Selected Acquisition Report (SAR)

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

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

As of FY 2020 President's Budget

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Sensitivity Originator

No originator information is available at this time.

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)
USD(A&S) - Under Secretary of Defense (Acquisition and Sustainment)

Program Information

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

DoD Component
Air Force

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Date Assigned: February 8, 2016

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated January 13, 2017

Approved APB

Air Force Acquisition Executive (AFAE) Approved Acquisition Program Baseline (APB) dated March 8, 2019

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 freighter floor 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 94.5% complete. Government funding has been stable. Delays and schedule pressures notwithstanding, the KC-46A program and strategy remain strong.

Discussions were conducted in January 2017 to negotiate consideration for Boeing missing the Required Assets Available (RAA) contractual date, and a Memorandum of Agreement detailing negotiation results was signed on March 23, 2017. Formal incorporation of the negotiation results via a contract modification was completed in December 2018.

Schedule:

The program has experienced schedule delays due to airworthiness certifications and developmental flight test completion. A revised APB with new schedule objective and threshold dates was signed on March 8, 2019.

Test:

Aerial refueling certification testing for IOT&E receiver pairs was completed for F-16, C-17, A-10, KC-46A, B-52, F/A-18C/D, F-15, and KC-135 as a tanker. Fuel dock, maneuvering, and on-load tests were also conducted in support of KC-46A specification verification and certifications. A KC-46A deployment to Naval Air Station Patuxent River was conducted for specific F/A-18 tests with very successful results. Additional receiver certification tests at Edwards Air Force Base (AFB) started in January 2019. Specific Remote Vision System (RVS) testing was completed with the F-16, AV-8B, and C-17. Testing was completed for Extended Operations at locations within the Continental United States and at Guam. Function and Reliability testing was completed with sorties to Fairbanks, Alaska; Colorado Springs, Colorado; and Yuma, Arizona. Additionally, EMD-3 conducted cold weather testing at Fairbanks, Alaska, completing an alert takeoff within ten minutes after being exposed to -20 degrees Fahrenheit for 24 hours. Two Integrated System Evaluations were also conducted to evaluate the military utility of the KC-46A. Tests included aerial refueling with F-16s, threat system testing with the Navy's Echo Range, navigation testing in Hawaii, Japan, Alaska, and Germany, and cargo loading evaluations. On December 21, 2017, the Federal Aviation Administration (FAA) issued KC-46A an Amended Type Certificate. On September 4, 2018, the FAA issued KC-46A a Supplemental Type Certificate, and on November 29, 2018, the Air Force issued KC-46A a Military Flight Release to enable first aircraft acceptance.

All ten Live Fire Test and Evaluation ballistic test series are complete. Final ballistic test reports were delivered in December 2017. The draft consolidated report was completed in June 2018, and provided to the Director of Operational Test and Evaluation for review. The team also continues thermal curtain test planning/execution, an inherent hardness assessment, and 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.

Overall, the Boeing-led aircraft development flight test program is 93% complete. The remaining Boeing-led testing includes Wing Aerial Refueling Pod (WARP) testing for airworthiness certification, WARP specification compliance, and F/A-18C/D WARP receiver certification. Tanker-receiver pair certification testing is complete for 8 receiver pairs and testing is underway to execute additional receivers certifications at Edwards AFB to support IOT&E.

Production:

Four production lots (52 KC-46As) are on contract. 40 of those aircraft are in some stage of production, while five are in the supply system. Of those in production, seven have completed build and have begun the aircraft acceptance process. Fourteen aircraft are undergoing KC-46A conversion, 12 are in 767-2C build, seven are being stored in a partially-built configuration, with two production aircraft supplementing flight test. The Production Team is evaluating Boeing's Lot 5 proposal (15 aircraft with associated spares/support equipment), with a goal to award in July 2019.

Sustainment:

The Sustainment team executed several site activation actions in support of Air Mobility Command at McConnell AFB, Altus AFB, and Pease Air National Guard Base (ANGB) to review and determine base readiness for receipt of the KC-46A aircraft. The KC-46A has worked through multiple challenges within the supply chain area which has led to defining and developing some new processes to support an organically managed and maintained weapon system based on a commercial derivative aircraft. The supply chain team has developed the necessary contractual means to ensure aircraft consumables and repairables are available upon initial weapon system operations. Currently, the program has procured over 6,518 part numbers through contract proposal actions. The program continues to deliver support equipment with approximately 6,387 pieces already contractually accepted and delivered. Depot activation actions are ongoing with four successful Depot Maintenance Activation Working Groups occurring in 2018. The Depot activation team finalized the critical path to the first organic C-Check scheduled for mid-FY 2020. Technical manual distribution systems are in place at all current KC-46 locations. McConnell AFB, and Altus AFB have small contingents of centralized technical order control unit personnel in place to support maintenance operations.

Training:

The Aircrew Training System program delivered device suites to Altus AFB, McConnell AFB, and Pease ANGB in CY 2018. The government certified and accepted multiple training devices, including two Fuselage Trainers and three Part Task Trainers; all are providing training. Small Group Tryout of courseware was completed in March 2019 with Altus AFB Formal Training Unit Ready for Training expected in June 2019.

The KC-46 Maintenance Training System (MTS) program completed Critical Design Reviews and delivered all 20 Virtual MTS classrooms at McConnell AFB in December 2018. The first eleven maintenance courses conducted lesson and courseware reviews culminating in Small Group Tryouts. Small Group Tryouts began in March 2019 and are expected to continue through June 2019.

