVIS environment. The KC-46A fleet shall have EMP protection for flight-critical aircraft systems.

and defensive systems to avoid potential threats as discussed in the ASACM CDD. EMP protection for all mission components.				
<b>Simultaneous Multi-Point Refuelings</b>				
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.	(T=O) 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.
<b>Operational Availability</b>				
Operational availability shall be not less than 89%.	Operational Availability (Ao) rate will be used as a primary, capstone measure for reliability, maintainability, availability and supportability. Ao measures the percent of aircraft available for tasking. Ao equals total aircraft inventory (TAI) less the number of depot possessed aircraft (including scheduled and unscheduled depot maintenance) less the number of aircraft that are not mission capable divided by TAI. Operational availability shall not be less than 80% and 89%.	Operational Availability (Ao) rate will be used as a primary, capstone measure for reliability, maintainability, availability and supportability. Ao measures the percent of aircraft available for tasking. Ao equals total aircraft inventory (TAI) less the number of depot possessed aircraft (including scheduled and unscheduled depot maintenance) less the number of aircraft that are not mission capable divided by TAI. Operational availability shall not be less than 80%.	TBD	Will meet or exceed APB Objective. Operational Availability (Ao) rate will be used as a primary, capstone measure for reliability, maintainability, availability and supportability. Ao measures the percent of aircraft available for tasking. Ao equals total aircraft inventory (TAI) less the number of depot possessed aircraft (including scheduled and unscheduled depot maintenance) less the number of aircraft that are not mission capable divided by TAI. Operational availability shall not be less than 80% and 89%.
<b>Mission Reliability</b>				
Break Rate shall be equal to or better than the 2006 KC-10 Six Sigma mean BR of 1.3 (breaks per 100 sorties).	N/A	N/A	N/A	N/A - Deleted

Reliability and Maintainability				
N/A	Reliability and Maintainability (R&M) shall be sufficient to generate, deploy, operate, sustain and recover the tanker in the conduct of operations to levels and degrees of readiness and performance as prescribed in 6.6.3 and 6.6.4. The aircraft will be designed with ease of maintenance, improved diagnostics and system reliability to minimize the support required.	(T=O) Reliability and Maintainability (R&M) shall be sufficient to generate, deploy, operate, sustain and recover the tanker in the conduct of operations to levels and degrees of readiness and performance as prescribed in 6.6.3 and 6.6.4. The aircraft will be designed with ease of maintenance, improved diagnostics and system reliability to minimize the support required.	TBD	Reliability and Maintainability (R&M) shall be sufficient to generate, deploy, operate, sustain and recover the tanker in the conduct of operations to levels and degrees of readiness and performance as prescribed in 6.6.3 and 6.6.4. The aircraft will be designed with ease of maintenance, improved diagnostics and system reliability to minimize the support required.

**Requirements Reference**

CPD for KC-135 Replacement Aircraft (KC-46A), R4.4. Approved by JROC Memorandum (023-16), dated April 21, 2016

**Change Explanations**

None

**Notes**

The Tanker Air Refueling Capability KPP objective requires the air refueling of all current and programmed fixed-wing receiver aircraft and the air refueling of all current and programmed tilt-rotor receiver aircraft. The ability to refuel at a maximum in-flight gross weight portion of this KPP objective was not included as one of the contractually-required 372 mandatory requirements.

Figure 5.1, as referenced in the objective and threshold values, is located in the CPD.

The KC-46A CPD references five KSAs. To maintain alignment with the approved Milestone B APB, only two have been referenced in the Milestone C update.

**Acronyms and Abbreviations**

AE - Aeromedical Evacuation  
AF - Air Force  
AFTTP - Air Force Tactics, Techniques, and Procedures  
AMC - Air Mobility Command  
APB - Acquisition Program Baseline  
AR - Aerial Refueling  
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
	<b>Project</b>	<b>Name</b>	
	674927	KC-135 Replacement Tanker (Sunk)	
Air Force	3600	05	0605221F
	<b>Project</b>	<b>Name</b>	
	655271	KC-46 RDT&E (Shared)	

### Procurement

Appn	BA	PE	
Air Force	3010	06	0401221F
	<b>Line Item</b>	<b>Name</b>	
	000999	Initial Spares (Shared)	
Air Force	3010	02	0401221F
	<b>Line Item</b>	<b>Name</b>	
	KC046A	KC-46A Tanker (Shared)	

### 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
	<b>Project</b>	<b>Name</b>	
	VARIOUS	KC-46, MILCON	
Air Force	3730	01	0501221F
	<b>Project</b>	<b>Name</b>	
	VARIOUS	KC-46A Air Force Reserve (AFR) MILCON	
Air Force	3830	01	0501413F
	<b>Project</b>	<b>Name</b>	
	VARIOUS	KC-46, Air National Guard (ANG), MILCON	



## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 2016 \$M			BY 2016 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Production Objective	Current Estimate
RDT&E	7351.9	6054.7	6660.2	6063.2	7149.6	5897.7	5907.3
Procurement	35699.9	30897.3	33987.0	30974.8	40236.0	35494.1	35642.0
Flyaway	--	--	--	25581.4	--	--	29475.9
Recurring	--	--	--	25581.4	--	--	29475.9
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	5393.4	--	--	6166.1
Other Support	--	--	--	2800.9	--	--	3183.7
Initial Spares	--	--	--	2592.5	--	--	2982.4
MILCON	3969.4	2577.1	2834.8	2614.6	4314.6	2966.7	3005.7
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	47021.2	39529.1	N/A	39652.6	51700.2	44358.5	44555.0

#### Current APB Cost Estimate Reference

Milestone C SCP Addendum dated August 26, 2016

The Base Year for the program has been updated from FY 2011 to FY 2016 using the following deflators:

Appn Category	Deflation Factor
RDT&E	1.08049703
Procurement	1.08049703
MILCON	1.08049703

#### Cost Notes

In accordance with Section 842 of the National Defense Authorization Act for FY 2017, which amended title 10 U.S.C. § 2334, the Director of Cost Assessment and Program Evaluation, and the Secretary of the military department concerned or the head of the Defense Agency concerned, must issue guidance requiring a discussion of risk, the potential impacts of risk on program costs, and approaches to mitigate risk in cost estimates for MDAPs and major subprograms. The information required by the guidance is to be reported in each SAR. This guidance is not yet available; therefore, the information on cost risk is not contained in this SAR.

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

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2018 President's Budget / December 2016 SAR (TY\$ M)									
Appropriation	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
RDT&E	5549.5	229.9	93.8	34.1	0.0	0.0	0.0	0.0	5907.3
Procurement	3655.5	2889.6	2959.0	3097.4	3167.8	3121.4	3050.4	13700.9	35642.0
MILCON	508.9	136.7	280.3	178.0	26.0	447.0	249.0	1179.8	3005.7
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2018 Total	9713.9	3256.2	3333.1	3309.5	3193.8	3568.4	3299.4	14880.7	44555.0
PB 2017 Total	10311.4	3455.2	3420.7	3621.9	3258.2	3739.2	3614.6	16790.8	48212.0
Delta	-597.5	-199.0	-87.6	-312.4	-64.4	-170.8	-315.2	-1910.1	-3657.0

#### Funding Notes

The final production for the KC-46A Program is 179 aircraft. Four of these aircraft are funded with RDT&E dollars and the quantities are identified in FY 2011 in the table below, as this is where the contract was awarded. The remaining aircraft are to be purchased using Procurement funds.

Quantity Summary										
FY 2018 President's Budget / December 2016 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	To Complete	Total
Development	4	0	0	0	0	0	0	0	0	4
Production	0	19	15	15	15	15	15	15	66	175
PB 2018 Total	4	19	15	15	15	15	15	15	66	179
PB 2017 Total	4	19	15	15	15	15	15	15	66	179
Delta	0	0	0	0	0	0	0	0	0	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	--	--	--	--	--	--	1496.0
2015	--	--	--	--	--	--	548.2
2016	--	--	--	--	--	--	169.5
2017	--	--	--	--	--	--	229.9
2018	--	--	--	--	--	--	93.8
2019	--	--	--	--	--	--	34.1
Subtotal	4	--	--	--	--	--	5907.3

Annual Funding 3600   RDT&E   Research, Development, Test, and Evaluation, Air Force							
Fiscal Year	Quantity	BY 2016 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2005	--	--	--	--	--	--	12.2
2006	--	--	--	--	--	--	11.7
2007	--	--	--	--	--	--	76.8
2008	--	--	--	--	--	--	18.5
2009	--	--	--	--	--	--	19.5
2010	--	--	--	--	--	--	330.2
2011	--	--	--	--	--	--	572.5
2012	--	--	--	--	--	--	855.0
2013	--	--	--	--	--	--	1591.8
2014	--	--	--	--	--	--	1514.8
2015	--	--	--	--	--	--	549.6
2016	--	--	--	--	--	--	167.4
2017	--	--	--	--	--	--	222.5
2018	--	--	--	--	--	--	89.0
2019	--	--	--	--	--	--	31.7
Subtotal	4	--	--	--	--	--	6063.2

