



Air Force KC-46A Tanker Aircraft Program: Background and Issues for Congress

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Summary

On February 24, 2011, the Department of Defense (DOD) announced the Boeing Company as the winner of a competition to build 179 new KC-46A aerial refueling tankers for the Air Force, a contract valued at roughly \$35 billion. Prior to the announcement, the program had been known as KC-X.

The KC-46A acquisition program is a subject of intense interest because of the dollar value of the contract, the number of jobs it would create, the importance of tanker aircraft to U.S. military operations, and because DOD's previous attempts to acquire a new tanker since 2001 had ultimately failed.

DOD's KC-46A competition strategy, and the contract award, pose several potential oversight issues for Congress, including the following: Did the contract award follow the announced competition strategy and metrics? Has DOD adequately defined the required capabilities for the KC-X and established a fair and adequate framework for scoring and evaluating bids against those required capabilities? Should World Trade Organization (WTO) rulings on commercial aircraft subsidies be taken into account in evaluating the KC-X bids? How should the Air Force take into account the premature disclosure of partial results to the two teams?

FY2011 defense authorization bill: The House Armed Services Committee, in its report on H.R. 5136 (H.Rept. 111-491 of May 26, 2010) recommends approving the Administration's request for \$863.9 million in research and development funding for the KC-X program. During its subsequent consideration of the bill, the full House voted to accept an amendment offered by Representative Inslee that would require the Defense Department to consider any "unfair competitive advantage that an offeror may possess" in evaluating bids on major weapons systems. The Senate Armed Services Committee report accompanying S. 3454 (S.Rept. 111-201 of June 4, 2010) makes no change to the Administration's requested funding level for KC-X.

FY2011 DOD appropriations bill: The Senate Appropriations Committee, in its report (S.Rept. 111-295 of September 16, 2010) on S. 3800, recommends \$538.9 million for the Next Generation Aerial Refueling Aircraft, a reduction of \$325 million from the Administration request. The House Appropriations Committee did not report a separate defense bill for FY2011.

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Introduction

On February 24, 2011, the Department of Defense (DOD) announced the Boeing Company as the winner of a competition to build 179 new KC-46A aerial refueling tankers for the Air Force, a contract valued at roughly \$35 billion.

DOD had released the Request for Proposals for what was then the KC-X¹ program on February 24, 2010. The 179 KC-Xs, which would be procured at a maximum rate of 15 aircraft per year, would replace roughly one-third of the Air Force's aging fleet of KC-135 aerial refueling tankers. The Air Force and the U.S. Transportation Command state that replacing the KC-135s is their highest recapitalization priority.

The Administration's proposed FY2012 defense budget requested \$877.0 million in Air Force research and development funding to begin the KC-46A acquisition.²

The estimated total value of the 179-aircraft KC-X program is roughly \$35 billion. DOD originally anticipated announcing the winner of the competition in the summer of 2010. However, the team of Northrop Grumman and the European Aeronautic Defence and Space Company (EADS), the parent company of Airbus, withdrew from the competition on March 8, 2010, leaving Boeing as the sole expected bidder.

DOD then extended the bid deadline by 60 days, to July 9, 2010.³ Subsequently, on April 20, 2010, EADS announced that its North American division would enter the competition on its own.⁴

Bidding closed on July 9, 2010, with three offerors submitting bids. EADS offered a KC-X design based on the Airbus A330 airliner, to be built in Mobile, AL. Boeing offered a KC-X design based on its 767 airliner, to be built in Seattle, WA, and Wichita, KS. A team of the Ukrainian airframe maker Antonov and U.S. Aerospace offered a twin-engine variant of the An-124 freighter, with production location uncertain; this bid was excluded for arriving after the deadline. U.S. Aerospace protested the exclusion, but on October 6, 2010, the Government Accountability Office denied the protest.⁵

The KC-46A acquisition program is a subject of intense interest because of the dollar value of the contract, the number of jobs it would create, the importance of tanker aircraft to U.S. military operations, and because previous attempts by DOD to move ahead with a KC-X acquisition program over the last several years have led to controversy and ultimately failed. The history of those earlier attempts forms an important part of the context for DOD's KC-X competition, particularly in defining the required capabilities for the KC-46A and designing and conducting a fair and transparent competition.

¹ In the designation KC-X, C means a cargo-type aircraft, K means that the aircraft is specifically an aerial refueling tanker, and X means the final design of the aircraft has not been determined.

² The requested funding is found in the Air Force's research development, test and evaluation (RDT&E) account in program element (PE) 0605221F, KC-X, Next Generation Aerial Refueling Aircraft.

³ Michael Bruno, "USAF KC-X Bid Deadline Extended 60 Days," *AviationWeek/Ares* blog, March 31, 2010.

⁴ John Reed, "EADS Confident Its KC-45 Can Compete for USAF Tanker Bid", *DefenseNews.com*, April 20, 2010.

⁵ U.S. Government Accountability Office, *Decision: Matter of U.S. Aerospace, Inc.*, File: B-403464, B-403464.2, October 6, 2010, <http://www.gao.gov/decisions/bidpro/403464.pdf>.