Major Accomplishments:

On January 10, 2019, the Air Force accepted the first KC-46A aircraft. As of March 11, 2019, seven aircraft have been delivered, four to McConnell AFB, Kansas, and three to Altus AFB, Oklahoma.

Deficiencies:

The government program team is tracking Boeing's progress on the closure plans of three Category 1 Deficiency Reports; two related to the RVS limitations, the other, boom telescope too stiff while receiver is in contact.

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.
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.
June 2012	Deputy Assistant Secretary of Defense, Systems Engineering, validated successful completion of PDR.
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.
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	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.
December 2016	Boeing delivered new KCR-0800 schedule, Required Assets Available slipped to October 2018.
November 2017	KC-46A delegated to ACAT IC program.
December 2017	Federal Aviation Administration (FAA) issued KC-46A Amended Type Certificate.

September 2018	FAA issued KC-46A Supplemental Type Certificate.
November 2018	Air Force issued Military Flight Release for KC-46A.
November 2018	Completed flight testing of eight receiver aircraft for aerial refueling certification.
December 2018	Received approval of F-16, C-17, and KC-46A (receiving fuel from a KC-135) receiver certifications.
January 2019	Air Force accepted first KC-46A aircraft on January 10, 2019.
January 2019	First KC-46A aircraft delivery to McConnell AFB January 25, 2019.
February 2019	First KC-46A aircraft delivery to Altus AFB February 8, 2019.

Threshold Breaches

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

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

Schedule

Schedule Events					
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	
Milestone B and Contract Award	Feb 2011	Feb 2011	Feb 2011	Feb 2011	
Milestone C	Aug 2016	Aug 2016	Aug 2016	Aug 2016	
IOT&E Start	Nov 2017	Mar 2019	Sep 2019	Mar 2019	(Ch-1)
RAA	Oct 2018	Jun 2020	Feb 2021	Jun 2020	(Ch-1)
FRP Decision	Aug 2019	Apr 2020	Oct 2020	May 2020	

Change Explanations

(Ch-1) IOT&E Start – The current estimate for IOT&E Start changed from August 2018 to March 2019, and the current estimate for RAA changed from February 2019 to June 2020, due to delays in FAA certification of first aircraft delivery.

Notes

1/ IOT&E Start represents the beginning of Dedicated IOT&E, which will commence upon approval of the Operational Test Readiness Review by the Program Executive Officer for Tankers.
2/ RAA is being used as a surrogate for Initial Operating Capability. RAA is defined as 18 aircraft in final production configuration, two spare engines, and nine ship sets of wing aerial refueling pods delivered.
3/ The RAA threshold date is eight months beyond the objective date based on KC-46 Program Office schedule analysis of the contractor trends and past performance, to include risks associated with the certification of the wing aerial refueling pods.

Acronyms and Abbreviations

FAA - Federal Aviation Administration
IOT&E - Initial Operational Test and Evaluation
RAA - Required Assets Available

Performance

Performance Characteristics				
SAR Baseline Production Estimate	**Current APB Production Objective/Threshold**		**Demonstrated Performance**	**Current Estimate**
Tanker Air Refueling Capability				
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 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.	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical requirements. At completion, we will provide demonstrated performance for KPP.	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.
Fuel Offload versus Radius				
The aircraft shall be capable, as a minimum, of an offload versus radius as	The aircraft shall be capable, as a minimum, of an offload versus radius as	The aircraft shall be capable, as a minimum, of an offload versus radius as	SVR is underway and projected to complete in CY 2019. The AF is	Will meet or exceed Current APB Objective. The aircraft should be capable of

depicted in 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.	depicted in 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.	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.	verifying the system meets technical requirements. At completion, we will provide demonstrated performance for KPP.	exceeding the offload versus radius as depicted in Figure 5.1.
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.	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical requirements. At completion, we will provide demonstrated performance for KPP.	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.
Airlift Capability				
The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System. The aircraft's entire	The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the Defense Transportation System. The aircraft's entire	(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	Completed the ground mobility demonstration, proving the ability to accommodate various configurations of 463L pallets,	Will meet or exceed Current APB Objective. The aircraft shall be capable of efficiently transporting equipment and personnel and fit seamlessly into the

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.	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.	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.	aero-medical patient support pallets, and passenger pallets. The ability to use material handling equipment and processes employed by 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.	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.
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.	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical requirements. At completion, we will provide demonstrated performance for KPP.	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.	(T=O) Aircraft shall be able to operate in chemical and biological environments.	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical	Will meet or exceed Current APB Objective. Aircraft shall be able to operate in chemical and biological environments.

			requirements. At completion, we will provide demonstrated performance for KPP.	
Net-Ready				
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.	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.	(T=O) 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.	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical requirements. At completion, we will provide demonstrated performance for KPP.	Will meet or exceed Current APB Objective. The KC-46 Program Office will provide installed performance values to the JITC 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.
Survivability				
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. 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	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. 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	(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. 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	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical requirements. At completion, we will provide demonstrated performance for KPP.	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. 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

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.	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.	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.		against RF threats as described in the ASACM CDD, May 22, 2006, 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), June 2003 (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.
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.	(T=O) The aircraft shall be provisioned (including structural modifications, plumbing, electrical, etc.) for simultaneous multi-point drogue refueling.	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical requirements. At	Will meet or exceed Current APB Objective. The aircraft shall be provisioned (including structural modifications, plumbing, electrical, etc.) for simultaneous

			completion, we will provide demonstrated performance for KPP.	multi-point drogue refueling.
Operational Availability				
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% 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%.	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical requirements. At completion, we will provide demonstrated performance for KPP.	Will meet or exceed APB Objective. 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 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. Ao shall not be less than 80% and 89%.
Reliability and Maintainability				
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.	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.	SVR is underway and projected to complete in CY 2019. The AF is verifying the system meets technical requirements. At completion, we will provide demonstrated performance for KPP.	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, re-validated by JROC Memorandum (043-18), dated May 2, 2018.