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	
2014	--	--	--	--	--	9.5	9.5	
2015	7	1149.4	--	--	1149.4	306.7	1456.1	
2016	12	1880.0	--	--	1880.0	309.9	2189.9	
2017	15	2502.8	--	--	2502.8	386.8	2889.6	
2018	15	2285.1	--	--	2285.1	673.9	2959.0	
2019	15	2331.5	--	--	2331.5	765.9	3097.4	
2020	15	2456.4	--	--	2456.4	711.4	3167.8	
2021	15	2594.8	--	--	2594.8	526.6	3121.4	
2022	15	2652.6	--	--	2652.6	397.8	3050.4	
2023	15	2627.6	--	--	2627.6	479.1	3106.7	
2024	15	2611.3	--	--	2611.3	461.2	3072.5	
2025	15	2647.5	--	--	2647.5	561.8	3209.3	
2026	15	2623.6	--	--	2623.6	451.5	3075.1	
2027	6	1113.3	--	--	1113.3	124.0	1237.3	
Subtotal	175	29475.9	--	--	29475.9	6166.1	35642.0	

Annual Funding								
3010   Procurement   Aircraft Procurement, Air Force								
Fiscal Year	Quantity	BY 2016 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2014	--	--	--	--	--	9.4	9.4	
2015	7	1124.0	--	--	1124.0	299.9	1423.9	
2016	12	1804.2	--	--	1804.2	297.5	2101.7	
2017	15	2355.2	--	--	2355.2	363.9	2719.1	
2018	15	2108.1	--	--	2108.1	621.8	2729.9	
2019	15	2108.8	--	--	2108.8	692.7	2801.5	
2020	15	2178.2	--	--	2178.2	630.8	2809.0	
2021	15	2255.8	--	--	2255.8	457.8	2713.6	
2022	15	2260.8	--	--	2260.8	339.1	2599.9	
2023	15	2195.6	--	--	2195.6	400.3	2595.9	
2024	15	2139.2	--	--	2139.2	377.8	2517.0	
2025	15	2126.3	--	--	2126.3	451.2	2577.5	
2026	15	2065.8	--	--	2065.8	355.5	2421.3	
2027	6	859.4	--	--	859.4	95.7	955.1	
Subtotal	175	25581.4	--	--	25581.4	5393.4	30974.8	

Annual Funding 3300   MILCON   Military Construction, Air Force	
Fiscal Year	TY \$M
	Total Program
2010	1.6
2011	2.6
2012	11.2
2013	--
2014	211.4
2015	171.0
2016	66.4
2017	37.2
2018	273.9
2019	178.0
2020	26.0
2021	447.0
2022	249.0
2023	368.2
2024	386.3
2025	273.4
2026	103.7
2027	37.3
2028	10.9
Subtotal	2855.1



Annual Funding 3300   MILCON   Military Construction, Air Force	
Fiscal Year	BY 2016 \$M
	Total Program
2010	1.7
2011	2.7
2012	11.5
2013	--
2014	208.6
2015	165.9
2016	63.2
2017	34.7
2018	250.7
2019	159.7
2020	22.9
2021	385.5
2022	210.5
2023	305.2
2024	313.9
2025	217.8
2026	81.0
2027	28.6
2028	8.2
Subtotal	2472.3

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

Annual Funding 3830   MILCON   Military Construction, Air National Guard	
Fiscal Year	BY 2016 \$M
	Total Program
2015	41.1
2016	2.7
2017	1.4
Subtotal	45.2

Annual Funding 3730   MILCON   Military Construction, Air Force Reserve	
Fiscal Year	TY \$M
	Total Program
2017	98.0
2018	6.4
<hr/>	
Subtotal	104.4

Annual Funding 3730   MILCON   Military Construction, Air Force Reserve	
Fiscal Year	BY 2016 \$M
	Total Program
2017	91.3
2018	5.8
Subtotal	97.1

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	2/24/2011	8/12/2016
<b>Approved Quantity</b>	19	49
<b>Reference</b>	Milestone B ADM	Milestone C ADM
<b>Start Year</b>	2015	2015
<b>End Year</b>	2016	2018

The Current Total LRIP Quantity is more than 10% of the total production quantity and has been increased above the Milestone B ADM approved LRIP quantity of 19 aircraft because a greater quantity is now necessary to achieve a smooth production ramp and avoid production breaks/delays on the way to FRP.

The DAE approved the increase of LRIP quantity from 19 to 49 aircraft in the Milestone C ADM. The increase is the result of changing Lots 3 (15 aircraft), and Lot 4 (15 aircraft) from FRP Lots to LRIP Lots.

## Foreign Military Sales

### Notes

Japan: The Japan KC-46A FMS case JA-D-GNW was signed on August 4, 2016. This Studies and Analysis case provides program office, electronic warfare, and training manpower to initiate program planning and assist Japan in the refinement of out-year requirements. The hiring process began in October 2016, and two-thirds of the positions have been filled. A Letter Of Agreement for a unique aircraft configuration development case was offered to Japan in February 2017 and signed on February 23, 2017. The Japan FMS team is currently working towards releasing a Request For Proposal to Boeing this summer.