The most recent failed attempt to acquire KC-X was a competition between Boeing and a team of Northrop Grumman and EADS that resulted in DOD awarding a contract to Northrop/EADS in February 2008. Boeing protested that award, and in June 2008, the Government Accountability Office (GAO) sustained Boeing's protest, agreeing with Boeing that the competition was conducted in a flawed manner.⁶ GAO's ruling prompted DOD to cancel the 2008 KC-X competition and temporarily take control of the KC-X acquisition away from the Air Force. The Bush Administration decided to defer the next attempt at a KC-X acquisition program to the Obama Administration.

DOD's new KC-46A acquisition competition strategy and contract award pose several potential oversight issues for Congress, including the following: Did the contract award follow the announced competition strategy and metrics? Has DOD adequately defined the required capabilities for the KC-X and established a fair and adequate framework for scoring and evaluating the bids against these required capabilities? Should the Air Force have been in charge of the KC-X competition?

The issues for Congress in FY2012 are whether to approve, reject, or modify the Air Force's request for FY2012 research and development funding for the KC-46A program, and to evaluate the fairness and transparency of the contract process. Congress' decision on these issues could affect DOD capabilities and funding requirements, and the aircraft manufacturing industrial base.

Background

Air Force Refueling Tankers

Roles and Missions

Aerial refueling aircraft—commonly called tankers—provide in-flight refueling services to bombers, fighters, airlifters, surveillance aircraft, and other types of aircraft flown by the U.S. military. Tankers enable other aircraft to deploy quickly to distant theaters of operation, and to remain in the air longer while operating in those theaters. Aerial refueling capability is a critical component of the U.S. military's ability to project power overseas and to operate military aircraft in theater with maximum effectiveness.

The Air Force operates the U.S. long-range tanker fleet, the subject of this report. The Navy and Marine Corps also operate shorter-range tankers in support of tactical missions.

⁶ For more on GAO bid protests generally, see CRS Report R40227, *GAO Bid Protests: Trends, Analysis, and Options for Congress*, by Moshe Schwartz and Kate M. Manuel, and CRS Report R40228, *GAO Bid Protests: An Overview of Timeframes and Procedures*, by Kate M. Manuel and Moshe Schwartz.

Current Tanker Fleet

KC-135 Stratotanker

The Air Force's current fleet of large tankers consists mostly of 415 re-engined KC-135R Stratotankers. The first KC-135 entered the Air Force inventory in 1956, and the final one was delivered in 1964. DOD and Air Force documents for FY2010 state variously that average age of the KC-135 fleet in 2009 is 45 years,⁷ 47 years,⁸ 48 years,⁹ or more than 48 years.¹⁰ The aircraft have received various upgrades and modifications over the years, including new engines.¹¹ DOD states that if new tankers are procured at a rate of 15 per year, the last KC-135R would be more than 80 years old at retirement. (For a discussion of the potential longevity of the KC-135 fleet, see **Appendix E**) On September 15, 2009, it was reported that:

It will cost the Air Force up to \$6 billion per year late in the next decade to maintain its aging fleet of KC-135 tankers, according to a senior service official...

The cost of maintaining the Stratotankers will continue to rise as the next-generation KC-X tanker program continues to slip, Air Mobility Command chief Gen. Arthur Lichte said during a briefing today.¹²

⁷ See, for example, Department of Defense, *Fiscal Year 2010 Budget Request, Summary Justification*, May 2009, p. 1-50, or United States Air Force, *FY 2010 Budget Overview*, SAF/FMB, May 2009, p. 48.

⁸ See, for example, Department of Defense, *Fiscal Year 2010 Budget Request, Summary Justification*, May 2009, p. 1-16.

⁹ See, for example, Department of the Air Force, *Fiscal Year (FY) 2010 Budget Estimates, Research, Development, Test and Evaluation (RDY&E) Descriptive Summaries, Volume II, Budget Activities 4 – 6*, May 2009, Exhibit R-2, RDT&E Budget Item Justification, [PE]0605221F, KC-X, Next Generation Aerial Refueling Aircraft, page 1 of 8 (page 559 of the overall document).

¹⁰ See, for example, Department of the Air Force, Presentation to the House Armed Services Committee Subcommittee on Air and Land Forces, United States House of Representatives, Combined Statement of: Lieutenant General Daniel J. Darnell, Air Force Deputy Chief Of Staff For Air, Space and Information Operations, Plans And Requirements (AF/A3/5) Lieutenant General Mark D. Shackelford, Military Deputy, Office of the Assistant Secretary of the Air Force for Acquisition (SAF/AQ) Lieutenant General Raymond E. Johns, Jr., Air Force Deputy Chief of Staff for Strategic Plans And Programs (AF/A8), May 20, 2009, p. 17.

¹¹ Air Force Fact sheet on the KC-135, available online at <http://www.af.mil/information/factsheets/factsheet.asp?fsID=110>. The fact sheet was accessed by CRS on December 7, 2009, at which time it carried a date of October 2009. The fact sheet states that:

Of the original KC-135A's, more than 415 have been modified with new CFM-56 engines produced by CFM-International. The re-engined tanker, designated either the KC-135R or KC-135T, can offload 50 percent more fuel, is 25 percent more fuel efficient, costs 25 percent less to operate and is 96 percent quieter than the KC-135A.