Change Explanations

None

Notes

The Tanker AR 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.

Development test is completed on the aircraft's LWIR cameras within the remote vision system. LWIR cameras are necessary for a KC-46A to perform as a tanker in a NVIS environment. LWIR performance was deemed unsatisfactory and conducting NVIS air refueling is prohibited until fixes are incorporated. Boeing has agreed to address the LWIR performance in the overall remote vision system improvements they are planning to incorporate.

Acronyms and Abbreviations

AE - Aeromedical Evacuation
AF - Air Force
AFTTP - Air Force Tactics, Techniques, and Procedures
AMC - Air Mobility Command
Ao - Operational Availability
AR - Aerial Refueling
ASACM - Advanced Situational Awareness and Countermeasures
ATC - Air Traffic Control
BLOS - Beyond Line of Sight
CNS/ATM - Communication Navigation Surveillance/Air Traffic Management
EMP - Electromagnetic Pulse
IAW - In Accordance With
IR - Infrared
JITC - Joint Interoperability Test Command
LAIRCM - Large Aircraft Infrared Countermeasures
LOS - Line of Sight
LWIR - Long Wave Infrared
MCM - Multi-Command Manual
NR - Net Ready
NVIS - Night Vision and Imaging Systems
ORD - Operational Requirements Document
R&M - Reliability and Maintainability
RF - Radio Frequency
SPM - Self-Protection Measures
STANAGs - Standard Agreements
SVR - System Verification Review
TAI - Total Aircraft in the Inventory
Vol - Volume

Track to Budget

RDT&E

Appn	BA	PE	
Air Force	3600	07	0401221F

Project	Name	
674927	KC-135 Replacement Tanker	(Sunk)

Appn	BA	PE
Air Force	3600	05	0605221F

Project	Name
655271	KC-46 RDT&E

Procurement

Appn	BA	PE
Air Force	3010	06	0401221F

Line Item	Name	
000999	Initial Spares	(Shared)

Appn	BA	PE
Air Force	3010	02	0401221F

Line Item	Name
KC046A	KC-46A Tanker

MILCON

Appn	BA	PE
Air Force	3300	01	0401221F

Project	Name
VARIOUS	KC-46, MILCON

Appn	BA	PE
Air Force	3730	01	0501221F

Project	Name	
VARIOUS	KC-46A Air Force Reserve (AFR) MILCON	(Sunk)

Appn	BA	PE
Air Force	3830	01	0501413F

Project	Name	
VARIOUS	KC-46, Air National Guard (ANG), MILCON	(Sunk)

Cost and Funding

Cost Summary

Total Acquisition Cost							
Appropriation	BY 2016 $M			BY 2016 $M	TY $M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	6054.7	6054.7	6660.2	5995.9	5897.7	5897.7	5847.8
Procurement	30897.3	30897.3	33987.0	29924.2	35494.1	35494.1	34731.9
Flyaway	--	--	--	25280.5	--	--	29386.3
Recurring	--	--	--	25280.5	--	--	29386.3
Non Recurring	--	--	--	0.0	--	--	0.0
Support	--	--	--	4643.7	--	--	5345.6
Other Support	--	--	--	2348.2	--	--	2697.3
Initial Spares	--	--	--	2295.5	--	--	2648.3
MILCON	2577.1	2577.1	2834.8	2605.1	2966.7	2966.7	3022.5
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	39529.1	39529.1	N/A	38525.2	44358.5	44358.5	43602.2

Current APB Cost Estimate Reference

Milestone C SCP Addendum dated August 26, 2016

Cost Notes

If an Independent Cost Estimate, Component Cost Estimate, or Program Office Estimate has been completed for the program in the previous year, list any program risks identified in the estimates, the potential impacts of the risks on program cost, and approaches to mitigate the risks.

A POE was completed for the program in November 2018. The following risks were considered in the POE:

1. Centerline Drogue System (CDS) – If CDS performance deficiency discoveries continue during qualification/performance testing, then it will negatively impact System Verification Review (SVR), aircraft certification, and Aerial Refueling (AR) Certification.

2. Wing Aerial Refueling Pod (WARP) – If Cobham does not produce a conformed and qualified WARP in time to meet test events, then it will negatively impact SVR, aircraft certification, and AR Certification.

3. Developmental Test Efficiency – If test conditions are not successfully completed at the planned rate (due to Flight Test Plan availability, configuration stability, release reliability, weather, etc.), then aircraft deliveries and SVR will be delayed.

4. Phase III AR Certifications for Initial Operational Test and Evaluation (IOT&E) – If the Phase III IOT&E receiver aircraft are not certified within the planned IOT&E test period, then the completion of IOT&E and FRP Decision will be delayed.

Due to the fixed price nature of the aircraft development contract, discrete costs were not included in the POE for the CDS

and WARP risks since the government's liability is capped at the contract ceiling price. However, these risks were addressed in the government Schedule Risk Assessment (SRA), and the POE incorporated costs for the associated schedule risk to government test support requirements. The Test Efficiency and Phase III risk impacts could include additional costs to extend the government test support, however, the government negotiated with Boeing to add an additional test aircraft to mitigate these two risks. Risk #3 was retired on December 13, 2018.