Israel: Israel submitted a letter of request for a small manpower case in March 2017. The resulting letter of offer and acceptance is currently in work.

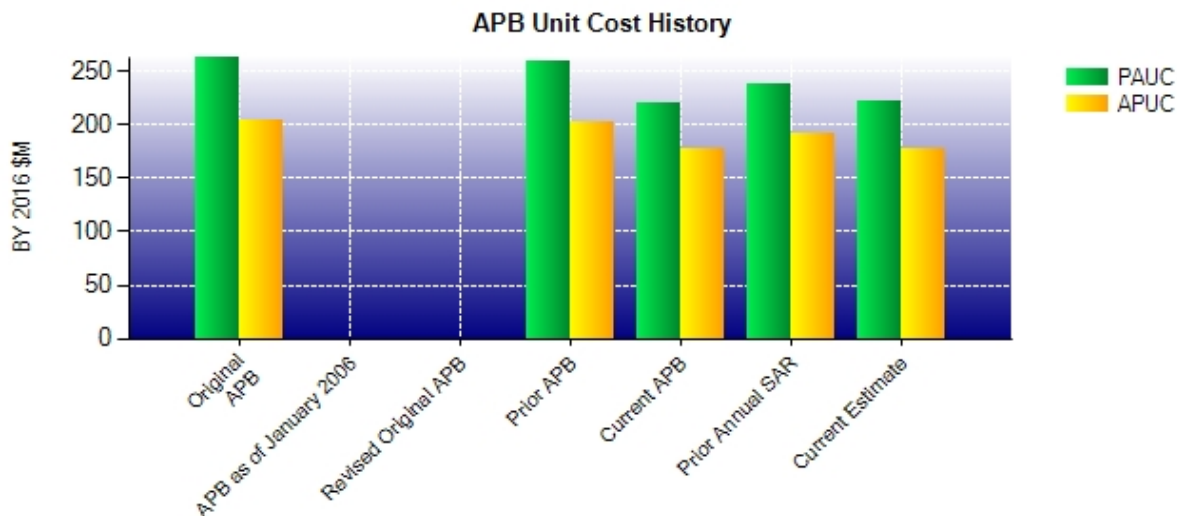
## Nuclear Costs

None

### Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2016 \$M	BY 2016 \$M	% Change
	Current UCR Baseline (Jan 2017 APB)	Current Estimate (Dec 2016 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	39529.1	39652.6	
Quantity	179	179	
Unit Cost	220.833	221.523	+0.31
<b>Average Procurement Unit Cost</b>			
Cost	30897.3	30974.8	
Quantity	175	175	
Unit Cost	176.556	176.999	+0.25
Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2016 \$M	BY 2016 \$M	% Change
	Original UCR Baseline (Aug 2011 APB)	Current Estimate (Dec 2016 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	47021.2	39652.6	
Quantity	179	179	
Unit Cost	262.688	221.523	-15.67
<b>Average Procurement Unit Cost</b>			
Cost	35699.9	30974.8	
Quantity	175	175	
Unit Cost	203.999	176.999	-13.24





APB Unit Cost History					
Item	Date	BY 2016 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Aug 2011	262.688	203.999	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	Aug 2011	259.821	201.773	288.828	229.920
Current APB	Jan 2017	220.833	176.556	247.813	202.823
Prior Annual SAR	Dec 2015	238.458	191.578	269.341	221.514
Current Estimate	Dec 2016	221.523	176.999	248.911	203.669

**SAR Unit Cost History**

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
288.828	6.192	0.000	-0.009	0.000	-43.628	0.000	-2.472	-39.917	248.911

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	5.296	0.000	-0.010	0.000	-29.038	0.000	-2.500	-26.252	203.669

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	Aug 2016
RAA	N/A	Aug 2017	N/A	Oct 2018
Total Cost (TY \$M)	N/A	51700.2	N/A	44555.0
Total Quantity	N/A	179	N/A	179
PAUC	N/A	288.828	N/A	248.911

**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	+7.2	+584.3	+100.6	+692.1
Quantity	--	--	--	--
Schedule	--	-1.7	--	-1.7
Engineering	--	--	--	--
Estimating	-892.3	-536.1	-1227.7	-2656.1
Other	--	--	--	--
Support	-4.9	-1517.6	--	-1522.5
Subtotal	-890.0	-1471.1	-1127.1	-3488.2
Current Changes				
Economic	+44.7	+342.5	+29.1	+416.3
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-397.0	-4545.5	-210.9	-5153.4
Other	--	--	--	--
Support	--	+1080.1	--	+1080.1
Subtotal	-352.3	-3122.9	-181.8	-3657.0
Adjustments	--	--	--	--
Total Changes	-1242.3	-4594.0	-1308.9	-7145.2
CE - Cost Variance	5907.3	35642.0	3005.7	44555.0
CE - Cost & Funding	5907.3	35642.0	3005.7	44555.0