Under another modification program, a re-engined tanker with the TF-33-PW-102 engine was designated the KC-135E. In 2009, the last KC-135E retired from the inventory.

Through the years, the KC-135 has been altered to do other jobs ranging from flying command post missions to reconnaissance. KC-135s are used for special reconnaissance and Air Force Materiel Command's NKC-135A's are flown in test programs. Air Combat Command operates the OC-135 as an observation platform in compliance with the Open Skies Treaty.

The KC-135R/T model aircraft continue to undergo life-cycle upgrades to expand its capabilities and improve its reliability. Among these are improved communications, navigation, auto-pilot and surveillance equipment to meet future civil air traffic control needs.

¹² Marcus Weisgerber, "KC-135 Maintenance Costs to Reach \$6 Billion Per Year," *InsideDefense.com (DefenseAlert – Daily News)*, September 15, 2009.

KC-10 Extender

The Air Force's fleet of large tankers also includes about 59 KC-10 Extender aerial refueling aircraft, the first of which entered service in 1981.¹³ The KC-10 is a much larger aircraft than the KC-135 or the KC-46A.

KC-46A Program Basics

Numbers of Aircraft

DOD envisages replacing the KC-135 fleet in three stages. The 179 new KC-46As would replace roughly one-third of the KC-135 fleet. Tankers to be procured in the second and third stages would be designated KC-Ys (envisioned as a KC-46A continuation or follow-on) and KC-Zs (a probable replacement for the KC-10 fleet).

Acquisition Cost

A March 2009 GAO report states that the procurement cost of 179 KC-Xs could be about \$35 billion,¹⁴ or an average of about \$195 million per aircraft. A September 25, 2009, news report quotes an unnamed U.S. military official as saying the program could cost between \$25 billion and \$50 billion.¹⁵ The Air Force testified in May 2009 that it had budgeted about \$3.5 billion per year for a projected procurement rate of 12 to 18 aircraft per year,¹⁶ which would equate to an average cost of about \$195 million to \$290 million per aircraft. The Northrop/EADS bid in the 2008 competition was reported as "\$184 million per plane for the first 68 tankers."¹⁷

¹³ Air Force fact sheet on the KC-135, available online at <http://www.af.mil/information/factsheets/factsheet.asp?id=109>. J. The fact sheet was accessed by CRS on December 7, 2009, at which time it carried a date of September 2008. The fact sheet states that the KC-10 can transport up to 75 people and nearly 170,000 pounds (76,560 kilograms) of cargo a distance of about 4,400 miles (7,040 kilometers) unrefueled.

In addition to KC-135s and KC-10s, the Air Force, Marine Corps, and Navy operate additional smaller refueling aircraft. The Air Force uses modified C-130s to refuel Air Force special operations and combat search and rescue helicopters. The Marine Corps uses modified C-130s to refuel Marine helicopters and fighters. Some Navy aircraft have been configured to give them a secondary capability to refuel other Navy or Marine Corps aircraft in flight. The Navy also provides some aerial refueling through a private fee-for-service vendor.

¹⁴ Government Accountability Office, *Defense Acquisitions[:] Assessments of Selected Weapon Programs*, GAO-09-326SP, March 2009, p. 156.

¹⁵ Jason Simpson, "Officials: KC-X Program Could Cost Up To \$50 Billion," *InsideDefense.com (DefenseAlert – Daily News)*, September 25, 2009.

¹⁶ Department of the Air Force, Presentation to the House Armed Services Committee Subcommittee on Air and Land Forces, United States House of Representatives, Combined Statement of: Lieutenant General Daniel J. Darnell, Air Force Deputy Chief Of Staff For Air, Space and Information Operations, Plans And Requirements (AF/A3/5) Lieutenant General Mark D. Shackelford, Military Deputy, Office of the Assistant Secretary of the Air Force for Acquisition (SAF/AQ) Lieutenant General Raymond E. Johns, Jr., Air Force Deputy Chief of Staff for Strategic Plans And Programs (AF/A8), May 20, 2009, p. 17

¹⁷ Colin Clark, "Northrop Drops Tanker Bid," *DoD Buzz*, March 8, 2010.

DOD's KC-X Competition Strategy and Draft RFP

According to DOD, key features of the KC-X competition strategy—which are taken from the briefing slides and transcript, respectively) of the September 24, 2009, DOD news briefing at which the proposed strategy was announced—include the following:

- The proposed KC-X competition strategy, known more formally as the Source Selection Strategy, was devised jointly by the Office of the Secretary of Defense (OSD) and the Air Force and was approved by the Secretary of Defense.
- The Air Force will be the Source Selection Authority (SSA) for the competition, as announced by the Secretary of Defense on September 16, 2009.
- DOD intends to select a sole winner for the KC-X competition; DOD does not intend to split the KC-X program between the two bidders.
- The competition will be evaluated on a best-value (rather than lowest-cost) basis that will take both price and non-price factors into account. The evaluation will include mandatory and non-mandatory/trade space capabilities, acquisition price, warfighting effectiveness, and day-to-day efficiency.
- The competition will differ in many details from the 2007-2008 competition and does not constitute a re-run of the 2007-2008 competition. DOD states that, among other things, the selection criteria to be used in the new competition are more precise and less subjective than those used in the 2007-2008 competition.
- The contracts to be awarded are to be fixed-price type contracts. The winning bidder will receive a fixed-price incentive fee contract with a ceiling for the Engineering and Manufacturing Development (EMD) phase of the program, which includes the first four aircraft. A firm fixed-price (FFP) contract will be used for the next 64 aircraft (production lots 1 through 5). A not-to-exceed contract will be used for the final 111 aircraft (lots 6 through 13). An FFP contract will be used for five years of initial contractor support.
- Following the release of the final RFP, bidders will have about 75 days to prepare and submit their bid. The government will evaluate the bids for about 120 days, and prepare a contract award over a subsequent period of about 30 days. DOD anticipates awarding the contract in the summer of 2010 (since revised to January 2011).
- The first KC-X is projected to be delivered in 2015, and Initial Operating Capability (IOC) for the KC-X is scheduled for 2017. Delivery of all 179 KC-Xs will occur over a period of more than 15 years. As KC-Xs are integrated into the fleet, the Air Force intends to begin evaluating its future tanker needs and begin work on the KC-Y program.

Response to the Draft RFP

On December 1, 2009, Wes Bush, the president and chief executive officer of Northrop Grumman, sent a letter to Under Secretary Carter stating that unless the draft RFP were substantially revised, Northrop Grumman would decline to bid in the KC-X competition. A press report that day stated:

Northrop Grumman Corp., the third-largest U.S. defense company, said it won't bid for the \$35 billion Air Force refueling tanker program unless the draft request for proposals is changed, citing "financial burdens."

The Pentagon has declined to amend the request and didn't plan to "substantially" address Northrop's concerns, Chief Executive Officer Wes Bush wrote in a Dec. 1 letter to Pentagon acquisition chief Ashton Carter. "As a result, I must regrettably inform you that, absent a responsive set of changes in the final RFP, Northrop Grumman has determined that it cannot submit a bid," he wrote.

Northrop and partner European Aeronautic Defence & Space Co. were vying against Boeing Co. to build the refueling tankers. The competition was restarted in September after Boeing successfully protested the award to Northrop and EADS last year.

The Pentagon's request shows a "clear preference" for a smaller tanker than the modified Airbus A330 that Northrop plans to offer, and continuing to compete for the tankers would impose "contractual and financial burdens on the company that we simply cannot accept," Bush wrote in the letter.

"The Department regrets that Northrop Grumman and Airbus have taken themselves out of the tanker competition and hope they will return when the final request for proposals is issued," Pentagon spokesman Bryan Whitman said in an e-mail. "The Department wants competition but cannot compel the two airplane makers to compete."...

Both competitors "have suggested changes to the request for proposals that would favor their offering," Whitman wrote in the e-mail. "But the Department cannot and will not change the warfighter requirements for the tanker to give advantage to either competitor."¹⁸

Final RFP

The final KC-X RFP was issued on February 24, 2010. Overall, the final requirements for the KC-X aircraft appeared to have changed little from those in the draft RFP. One requirement was eliminated (bringing the total to 372), and none added. The financial structure of the proposed contract, however, changed substantially.

Table I. Major Differences Between KC-X Draft RFP and Final Document

Issue	Draft RFP	Final RFP
Microwave Landing System	Required	Not required
Large Aircraft Infrared Countermeasures	Contractor to procure and include in price	Government will furnish
Contract type	Development phase: Fixed-price with incentive fee.	Development phase unchanged.
	Production lots 1-2: Firm fixed price.	Production lots 1-2 unchanged.
	Production lots 3-5: Firm fixed price, with 5% inflation trigger for price adjustment.	Production lots 3-5: Not to Exceed, with 2.5% inflation trigger.

¹⁸ Gopal Ratnam and Alison Fitzgerald, "Northrop Declines Tanker Bid on 'Financial Burdens' (Update2)," *Bloomberg.com*, December 1, 2009.

Issue	Draft RFP	Final RFP
	Production lots 6-13: Not to Exceed, with 5% trigger.	Production lots 6-13: Not to Exceed, with 1% trigger.
	Contractor support: Firm fixed price.	Contractor support unchanged.
Mission modeling	IFARA (Integrated Fleet Air Refueling Assessment) model used to determine operational suitability.	IFARA ground rules updated “to ensure they reflected current operational practices.” ^a
Alert quick-start	Did not specify temperatures at which power carts were allowed for environmental control.	Established a range of temperatures for which power carts could be allowed for both heating and cooling the aircraft.
Fuel burn	Penalty if actual fuel use exceeds contractor’s proposal.	Incentive if fuel use is less than contractor’s proposal.
Proposal due date	60 days	75 days

Source: CRS analysis.

- a. Briefing script of Dr. Ashton Carter, Undersecretary of Defense for Acquisition, Technology, & Logistics, obtained by CRS.