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

Cost and Funding

Funding Summary

Appropriation Summary FY 2020 President's Budget / December 2018 SAR (TY$ M)									
Appropriation	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
RDT&E	5674.4	66.7	45.7	37.4	23.6	0.0	0.0	0.0	5847.8
Procurement	9561.5	2523.0	2228.1	3045.2	2491.5	2552.8	3140.1	9189.7	34731.9
MILCON	906.6	178.0	26.1	445.6	249.0	254.0	0.0	963.2	3022.5
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2020 Total	16142.5	2767.7	2299.9	3528.2	2764.1	2806.8	3140.1	10152.9	43602.2
PB 2019 Total	16099.2	3177.6	3186.9	3542.3	3274.0	3349.0	3425.0	7764.4	43818.4
Delta	43.3	-409.9	-887.0	-14.1	-509.9	-542.2	-284.9	2388.5	-216.2

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. POE will be updated in 2019 to incorporate fixing the boom deficiency.

Quantity Summary FY 2020 President's Budget / December 2018 SAR (TY$ M)										
Quantity	Undistributed	Prior	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	To Complete	Total
Development	4	0	0	0	0	0	0	0	0	4
Production	0	52	15	12	15	12	12	15	42	175
PB 2020 Total	4	52	15	12	15	12	12	15	42	179
PB 2019 Total	4	49	15	15	15	15	15	15	36	179
Delta	0	3	0	-3	0	-3	-3	0	6	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	--	--	--	--	--	--	105.1
2017	--	--	--	--	--	--	113.7
2018	--	--	--	--	--	--	75.6
2019	--	--	--	--	--	--	66.7
2020	--	--	--	--	--	--	45.7
2021	--	--	--	--	--	--	37.4
2022	--	--	--	--	--	--	23.6
Subtotal	4	--	--	--	--	--	5847.8

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	--	--	--	--	--	--	103.8
2017	--	--	--	--	--	--	110.1
2018	--	--	--	--	--	--	71.7
2019	--	--	--	--	--	--	62.0
2020	--	--	--	--	--	--	41.6
2021	--	--	--	--	--	--	33.4
2022	--	--	--	--	--	--	20.7
Subtotal	4	--	--	--	--	--	5995.9

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
2014	--	--	--	--	--	9.5	9.5
2015	7	1149.3	--	--	1149.3	306.8	1456.1
2016	12	1749.5	--	--	1749.5	301.3	2050.8
2017	15	2276.7	--	--	2276.7	450.0	2726.7
2018	18	2707.1	--	--	2707.1	611.3	3318.4
2019	15	2193.9	--	--	2193.9	329.1	2523.0
2020	12	1895.3	--	--	1895.3	332.8	2228.1
2021	15	2476.8	--	--	2476.8	568.4	3045.2
2022	12	2111.9	--	--	2111.9	379.6	2491.5
2023	12	2084.6	--	--	2084.6	468.2	2552.8
2024	15	2691.3	--	--	2691.3	448.8	3140.1
2025	15	2755.7	--	--	2755.7	433.5	3189.2
2026	15	2782.5	--	--	2782.5	485.9	3268.4
2027	12	2511.7	--	--	2511.7	220.4	2732.1
Subtotal	175	29386.3	--	--	29386.3	5345.6	34731.9

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	1123.8	--	--	1123.8	300.0	1423.8
2016	12	1678.4	--	--	1678.4	289.0	1967.4
2017	15	2140.6	--	--	2140.6	423.1	2563.7
2018	18	2489.2	--	--	2489.2	562.1	3051.3
2019	15	1977.7	--	--	1977.7	296.7	2274.4
2020	12	1675.1	--	--	1675.1	294.1	1969.2
2021	15	2146.1	--	--	2146.1	492.5	2638.6
2022	12	1794.0	--	--	1794.0	322.5	2116.5
2023	12	1736.1	--	--	1736.1	389.9	2126.0
2024	15	2197.4	--	--	2197.4	366.5	2563.9
2025	15	2205.9	--	--	2205.9	347.0	2552.9
2026	15	2183.7	--	--	2183.7	381.3	2565.0
2027	12	1932.5	--	--	1932.5	169.6	2102.1
Subtotal	175	25280.5	--	--	25280.5	4643.7	29924.2

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	206.9
2015	169.8
2016	66.3
2017	32.7
2018	264.6
2019	178.0
2020	26.1
2021	445.6
2022	249.0
2023	254.0
2024	--
2025	394.8
2026	434.4
2027	112.4
2028	21.6
Subtotal	2871.6

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	204.1
2015	164.8
2016	63.1
2017	30.5
2018	241.9
2019	159.5
2020	22.9
2021	383.9
2022	210.3
2023	210.3
2024	--
2025	314.2
2026	339.0
2027	86.0
2028	16.2
Subtotal	2462.6

Annual Funding 3830 | MILCON | Military Construction, Air National Guard	
Fiscal Year	TY $M Total Program
2013	0.7
2014	--
2015	41.9
2016	2.8
2017	1.5
Subtotal	46.9

Annual Funding 3830 | MILCON | Military Construction, Air National Guard	
Fiscal Year	BY 2016 $M
	Total Program
2013	0.7
2014	--
2015	41.1
2016	2.7
2017	1.4
Subtotal	45.9

Annual Funding 3730 | MILCON | Military Construction, Air Force Reserve	
Fiscal Year	TY $M Total Program
2017	97.6
2018	6.4
Subtotal	104.0

Annual Funding 3730 | MILCON | Military Construction, Air Force Reserve	
Fiscal Year	**BY 2016 $M** **Total Program**
2017	90.8
2018	5.8
Subtotal	96.6

Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
Approval Date	2/24/2011	11/28/2017
Approved Quantity	19	64
Reference	Milestone B ADM	Milestone C ADM and KC-46 Lot 5 ADM
Start Year	2015	2015
End Year	2016	2019

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.