Summary BY 2016 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	7351.9	35699.9	3969.4	47021.2
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	+0.3	--	-57.7	-57.4
Engineering	--	--	--	--
Estimating	-883.4	-513.7	-1113.5	-2510.6
Other	--	--	--	--
Support	-8.1	-1289.9	--	-1298.0
Subtotal	-891.2	-1803.6	-1171.2	-3866.0
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-397.5	-3824.1	-183.6	-4405.2
Other	--	--	--	--
Support	--	+902.6	--	+902.6
Subtotal	-397.5	-2921.5	-183.6	-3502.6
Adjustments	--	--	--	--
Total Changes	-1288.7	-4725.1	-1354.8	-7368.6
CE - Cost Variance	6063.2	30974.8	2614.6	39652.6
CE - Cost & Funding	6063.2	30974.8	2614.6	39652.6

Previous Estimate: June 2016

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+44.7
Adjustment for current and prior escalation. (Estimating)	-45.5	-44.5
Increased Aircraft Product Development estimate to reflect updated execution plan. (Estimating)	+113.5	+116.6
Decreased KC-46 Aircrew Training Systems (ATS) estimate to reflect updated execution plan. (Estimating)	-18.3	-19.0
Decreased KC-46 Maintenance Training Systems (MTS) estimate to reflect updated execution plan. (Estimating)	-33.9	-34.0
Increased KC-46 Direct Mission Support (DMS) estimate to reflect updated execution plan. (Estimating)	+9.5	+9.7
Decreased KC-46 Test and Evaluation estimate to reflect updated execution plan. (Estimating)	-15.2	-13.2
Increased KC-46 Program Management Administration (PMA) estimate to reflect updated execution plan. (Estimating)	+16.2	+16.8
Increase in FY 2018 as a result of DoD budgetary adjustments. (Estimating)	+4.9	+5.2
Revised estimate due to Congressional marks in FY 2016. (Estimating)	-370.7	-375.3
Decreased FY 2016 estimate for funds planned for sourcing Rapid Acquisition Authority. (Estimating)	-26.3	-26.6
Revised estimate due to Congressional marks in FY 2017. (Estimating)	-30.8	-31.8
Revised estimate to reflect application of new outyear inflation indices. (Estimating)	-0.2	-0.2
Decreased FY 2016 estimate for Below Threshold Reprogramming. (Estimating)	-0.7	-0.7
<b>RDT&amp;E Subtotal</b>	<b>-397.5</b>	<b>-352.3</b>

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+342.5
Adjustment for current and prior escalation. (Estimating)	-45.9	-48.2
Revised estimate due to Congressional mark in FY 2016. (Estimating)	-189.5	-197.7
Decreased FY 2016 estimate for Below Threshold Reprogramming. (Estimating)	-15.4	-16.0
Decreased Airframe estimate based on stable requirements and Not-to-Exceed contract options. (Estimating)	-69.6	-107.5
Increased Wing Aerial Refueling Pod estimate to reflect application of revised escalation indices. (Estimating)	+28.1	+32.7
Increased Alternate Mission Equipment (Other) estimate to reflect updated acquisition strategy. (Estimating)	+3.2	+3.3
Decreased Economic Price Adjustment estimate based on updated analysis of historical escalation and revised index forecasts. (Estimating)	-1765.2	-2076.0
Decreased estimate to remove Warranty costs based on Cost Benefit Analysis and program decision not to exercise Warranty options. (Estimating)	-252.8	-292.4
Decreased LAIRCM CFE estimate to reflect updated pricing data. (Estimating)	-210.8	-247.6
Decreased LAIRCM estimate to reflect transition from CFE to GFE acquisition strategy. (Estimating)	-383.9	-461.2
Decreased Engineering Change Order estimate due to fact-of-life execution changes and	-592.4	-759.5

stable aircraft requirements. (Estimating)		
Increased estimate to fund Pension Protection Act. (Estimating)	+11.7	+12.1
Increased Studies estimate based on actuals. (Estimating)	+22.3	+24.4
Revised estimate due to Congressional marks in FY 2017. (Estimating)	-157.3	-167.2
Revised estimate to reflect application of new outyear inflation indices. (Estimating)	-211.4	-250.0
Increased estimate to reflect Over and Above estimate refinements and updates to Dash 21 and Government Furnished equipment based on latest acquisition strategy. (Estimating)	+4.8	+5.3
Adjustment for current and prior escalation. (Support)	-9.4	-9.7
Decrease in Other Support due to increases in Interim Contractor Support, Direct Mission Support, Program Management Administration, and decreases in Aircrew Training Systems, Maintenance Training Systems, Data, Support Equipment, Operational Site Activation, and Depot Stand-Up costs. (Support)	-585.3	-663.4
Increase in Initial Spares based on updated acquisition strategy and an increase in the estimated spares requirement. (Support)	+1497.3	+1753.2
<b>Procurement Subtotal</b>	<b>-2921.5</b>	<b>-3122.9</b>