After evaluating the final RFP, on March 8, 2010, the Northrop/EADS team withdrew from the competition.¹⁹

DOD then extended the bid deadline by 60 days, to July 9, 2010.²⁰ Subsequently, on April 20, 2010, EADS announced that its North American division would enter the competition on its own.²¹

DOD Statements on KC-X Priority

DOD states that “with the average age of the [KC-135] inventory over 45 years old, a new Tanker has become an operational necessity as well as a financially prudent decision to meet refueling requirements.”²² The U.S. Transportation Command testified in February 2009 that:

My number one recapitalization priority is replacing the fleet of 415 Eisenhower-era KC-135s with a new platform to preserve a unique asymmetric advantage for our nation. The KC-X with multipoint refueling allowing same sortie service to Air Force, Navy, Marine and coalition aircraft will address the significant risk we are currently carrying in air capacity and address further capability risks associated with an airframe that is almost 50 years old - and will be over 80 years old by the time we recapitalize all of them. The ability to carry cargo and operate forward with defensive systems will be a game changer when the aircraft is not needed as a tanker. Further delays in replacing this aircraft will add significant risk to our ability to rapidly project combat power to support the nation and our allies. It is imperative to expedite a smart, steady reinvestment program.²³

¹⁹ See, inter alia, Colin Clark, “Northrop Drops Tanker Bid,” *DoD Buzz*, March 8, 2010 and John Reed, “Northrop Won’t Bid on USAF Tanker,” *DefenseNews.com*, March 8, 2010.

²⁰ Michael Bruno, “USAF KC-X Bid Deadline Extended 60 Days,” *AviationWeek/Ares* blog, March 31, 2010.

²¹ John Reed, “EADS Confident Its KC-45 Can Compete for USAF Tanker Bid”, *DefenseNews.com*, April 20, 2010.

²² Department of Defense, *Fiscal Year 2010 Budget Request, Summary Justification*, May 2009, p. 1-50.

²³ Statement of General Duncan J. McNabb, USAF, Commander, United States Transportation Command, Before the (continued...)

The Air Force testified in May 2009 that:

The KC-X remains the Air Force's highest procurement and recapitalization priority. Air refueling is critical to the entire Joint and Coalition team's ability to project combat power around the world. The current fleet of Eisenhower-era KC-135s averages over 48 years old.

KC-X tankers will provide increased aircraft availability, more adaptable technology, more flexible employment options, and greater overall capability than the current fleet of KC-135R/T tankers. The KC-X will be able to refuel receptacle and probe-equipped aircraft on every mission and to receive fuel in-flight plus carry cargo, passengers, & conduct aeromedical evacuation. The KC-X will also be equipped with defensive systems to enhance its utility to the warfighter.

The KC-X program is based on a planned purchase of 179 aircraft and is the first of up to three recapitalization programs to replace the entire legacy fleet. The Air Force has budgeted approximately \$3.5 billion per year for a projected annual production rate of 12-18 aircraft. But even with this level of investment, it will take several decades to replace the 400+ KC-135s. Given the age of the fleet and the time required to recapitalize, it is absolutely critical for the Air Force to move forward now on this program.²⁴

Industrial Base

Asserted Employment Effects

Boeing's plan for the KC-X competition calls for 767s to be assembled at the Boeing plant in Everett, WA, and be converted into tankers at Boeing's plant in Wichita, KS. Boeing claims that "nationwide, the NewGen Tanker program will support approximately 50,000 total U.S. jobs with Boeing and more than 800 suppliers in more than 40 states."²⁵

The EADS plan calls for assembling its KC-X (originally called the KC-30, and later the KC-45) at a new plant planned for Mobile, AL. Initial assembly will take place in Europe while the plant is under construction. EADS stated that "nationwide, assembly of the EADS North America KC-45 tanker will create or support 48,000 jobs."²⁶

(...continued)

House Armed Services Air & Land Forces and Seapower & Expeditionary Forces Subcommittees [Hearing] On the State of the Command, February 25, 2009, pp 6-7.

²⁴ Department of the Air Force, Presentation to the House Armed Services Committee Subcommittee on Air and Land Forces, United States House of Representatives, Combined Statement of: Lieutenant General Daniel J. Darnell, Air Force Deputy Chief Of Staff For Air, Space and Information Operations, Plans And Requirements (AF/A3/5) Lieutenant General Mark D. Shackelford, Military Deputy, Office of the Assistant Secretary of the Air Force for Acquisition (SAF/AQ) Lieutenant General Raymond E. Johns, Jr., Air Force Deputy Chief of Staff for Strategic Plans And Programs (AF/A8), May 20, 2009, p. 17.

²⁵ Boeing, "Boeing Statement on EADS' Decision to Enter KC-X Tanker Competition," press release, April 20, 2010, <http://www.unitedstaterstanker.com/media/Statement-20100420>.

²⁶ EADS, "EADS North America's KC-45 tanker would support 1,500 jobs across North Carolina," press release, July 28, 2010, <http://www.kc45now.com/news-press-releases/07-08-2010.asp>.

Domestic Content as Discussed in 2007-2008 Competition

In the 2007-2008 KC-X competition, some observers questioned whether the Northrop/EADS proposal satisfied requirements in the Buy American Act, which requires the federal government to purchase domestically manufactured goods. The statute defines goods to have been domestically manufactured if their components have “substantially all” been mined, produced, or manufactured within the United States.²⁷ The definition of “substantially all” has been left to the Federal Acquisition Regulations (FAR). In the FAR, a good is considered “domestic” if the cost of domestically produced components exceeds 50% of the value of the whole article.²⁸

One way a KC-X contractor could potentially satisfy requirements of the Buy American Act is by having 50% or more of total cost of their proposed aircraft produced in the United States. Reportedly, approximately 85% of Boeing’s KC-X in the 2007-2008 competition would have been manufactured in the United States.²⁹ Northrop/EADS stated that “at least 58 percent” of its proposal in the 2007-2008 KC-X competition would be comprised of products manufactured by U.S.³⁰ For a listing of Boeing 767 suppliers, see **Appendix D**.