On August 12, 2016, 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 Lot 3 and Lot 4 from FRP Lots to LRIP Lots. On November 28, 2017, the DAE further approved an increase of LRIP quantity to 64 aircraft in the KC-46A Lot 5 ADM. When Congress enacted the FY 2018 budget, 3 additional aircraft were added to Lot 4, bringing the LRIP quantity to 67.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Description
Japan	2/23/2017	1	446.0	The second Japanese FMS case was signed on February 23, 2017, funding unique aircraft configuration development. The case has been amended three times thus far to fund the first and second aircraft, as well as associated government furnished equipment that will be integrated into the Japanese KC-46s.
Japan	8/18/2016	0	9.0	Letter of Offer and Acceptance

Notes

Japan: On December 22, 2017, a $289M contract was awarded to Boeing for the development of the exportable Japanese configuration, purchase of the first of four aircraft, and minor logistics support. Included in this award were three pre-priced options for aircrafts two through four, bringing the total contract value to $793M. The second aircraft option was exercised on December 6, 2018.

Israel: The Israeli FMS case was signed on September 14, 2017. This studies and analysis case funds travel and manpower support for one government engineer to assist Israel in refining program requirements and ensuring export compliance.

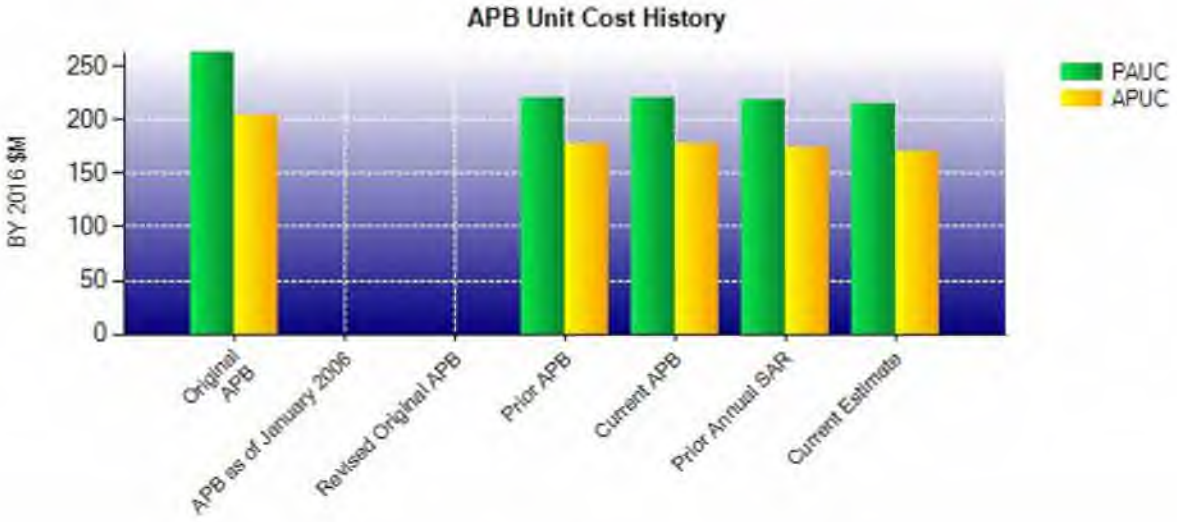
Nuclear Costs

None

Unit Cost

Current UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2016 $M Current UCR Baseline (Mar 2019 APB)	BY 2016 $M Current Estimate (Dec 2018 SAR)	% Change
Program Acquisition Unit Cost			
Cost	39529.1	38525.2	
Quantity	179	179	
Unit Cost	220.833	215.225	-2.54
Average Procurement Unit Cost			
Cost	30897.3	29924.2	
Quantity	175	175	
Unit Cost	176.556	170.995	-3.15

Original UCR Baseline and Current Estimate (Base-Year Dollars)			
Item	BY 2016 $M Original UCR Baseline (Aug 2011 APB)	BY 2016 $M Current Estimate (Dec 2018 SAR)	% Change
Program Acquisition Unit Cost			
Cost	47021.2	38525.2	
Quantity	179	179	
Unit Cost	262.688	215.225	-18.07
Average Procurement Unit Cost			
Cost	35699.9	29924.2	
Quantity	175	175	
Unit Cost	203.999	170.995	-16.18



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	Jan 2017	220.833	176.556	247.813	202.823
Current APB	Mar 2019	220.833	176.556	247.813	202.823
Prior Annual SAR	Dec 2017	219.112	174.634	244.796	199.728
Current Estimate	Dec 2018	215.225	170.995	243.588	198.468

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
288.828	5.789	0.000	-0.009	0.000	-48.519	0.000	-1.293	-44.032	247.813

Current SAR Baseline to Current Estimate (TY $M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
247.813	0.956	0.000	4.593	0.000	-3.916	0.000	-5.858	-4.225	243.588

Initial SAR Baseline to Current SAR Baseline (TY $M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
229.920	4.918	0.000	-0.010	0.000	-33.806	0.000	-1.294	-30.192	202.823

Current SAR Baseline to Current Estimate (TY $M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
202.823	0.925	0.000	4.292	0.000	-3.581	0.000	-5.991	-4.355	198.468