MILCON	\$M	
	Base Year	Then Year
<b>Current Change Explanations</b>		
Revised escalation indices. (Economic)	N/A	+29.1
Adjustment for current and prior escalation. (Estimating)	-5.6	-5.7
Increase in FY 2012 and FY 2014-FY 2016 funding as a result of reprogramming efforts. (Estimating)	+37.8	+39.1
Increase in FY 2018 funding as a result of Flight Training Unit (FTU) Fuselage trainer phase two. (Estimating)	+3.8	+4.2
Decrease in FY 2019 funding as a result of FTU Fuselage trainer phase two. (Estimating)	-3.1	-3.5
Increase in FY 2018 and decrease in FY 2019-FY 2020 and FY 2022 funding as a result of Main Operating Base (MOB) #4 projects. (Estimating)	-181.2	-203.3
Increase in FY 2021 funding as a result of MOB #5 projects. (Estimating)	+0.4	+0.5
Decrease in FY 2022 funding as a result of MOB #5 projects. (Estimating)	-15.9	-18.8
Revised estimate to reflect application of new outyear inflation indices. (Estimating)	-19.6	-23.2
Revised estimate to reflect application of new outyear inflation indices. (Estimating)	-0.2	-0.2
<b>MILCON Subtotal</b>	<b>-183.6</b>	<b>-181.8</b>

## 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 EVM 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 (2/23/2017)	-133.2	-130.1
Previous Cumulative Variances	-58.5	-290.6
Net Change	-74.7	+160.5

### Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to higher than actual costs in Boom Air Refueling, Drogue Air Refueling, Air Vehicle Systems Engineering and Integration, Program Planning and Management, Flight Test, Ground Test, and Test Planning & Reporting.

The favorable net change in the schedule variance is due to the Over Target Schedule (OTS) Implementation in November 2016, which was a positive adjustment to budget scheduled. This was offset by negative variances after the OTS due to missed Moog deliveries, missed Cobham Wing Aerial Refueling Pod deliveries, and missed General Electric high value milestone events.

### 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	110.9	N/A	N/A	110.9	110.9

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to some contract modifications for studies, and support equipment, and a required cost accounting change for Pension Harmonization.

On January 14, 2013, a modification (P00022), was issued in the amount of \$2.1M for the Cargo Restraint Alternate Location study, increasing the price of this 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

On February 6, 2015, a modification (P00052) was issued in the amount of \$184K for additional support equipment, increasing the contract price of this FFP contract from \$71.8M to \$72.0M.

On September 18, 2015, a modification (P00066) was issued in the amount of \$1.0M for the Characterization of Data Exchange study, increasing the contract price of this FFP contract from \$72.0M to \$73.0M.

On December 23, 2015, a modification (P00074) was issued in the amount of \$7.3M for the Integrated Broadcast Service Common Interactive Broadcast study, increasing the contract price of this FFP contract from \$73.0M to \$80.3M.

On April 5, 2016, a modification (P00084) was issued in the amount of \$4.3M for the Characterization of Data Exchange II study, increasing the contract price of this FFP contract from \$80.3M to \$84.6M.

On April 11, 2016, a modification to the FFP contract (P00079) was issued to change the contractual EMD completion date to June 24, 2018.

On April 29, 2016, a modification (P00086) was issued in the amount of \$88K for the Phase III EMD Aircraft Data, Tolerances, and Data Rate Measurement Capabilities Study, maintaining the contract price of this FFP contract at \$84.6M.

On August 12, 2016, a modification (P00100) was issued in the amount of \$26.3M reflecting an equitable adjustment to the contract price arising from the Pension Protection Act, increasing the contract price from \$84.6M to \$110.9M.

Based on information received from the Contractor, the Program Manager's (PM) Most Likely Estimated Cost at Completion



(EAC) reflects the \$110.9M FFP Contract Price. The Program Office is updating the PM EAC in CY17.

#### **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	5199.8	N/A	34	5199.8	5199.8

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the definitization of an Undefined Contract Action, the exercise of Lots 1 and 2, addition of Large Aircraft Infrared Countermeasures (LAIRCM) to Lots 1 and 2, and a required cost accounting change for Pension Harmonization.

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 (UCA) 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 (ICS) Year 1 option.