Issues for Congress

DOD’s KC-46A competition strategy and contract award pose several potential oversight issues for Congress, including the following:

- Did the contract award follow the announced competition strategy and metrics?
- Has DOD adequately defined the required capabilities for the KC-X and established a fair and adequate framework for scoring and evaluating bids against these required capabilities?
- Should DOD take into account the World Trade Organization (WTO) rulings that EADS and Boeing received improper subsidies?
- Was extending the period for bids appropriate?
- How should the Air Force take into account the premature disclosure of partial results to the two teams?

Information on each of these issues is presented below.

Fidelity to the Announced Competition Strategy and Metrics

Following the February 24, 2011, announcement of the contract award to Boeing, some members of Congress expressed interest in understanding how the Air Force reached the decision,

²⁷ For more information on the Buy American Act, see CRS Report 97-765, *The Buy American Act: Requiring Government Procurements to Come from Domestic Sources*, by John R. Luckey.

²⁸ FAR § 25.101.

²⁹ Eric Rosenburg, “Boeing Duels for Tanker Deal,” *Seattle Post-Intelligencer*, September 30, 2007, available online at http://seattlepi.nwsourc.com/business/333751_tanker01.html.

³⁰ “Northrop Grumman’s KC-45 Tanker: Making the Right Choice,” January 25, 2007, available online at <http://www.northropgrumman.com/kc45/benefits/choice.html>.

particularly as the February 2008 award went to the other competitor.³¹ Reports indicated that EADS would receive a debriefing on the results on February 28, 2011, after which the company would make a decision about whether to protest the results.

Required Capabilities and Evaluation Process

Has DOD adequately defined the required capabilities for the KC-X and established a fair and adequate framework for scoring and evaluating the Boeing and Northrop/EADS bids against these required capabilities?

This question is of particular interest to many observers because of concerns about whether requirements were adequately defined and fairly evaluated in previous attempts to implement a KC-X acquisition program, and because the latest RFP de-emphasizes the value of capabilities beyond the minimum required.

A November 23, 2009, news report stated:

The Pentagon will consider making changes to the next-generation tanker draft request for proposals even though the Air Force knows what it wants and needs in new aerial refueling aircraft, the Defense Department's top weapons buyer said today...

"Some [requirements] are in the trade space that will be taken into account in the event that the adjusted prices are very close," [Ashton Carter] said. "The others are the ones that the warfighter says, 'This is what I want on Day 1. I want a tanker that can go to war.' He's entitled to say that because he's been flying tankers for a long time."³²

At the September 24, 2009, DOD news briefing on DOD's proposed new KC-X competition strategy, Secretary of the Air Force Michael B. Donley stated:

Let's focus on requirements for a minute. Just to give you a broad overview, the Capabilities Development Document [CDD] is the very high-level overview of the requirements for the KC-X going forward.

The CDD as it's referred to is the same CDD that was reviewed and approved in December of 2006. The Air Force revisited this early this year in January. The Joint Requirements Oversight Council also reviewed it in February. And no changes have been made. Again this is the very high-level, what are our requirements going forward for a KC-X aircraft?

The key work that has been done is at the Systems Requirement Document, the SRD, level. And here we undertook significant changes, without changing the requirements but to make a better linkage between the requirements written by the warfighter and the RFP that's going out tomorrow...

You may recall that in the last solicitation, there were about 808 requirements listed, for the KC-X, of which about 37 were mandatory requirements.

³¹ See, inter alia, Graham Warwick, "Boeing The Clear Winner Of KC-X, U.S. Air Force Says," *Aerospace Daily*, February 25, 2011, and Christopher Drew, "Boeing Wins Contract To Build Air Force Tankers," *The New York Times*, February 25, 2011.

³² Marcus Weisgerber, "Carter: Air Force Knows What It Wants In New Tanker," *InsideDefense.com (DefenseAlert – Daily News)*, November 23, 2009.

And this provided an extensive amount of trade space in those requirements to determine how a selection and—how an evaluation and then selection might be made.

However, by doing so, the offers indicated last time some confusion, because they did not clearly understand what the warfighter valued most. Another factor was that the way the requirements were written and their distribution throughout the RFP also left some uncertainty and confusion.

We've taken those 808 and we have boiled them down to the 373 mandatory, system-level requirements, which reflect what the warfighter needs on the first day of the war. When this aircraft is delivered, the warfighter will be able to take those capabilities and go to war. That's the fundamental baseline requirements that Air Mobility Command has put value on and which they need to make this a successful program.

Above that, we have identified 93 trade-space requirements. They are non-mandatory, above-threshold requirements that would provide additional capability to the warfighter, additional value, but not to such an extent that the warfighter would be willing to pay that much more for these capabilities. And Secretary Carter will explain a little bit later how this relationship between the mandatory and the non-mandatory, above-threshold requirements relate to each other.