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	Feb 2011	Feb 2011
Milestone C	N/A	Aug 2015	Aug 2016	Aug 2016
IOC	N/A	Aug 2017	Oct 2018	Jun 2020
Total Cost (TY $M)	N/A	51700.2	44358.5	43602.2
Total Quantity	N/A	179	179	179
PAUC	N/A	288.828	247.813	243.588

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

Cost Variance

Summary TY $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	5897.7	35494.1	2966.7	44358.5
Previous Changes				
Economic	-1.6	-154.6	-17.8	-174.0
Quantity	--	--	--	--
Schedule	+72.9	--	--	+72.9
Engineering	--	--	--	--
Estimating	+9.1	-170.2	-61.0	-222.1
Other	--	--	--	--
Support	--	-216.9	--	-216.9
Subtotal	+80.4	-541.7	-78.8	-540.1
Current Changes				
Economic	+4.0	+316.4	+24.7	+345.1
Quantity	--	--	--	--
Schedule	-1.9	+751.1	--	+749.2
Engineering	--	--	--	--
Estimating	-132.4	-456.4	+109.9	-478.9
Other	--	--	--	--
Support	--	-831.6	--	-831.6
Subtotal	-130.3	-220.5	+134.6	-216.2
Total Changes	-49.9	-762.2	+55.8	-756.3
CE - Cost Variance	5847.8	34731.9	3022.5	43602.2
CE - Cost & Funding	5847.8	34731.9	3022.5	43602.2

Summary BY 2016 $M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	6054.7	30897.3	2577.1	39529.1
Previous Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	+67.1	--	--	+67.1
Engineering	--	--	--	--
Estimating	+3.0	-141.5	-41.8	-180.3
Other	--	--	--	--
Support	--	-194.9	--	-194.9
Subtotal	+70.1	-336.4	-41.8	-308.1
Current Changes				
Economic	--	--	--	--
Quantity	--	--	--	--
Schedule	-2.0	+531.9	--	+529.9
Engineering	--	--	--	--
Estimating	-126.9	-410.7	+69.8	-467.8
Other	--	--	--	--
Support	--	-757.9	--	-757.9
Subtotal	-128.9	-636.7	+69.8	-695.8
Total Changes	-58.8	-973.1	+28.0	-1003.9
CE - Cost Variance	5995.9	29924.2	2605.1	38525.2
CE - Cost & Funding	5995.9	29924.2	2605.1	38525.2

Previous Estimate: December 2017

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+4.0
Adjustment for current and prior escalation. (Estimating)	-2.9	-3.0
Revised estimate to reflect application of new outyear inflation indices. (Estimating)	-0.9	-0.9
Revised Aircraft Product Development estimate to reflect updated execution plan. (Estimating)	+38.9	+41.8
Revised Aircrew Training Systems estimate to reflect updated execution plans. (Estimating)	-0.3	-0.3
Revised Direct Mission Support estimate to reflect updated execution plan. (Estimating)	-1.0	-1.2
Revised Government Test estimate to reflect updated execution plan based on latest burn rates and test strategy. (Estimating)	-26.9	-28.6
Revised Program Management Administration estimate to reflect updated execution plan. (Estimating)	+2.2	+2.6
Schedule variance to reflect updated test schedule and inclusion of Stiff Boom and Remote Vision System government testing. (Schedule)	-2.0	-1.9
Revised FY 2017 estimate for omnibus reprogramming. (Estimating)	-7.7	-8.0
Revised FY 2023 estimate for DoD budget adjustment. (Estimating)	-12.5	-14.4
Revised estimate due to Small Business Innovative Research in FY 2018. (Estimating)	-2.5	-2.6
Revised estimate due to Congressional marks in FY 2018. (Estimating)	-9.5	-10.0
Revised estimate in FY 2018 for Above Threshold Reprogramming. (Estimating)	-8.1	-8.5
Revised estimate in FY 2018 for Below Threshold Reprogramming. (Estimating)	-1.4	-1.5
Revised estimate due to Congressional mark in FY 2019. (Estimating)	-7.4	-8.0
Revised estimate to reflect Congressional Rescissions in FY 2017 and FY 2018 due to funds declared excess to need. (Estimating)	-86.9	-89.8
RDT&E Subtotal	-128.9	-130.3

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+316.4
Shift of procurement buy profile from FY 2018 to FY 2027. (Schedule)	+531.9	+751.1
Adjustment for current and prior escalation. (Estimating)	-68.1	-73.7
Decreased FY 2016 estimate for ATR. (Estimating)	-8.4	-8.8
Revised estimate due to Congressional marks in FY 2017 - FY 2019. (Estimating)	-539.5	-590.7
Revised FY 2016 estimate for omnibus reprogramming. (Estimating)	-11.5	-12.0
Revised Engineering Change Order estimate to reflect fact-of-life execution changes. (Estimating)	+324.4	+356.9
Revised Studies estimate to reflect updated execution plan. (Estimating)	-18.3	-20.2
Revised Thermal Curtains estimate to reflect updated acquisition strategy and fact-of-life changes. (Estimating)	+0.5	+0.6
Revised Wing Aerial Refueling Pods estimate to reflect fact-of-life changes. (Estimating)	+0.3	+0.3
Increased Boom Telescope Actuator estimate to reflect updated acquisition strategy. (Estimating)	+119.5	+139.0
Revised Government Furnished Equipment Estimate Large Aircraft Infrared	-75.9	-86.5