On November 9, 2015, contract modification P00067 was signed by both the Program Office and the Contractor. This contractual modification reduced the price of the P00054 UCA by \$10.6M due to a reduction in scope.

On March 4, 2016, contract modification P00082 was signed by both the Program Office and the Contractor. This contractual modification partially definitized the P00054 UCA and reduced the price by \$1.1M.

On August 10, 2016, contract modification PZ0060 was signed by both the Program Office and the Contractor. This contractual modification completed the definitization of the P00054 UCA, reducing the price by \$15.9M.

On August 18, 2016, contract modification P00099 was signed by the Program Office. This contractual modification in the amount of \$2.814B represents the Lots 1 and 2 option exercises.

On September 15, 2016, contract modification P00053 was signed by both the Program Office and the Contractor. This contractual modification in the amount of \$99.0M represents the addition of LAIRCM for Lots 1 and 2.

On September 23, 2016, contract modification P00103 was signed by both the Program Office and the Contractor. This contractual modification in the amount of \$12.1M represents the required cost accounting change for Pension Harmonization.

On January 27, 2017, contract modification P00110 was signed by both the Program Office and the Contractor. This contractual modification in the amount of \$2.1B represents Lot 3 aircraft, spare engines, and Wing Aerial Refueling Pods.

On March 24, 2017, contract modification P00117 was signed by both the Program Office and the Contractor. This contractual modification in the amount of \$59.2M represents the ICS Year 2 option.

#### **Cost and Schedule Variance Explanations**

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

**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	8	78.4	86.6	8	86.6	86.6

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (2/23/2017)	-12.7	-13.9
Previous Cumulative Variances	-8.4	-14.2
Net Change	-4.3	+0.3

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to increased prices for aircraft parts, data licenses, PM issues related to schedule and EVM requirements, and late receipt of aircraft data delaying completion of Hardware/Software Integration.

The favorable net change in the schedule variance is due to positive schedule performance in PMP Application Software, Visual System, and Integration Assembly Test and Checkout Work Breakdown Structure categories.

**Notes**

The Aircrew Training System contract (FA8621-13-C-6247) contains both FPIF and FFP CLINs. \$79.2M is under the FPIF portion of the contract, and \$7.4M is FFP. While EVM data is not required on the FFP efforts, the Contractor has included actual performance in the monthly EVM data. In an effort to ensure the EVM source data aligns with the contract, both contract efforts have been consolidated for reporting purposes.

**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	152.3	N/A	N/A	152.3	152.3

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to additional contract modifications that have been awarded, increasing the original contract price from \$143.7M to \$152.3M as of March 31, 2017.

**Cost and Schedule Variance Explanations**

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

**Notes**

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, General Maintenance Hangar, and Composite Maintenance Shop located at McConnell AFB, Kansas. The contractor has 990 calendar days from the notice to proceed to complete the work.

**Contract Identification**

**Appropriation:** RDT&E  
**Contract Name:** KC-46 Maintenance Training System  
**Contractor:** The Boeing Company  
**Contractor Location:** 6200 JS McDonnell Blvd.  
 St. Louis, MO 63134  
**Contract Number:** FA8621-16-C-6390  
**Contract Type:** Firm Fixed Price (FFP)  
**Award Date:** July 06, 2016  
**Definitization Date:** July 06, 2016

**Contract Price**

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
45.3	N/A	N/A	45.8	N/A	N/A	45.8	45.8

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to P00001 which added \$500K to the unpriced Cost Reimbursable No Fee Travel CLIN.

**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 July 6, 2016, the KC-46 Maintenance Training System (MTS) Firm Fixed Price (FFP) contract was awarded to The Boeing Company (Training Systems Group - St. Louis, MO).

On August 1, 2016, P00001 added \$0.500M to the unpriced Cost Reimbursable No Fee Travel CLIN and exercised the Training Systems Requirements Analysis Update CLIN for \$0.044M, resulting in the increase from the Initial Contract Price to the Current Contract Price Target.

On September 22, 2016, P00002 incrementally funded the KC-46 MTS contract for \$24.408M.

On November 17, 2016, P00003 was an administrative modification to the KC-46 MTS contract.

## 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	44555.0	Years Appropriated	13
Expended to Date	7067.0	Percent Years Appropriated	54.17%
Percent Expended	15.86%	Appropriated to Date	12970.1
Total Funding Years	24	Percent Appropriated	29.11%

The above data is current as of April 30, 2017.