Our task here was to not only take out the duplication, to combine the requirements where we thought they could be combined, but to write them clearly and precisely. And these requirements will be evaluated in an acceptable/non-acceptable basis.³³

World Trade Organization (WTO) Rulings

Should DOD take into account WTO rulings that EADS/Airbus received improper subsidies for several airplanes, including the A330, and that Boeing received illegal subsidies from the U.S. government and the state of Washington?

On June 30, 2010, the World Trade Organization released a ruling “that some launch aid subsidies Airbus received from European governments for its aircraft programs are ‘actionable’,” including the A330 on which the EADS tanker is expected to be based.³⁴ Boeing supporters have argued that DOD should take the WTO ruling on commercial aircraft subsidies into account in the KC-X competition, in part because they may artificially lower the price of an aircraft based on a subsidized platform.³⁵

On September 15, 2010, the WTO released an initial ruling finding “that roughly one-quarter of the \$10.4 billion in research aid from NASA, and only a portion of the \$2.2 billion in tax breaks from Washington state to be illegal subsidies, according to a U.S. source familiar with the case.”³⁶

DOD has maintained that it does not have the authority to take WTO decisions into account:

³³ Transcript of DoD News Briefing with Deputy Secretary of Defense William Lynn, Under Secretary of Defense Ashton Carter, and Secretary of the Air Force Michael Donley, September 24, 2009, available online at <http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=4484>.

³⁴ “WTO Report Says Some EU Launch Aid Was Illegal,” *Aerospace Daily*, July 1, 2010.

³⁵ “Murray Asks Gates To Weigh In On WTO Dispute As Tanker Competition Looms,” *The Hill*, September 16, 2009.

³⁶ John W. Miller and Daniel Michaels, “Boeing Received Illegal Aid, WTO Says,” *The Wall Street Journal*, September 16, 2010.

“The judgment inside the executive branch—not just the Air Force or [Defense Department], but working with our interagency partners—is that it would not be appropriate for the Department of Defense, in a single contract action, to take action representative of a WTO decision,” [Air Force Secretary Michael Donley] responded.³⁷

On December 21, 2010, the House of Representatives passed H.R. 6540, which would have required the Secretary of Defense to take into account “any unfair competitive advantage that an offeror may possess” when evaluating KC-X bids, and to submit a report to Congress on such advantages. Although the bill mentions neither competitor nor the WTO, in part to keep the legislation WTO-compliant, members referred to it in debate as a response to European subsidies to EADS. H.R. 6540 passed by a vote of 325-23³⁸ but was not subsequently passed by the Senate prior to the adjournment *sine die* of the 111th Congress.

Was Extending the Period for Bids Appropriate?

After the Northrop/EADS team withdrew from the KC-X competition, numerous sources reported a logical chicken-and-egg issue: EADS might be willing to submit an independent bid were DOD willing to extend the bidding period to allow EADS to assemble a proposal, on the one hand; DOD might be willing to extend the bidding period once EADS decided to bid, on the other.³⁹ Finally, DOD announced on March 31, 2010, that it would extend the bidding period 60 days, to July 9, 2010. EADS’s announcement that it would submit a bid followed on April 20, 2010.⁴⁰ Critics have charged that the extension was both improper and a display of favoritism to EADS.⁴¹ The Antonov/U.S. Aerospace team requested a similar delay to allow revision of their offering, which DoD denied.⁴²

How Should the Air Force Take into Account the Premature Disclosure of Partial Results to the Two Teams?

In an apparent error, in November 2010, the Air Force shared details of its evaluation of each aircraft with the other competitor.

[T]he U.S. Air Force sent letters to rival planemakers about their bids for the \$35 billion-dollar tanker contest—but it mixed them up, delivering its technical assessment of Boeing’s bid to EADS, and vice versa.⁴³

The decade-old, \$35 billion, 179-plane KC-X tanker race was thrown for yet another loop just before Thanksgiving when it surfaced that the Air Force wrote letters containing

³⁷ Scott Fontaine, “Senators blast Donley, Schwartz on KC-X process,” *Air Force Times*, May 12, 2010.

³⁸ Roll call vote No. 658, December 21, 2010.

³⁹ Andrea Shalal-Esa, “UPDATE 1-Pentagon-Still in talks on longer tanker deadline,” *Reuters.com*, March 23, 2010.

⁴⁰ *Ibid.*

⁴¹ Scott Fontaine, “Senators blast Donley, Schwartz on KC-X process,” *Air Force Times*, May 12, 2010.

⁴² John T. Bennett, “Sources: U.S. Aerospace-Antonov To Bid Only One Tanker; DoD Rejects Plea For More Time,” *DefenseNews.com*, July 9, 2010.

⁴³ Vago Muradian, “USAF Gaffe Roils Tanker Contest,” *Defense News*, November 22, 2010.

technical assessments of the bids by competitors Boeing and EADS—and delivered them to the wrong companies.⁴⁴

According to Air Force Chief of Staff General Norton Schwartz, each company was sent “one compact disc containing one page of information about their rival jet’s performance in the so-called Integrated Fleet Aerial Refueling Assessments.”⁴⁵ These are the measures of how well each aircraft performs in simulated operations in a variety of scenarios. The score from these assessments is one of the major evaluation factors in the competition. General Schwartz stated that no pricing information was included in the disclosures.