Countermeasures estimate due to fact-of-life execution changes and updated acquisition strategy. (Estimating)		
Revised Alternate Mission Equipment Palletized Seats estimate to reflect updated execution plan. (Estimating)	+23.4	+28.2
Revised estimate to reflect application of new outyear inflation indices. (Estimating)	-157.1	-189.5
Adjustment for current and prior escalation. (Support)	-18.2	-19.5
Decrease in Other Support due to miscellaneous adjustments which include: decreases in Aircrew Training Systems, Support Equipment, Operational Site Activation, Depot Stand-Up, Interim Contractor Support, and Direct Mission Support costs, use of new outyear inflation indices, and increases in Maintenance Training Systems and Program Management Administration. (Support)	-391.9	-425.0
Decrease in Initial Spares based on updated acquisition strategy, Procurement buy profile schedule shift, use of new outyear inflation indices, and a decrease in the Initial Spares requirement. (Support)	-347.8	-387.1
Procurement Subtotal	-636.7	-220.5

MILCON	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+24.7
Adjustment for current and prior escalation. (Estimating)	-6.4	-6.9
Revised estimate to reflect reprogramming actions (Military Construction, Air Force (MCAF)). (Estimating)	-14.1	-15.3
Revised estimate to reflect updated project plan for the Depot Maintenance Hangar (MCAF). (Estimating)	+26.5	+25.0
Revised outyear estimate for FTU and MOBs 4 - 9 to reflect updated beddown plan and latest MILCON strategy (MCAF). (Estimating)	+79.0	+125.3
Revised estimate to reflect reprogramming actions (Military Construction, Air Force Reserve). (Estimating)	-0.4	-0.4
Revised estimate to reflect application of new outyear inflation indices (MCAF). (Estimating)	-14.8	-17.8
MILCON Subtotal	+69.8	+134.6

Contracts

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	8331.8	N/A	34	8331.8	8331.8

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 Undefinitized Contract Action (UCA), 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 UCA to purchase Support Equipment (SE) 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.

On July 12, 2017, a contract modification (P00101) was issued in the amount of $2.9M for a Software System Integration Lab Study.

On September 20, 2017, a contract modification (P00129) was issued in the amount of $772K for KY-100M Integration.

On September 26, 2017, a contract modification (P00067) was issued in the amount of $43.8M for SE.

On September 27, 2017, a contract modification (P00080) was issued in the amount of $38.8M for KC-46 Initial Common Spares and Readiness Spares Packages in support of Production Aircraft Lots 1 and 2.

On December 21, 2017, a contract modification (P00132) was issued in the amount of $6.7M for an UCA for subscriptions and software licenses.

P00067 and P00080 were issued as Fixed-Price Incentive Fee efforts. The Program Office has not yet received a Contract Performance Report for these efforts.

On December 29, 2017, a contract modification (P00144) was issued in the amount $41K for the KY-100M SIL Restoration and Closure.

On March 21, 2018, a contract modification (P00085) was issued in the amount of $21.3M for Support Equipment.

On May 3, 2018, a contract modification (P00143) was issued in the amount of $1.3M for the LAIRCM Block 30 Flight Test Study.

On July 19, 2018, a contract modification (P00158) was issued in the amount of $1.1M for CLIN 1403 KY-100M Cut-In.

On July 24, 2018, a contract modification (P00131) was issued in the amount of $271K for G081 CCP.

On August 30, 2018, a contract modification (P00128) was issued in the amount of $61M for Lot 3 Spares.

On September 10, 2018, a contract modification (P00141) was issued in the amount of $2.9B for Lot 4 Aircraft, Spares, and Support Equipment.

On September 13, 2018, a contract modification (P00160) was issued in the amount of $409K for CLIN 0216 G081 data files.

On September 27, 2018, a contract modification (P00164) was issued in the amount of $2.1M for subscriptions and licenses UCA option exercise.

On December 14, 2018, a contract modification (PZ0153) was issued in the amount of -$5.6M to definitize the subscriptions and licenses UCA.

On December 17, 2018, a contract modification (P00168) was issued in the amount of $6.6M for subscriptions and licenses and CY19 renewals.

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 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 (11/30/2017)	-283.0	-148.8
Previous Cumulative Variances	-283.0	-148.8
Net Change	+0.0	+0.0

Cost and Schedule Variance Explanations

None

Notes

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

This contract is more than 90% complete; therefore, this is the final report for this contract.

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	173.3	N/A	N/A	173.3	173.3

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.

On July 13, 2017, a modification (P00115) was issued in the amount of $1.1M for the Mission Data File Study, increasing the

contract price from $110.9 to $112.1M.

On August 10, 2017, a modification (P00127) was issued in the amount of$138K, increasing the contract price from $112.1M to $112.2M.

On August 18, 2017, a modification (P00119) was issued in the amount of$7.7M for the ARO Instructor Override Study, increasing the contract price from $112.2M to $119.9M.

On September 15, 2017, a modification (P00112) was issued in the amount of $834K for the APT Study, increasing the contract price from $119.7M to $120.7M.

On September 25, 2017, a modification (P00111) was issued in the amount of $7.4M for the ARASQ Data Collection Study, increasing the contract price from $120.7M to $128.1M.

On October 17, 2017, a modification (P00118) was issued in the amount of $8.4M for the C2 MEIS/ANGI Study, increasing the contract price from $128.1M to $136.5M.

On January 18, 2018, a modification (P00138) was issued in the amount of $39K for the APT Interim Solution Study, increasing the contract price from $136.5 to $136.6M.

On July 2, 2018, a modification (P00157) was issued in the amount of $781K for additional trips for the Mission Data File Study, increasing the contract price from $136.6M to $137.3M.

On July 24, 2018, a modification (P00131) was issued in the amount of $524K for G081 CCP, increasing the contract price from $137.3M to $137.8M.