Total expended to date includes \$256.6M in Air Force (3300) MILCON expenditures.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	August 26, 2016
<b>Source of Estimate:</b>	SCP
<b>Quantity to Sustain:</b>	168
<b>Unit of Measure:</b>	Aircraft
<b>Service Life per Unit:</b>	40.00 Years
<b>Fiscal Years in Service:</b>	FY 2016 - FY 2069

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

### Sustainment Strategy

The KC-46A sustainment strategy will use United States Air Force (USAF) Two-Level logistics concepts supported by the USAF maintenance and logistics support structures and Organizational, Maintenance, Installation, and Training data rights. The sustainment strategy will use a Contractor Supported Weapons System concept during EMD, transitioning to an organic/performance-based logistics posture as soon as sustainable organic capabilities are established during production. Organizational-level maintenance will be done by Air Force personnel with assistance of contractor Field Service Representatives and supported by contractor Logistics Support Representatives beginning with Initial Operational Test and Evaluation. The most critical organic capabilities are planned for incremental stand-up during Interim Contractor Support. The Depot-level (C-Check) capability stand-up is targeted not later than two years after first production aircraft delivery. Subsequent depot operations will expand incrementally based upon the Depot Maintenance Activation Working Group developed activation plan. The KC-46A Program Office will closely coordinate with the Air Force Sustainment Center to facilitate planning, execution, and evaluation of the C-Check process and the follow-on stand-up of commodity support capability.

### 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-46 Milestone C SCP. KC-135R&T average annual cost per aircraft reflects actual FY 2016 costs reported in the Air Force Total Ownership Cost (AFTOC) system (budget constrained). Most FY 2016 costs reflect the current state of KC-135R&T; however, there are a few exceptions, such as flying hour costs, where the FY 2016 KC-135R&T costs are lower than in previous years.



Annual O&S Costs BY2016 \$M			
Cost Element	KC-46A		KC-135R&T (Antecedent)
	Average Annual Cost Per Aircraft		Average Annual Cost Per Aircraft
Unit-Level Manpower	4.872		3.274
Unit Operations	3.452		3.433
Maintenance	5.309		5.006
Sustaining Support	0.997		0.099
Continuing System Improvements	0.968		0.160
Indirect Support	--		--
Other	--		--
<b>Total</b>	<b>15.598</b>		<b>11.972</b>

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

The "Annual O&S Costs BY2016\$M" comparison above excludes "Indirect Support" costs because these costs are not allocated to KC-135 R&T-specific Program Elements in the AFTOC system. However, these costs are included in the KC-46A Total O&S costs.

While the comparison is to FY 2016 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. This projected increase is not reflected in the "Annual O&S Costs BY 2016 \$M" table above. The KC-46A Average Annual Cost Per Aircraft above is a life cycle steady state average that includes price escalation. The KC-135 R&T Average Annual Cost Per Aircraft above is a FY16 actual cost, and therefore does not include future price escalation.

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 Production APB Objective/Threshold		Current Estimate	
<b>Base Year</b>	125041.0	137545.1	125041.0	N/A
<b>Then Year</b>	220824.2	N/A	220824.2	N/A

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 BY 2016 \$M" table due to the exclusion of "Indirect Costs" associated with the KC-135 R&T. The KC-46A SCP reflects the following assumptions: 168 PAA, 40-year service life, steady state beginning in FY 2028, 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 SCP 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 2016\$M) = [unitized cost (\$15.598M average steady state) x 30 steady state 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).

\$125,041.0M (BY 2016\$M) = \$78,612.328M + \$17,563.172M + \$13,533.970M + \$15,331.530M

O&S Cost Variance		
Category	BY 2016 \$M	Change Explanations
Prior SAR Total O&S Estimates - Jun 2016 SAR	108604.2	
Programmatic/Planning Factors	-1601.3	Schedule changes affecting C-Checks and Depot Over and Above
Cost Estimating Methodology	16867.1	Consumables, Depot Level Reparables, and Sustaining Engineering updated based on analysis of analogous systems
Cost Data Update	180.9	Estimating refinements based on new AFTOC data and cost planning factors
Labor Rate	2643.7	Changes in labor rates
Energy Rate	-2671.1	Decrease in fuel price per gallon
Technical Input	1017.5	Content changes and new requirements
Other	0.0	
<b>Total Changes</b>	<b>16436.8</b>	
Current Estimate	125041.0	

The Milestone C SCP incorporated refinements to the following estimate areas: Depot C-Checks, Consumables, Depot Level Reparables, Support Equipment Replacement, Sustaining Engineering, Program Management, and Hardware Modifications. New approved requirements reflected in the SCP are Unscheduled Depot Level Repair, Fleet Management Tool, Mission Planning Software Maintenance, and Software Control Center Support.

### Disposal Estimate Details

**Date of Estimate:** August 26, 2016  
**Source of Estimate:** SCP  
**Disposal/Demilitarization Total Cost (BY 2016 \$M):** Total costs for disposal of all Aircraft are 16.0

The KC-46A Milestone C Air Force SCP 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.