On August 8, 2018, a modification (P00147) was issued in the amount of $10.0M for the Block 1 Risk Reduction Study, increasing the contract price from $137.8M to $147.9M.

On August 9, 2018, a modification (P00120) was issued in the amount of $5.7M for the APT Phase 2 FAA Certification Study, increasing the contract price from $147.9M to $153.6M.

On August 22, 2018, a modification (P00124) was issued in the amount of $8.7M for the MDF Equipment CCP, increasing the contract price from $153.6M to $162.3M.

On August 31, 2018, a modification (P00155) was issued in the amount of $11.0M for the Airframe and Aerial Refueling Receiver Study, increasing the contract price from $162.3M to $173.3M.

Cost and Schedule Variance Explanations

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

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	152.6	N/A	N/A	152.6	152.6

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to 115 contract modifications that have been awarded, increasing the original contract price from $143.7M to $152.6M.

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: Procurement
Contract Name: KC-46 Aircrew Training Systems-Production
Contractor: FlightSafety Services Corporation
Contractor Location: 10770 E. Briarwood Ave. Suite 100
Centennial, CO 80112-3807
Contract Number: FA8621-13-C-6247
Contract Type: Firm Fixed Price (FFP)
Award Date: May 01, 2013
Definitization Date: May 31, 2017

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
68.9	N/A	N/A	104.3	N/A	14	104.3	104.3

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract modifications that have been awarded, increasing the original contract price from $68.9M to $104.3M.

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.

FFP Production Option Year (OY) 1 exercised in June 2016 ($35.6M).

FFP Production OY2 exercised in May 2017 ($33.3M).

FFP Production OY3 exercised in April 2018 ($35.4M).

Contract Identification

Appropriation: MILCON
Contract Name: KC-46A MILCON (Tinker AFB)
Contractor: Walsh Federal/ALBERICI JV
Contractor Location: 929 W. Adams St.
Chicago, IL 60607-3021
Contract Number: W912BV-17-C-0004
Contract Type: Firm Fixed Price (FFP)
Award Date: March 30, 2017
Definitization Date: March 30, 2017

Contract Price							
Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
100.9	N/A	N/A	101.0	N/A	N/A	101.0	101.0

Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to contract modifications that have been awarded, increasing the original contract price from $100.9M to $101.0M.

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.

The work scope of this contract is for the Design-Bid-Build of the Two Bay Maintenance Hanger at Tinker AFB, OK.

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	43602.2	Years Appropriated	15
Expended to Date	10510.0	Percent Years Appropriated	62.50%
Percent Expended	24.10%	Appropriated to Date	18910.2
Total Funding Years	24	Percent Appropriated	43.37%

The above data is current as of March 11, 2019.

Notes

Total expended to date includes $405M in MILCON expenditures.

Operating and Support Cost

Cost Estimate Details

Date of Estimate:	September 15, 2017
Source of Estimate:	POE
Quantity to Sustain:	166
Unit of Measure:	Aircraft
Service Life per Unit:	40.00 Years
Fiscal Years in Service:	FY 2017 - FY 2069

The KC-46A Program has 166 Primary Aircraft Authorized (PAA) and 13 back-up aircraft. The O&S estimate is based on 166 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

The antecedent system is the KC-135R&T.

KC-135R&T costs have been normalized to reflect the average of 662 annual flying hours per aircraft in the KC-46 Milestone C SCP. KC-135R&T average annual cost per aircraft reflects actual FY 2017 costs reported in the Air Force Total Ownership Cost (AFTOC) system (budget constrained). Most FY 2017 costs reflect the current state of KC-135R&T; however, there are a few exceptions, such as flying hour costs, where the FY 2017 KC-135R&T costs are lower than in previous years.

Annual O&S Costs BY2016 $M		
Cost Element	**KC-46A Average Annual Cost Per Aircraft**	**KC-135R&T (Antecedent) Average Annual Cost Per Aircraft**
Unit-Level Manpower	5.027	3.220
Unit Operations	3.048	2.848
Maintenance	4.906	5.181
Sustaining Support	1.069	0.114
Continuing System Improvements	0.881	0.190
Indirect Support	--	--
Other	--	--
Total	14.931	11.553

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 BY 2016$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 2017 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 FY 2017 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	
Base Year	125041.0	137545.1	119747.2	N/A
Then Year	220824.2	N/A	221448.6	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 POE reflects the following assumptions: 166 PAA, 40-year service life, steady state beginning in FY 2029 through FY 2058, and peacetime operations tempo with average annual flying hours of 662 hours per PAA. 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 ($14.970.5M average steady state) x 30 steady state years x 166 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).

$119,747.2M (BY 2016$M) = $74,553.2M + $17,775.3M + $13,860.1M + $13,558.7M

O&S Cost Variance		
Category	**BY 2016 $M**	**Change Explanations**
Prior SAR Total O&S Estimates - Dec 2017 SAR	121094.0	
Programmatic/Planning Factors	-1169.2	Schedule and planning changes affecting Depot Maintenance, Paint induction cycles and Manpower.
Cost Estimating Methodology	711.7	Revised methodologies for inflating Software maintenance and fuel escalation
Cost Data Update	-863.7	Estimating refinements based on new AFTOC data and cost planning factors.
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	-25.6	Content changes and new requirements for Hardware modifications and Training Systems.
Other	0.0	
Total Changes	-1346.8	
Current Estimate	119747.2	

Disposal Estimate Details

Date of Estimate: September 15, 2018
Source of Estimate: POE
Disposal/Demilitarization Total Cost (BY 2016 $M): 15.6

The KC-46A CY 2018 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.