EADS personnel reportedly examined the data, while Boeing personnel did not, instead returning the data to the Air Force.⁴⁶

In an effort to ameliorate any issues arising from the release, the Air Force deliberately sent the same data to each competitor with instructions to open and read it, therefore ensuring that each company had equal access to the other’s results.⁴⁷ Unequal access to information was one of the grounds on which Boeing had successfully protested the 2007-2008 KC-X competition.

In a December 22, 2010, colloquy with Senator Maria Cantwell, Senate Armed Services Committee Chairman Levin committed to holding one or more hearings to consider “the release of proprietary data to determine if laws and fair competition regulations have been appropriately followed.”⁴⁸ That committee held such a hearing on January 27, 2011, at which

Steven Shirley, the executive director of the Defense Department’s cybercrime center, said an examination of an EADS computer and other records supported the company’s contention that the manager had looked at the file only briefly before realizing it involved Boeing’s data.... he said, “what we found on the computer was consistent” with EADS’s assertions that it had quickly reported the mistake to the Air Force.⁴⁹

Legislative Activity for 2012

FY2012 Funding Request

The Administration’s proposed FY2012 defense budget requested \$877.0 million in Air Force research and development funding to begin the KC-46A acquisition.⁵⁰

⁴⁴ John T. Bennett, “After Tanker Mixup, Which Way Forward for USAF?,” *Defense News*, November 29, 2010.

⁴⁵ John Reed, “No KC-X Price Info Shared,” *DoD Buzz*, November 23, 2010.

⁴⁶ Marina Malenic, “Air Force To Proceed With KC-X Contest Despite Document Mix-Up,” *Defense Daily*, December 2, 2010.

⁴⁷ Christopher Drew, “Air Force Moves to Fix Tanker Bidding Mistake,” *The New York Times*, November 30, 2010.

⁴⁸ Sen. Carl Levin, colloquy in the Senate, *Congressional Record*, December 22, 2010, p. S10936.

⁴⁹ Christopher Drew, “At Hearing, New Details On Military Disc Switch,” *The New York Times*, January 28, 2011.

⁵⁰ The requested funding is found in the Air Force’s research development, test and evaluation (RDT&E) account in program element (PE) 0605221F, KC-X, Next Generation Aerial Refueling Aircraft.

Appendix A. Legislative Activity for FY2011

FY2011 Funding Request

The Administration's proposed FY2011 defense budget requested \$863.9 million in Air Force research and development funding to begin the KC-X acquisition.⁵¹

FY2011 Defense Authorization Bill (H.R. 5136/S. 3454)

House (H.R. 5136)

The House Armed Services Committee, in its report on H.R. 5136,⁵² recommends approving the Administration's request for \$863.9 million in research and development funding for the KC-X program.

In markup, the committee approved an amendment "which would require the Defense Department to take into account subsidies ruled illegal by the World Trade Organization."⁵³ The text is included as Section 824 of the bill, and states:

SECTION 824—INTERIM REPORT ON REVIEW OF IMPACT OF COVERED SUBSIDIES ON ACQUISITION OF KC-45 AIRCRAFT

(a) Interim Report- The Secretary of Defense shall submit to the congressional defense committees an interim report on any review of a covered subsidy initiated pursuant to subsection (a) of section 886 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (P.L. 110-417; 122 Stat. 4561) not later than 60 days after the date of the initiation of the review.

(b) Report Contents- The report required by subsection (a) shall contain detailed findings relating to the impact of the covered subsidy that led to the initiation of the review on the source selection process for the KC-45 Aerial Refueling Aircraft Program or any successor to such program and whether the covered subsidy would provide an unfair competitive advantage to any bidder in the source selection process.

During its subsequent consideration of the bill, the full House voted to accept an amendment offered by Representative Inslee that

would require the Defense Department to consider any "unfair competitive advantage that an offeror may possess" in evaluating bids on major weapons systems.

The term "unfair competitive advantage" means a situation in which the cost of development, production, or manufacturing is not fully borne by the offeror for the contract, the amendment to a defense spending bill said.⁵⁴

⁵¹ The requested funding is found in the Air Force's research development, test and evaluation (RDT&E) account in program element (PE) 0605221F, KC-X, Next Generation Aerial Refueling Aircraft.

⁵² U.S. Congress, House Committee on Armed Services, 111th Cong., 2nd sess., May 21, 2010, H.Rept. 111-491.

⁵³ Jen DiMascio, "House Committee Passes Defense Bill," *Politico.com*, May 20, 2010.

In effect, the Inslee amendment generalized the bill's reporting language to apply to any bidder.

Senate (S. 3454)

The report accompanying S. 3454 (S.Rept. 111-201 of June 4, 2010) makes no change to the Administration's requested funding level for KC-X.

Final Version (H.R. 6523)

The Joint Explanatory Statement Of The Committees On Armed Services Of The U.S. Senate and House Of Representatives On H.R. 6523, Ike Skelton National Defense Authorization Act For Fiscal Year 2011, makes no mention of the KC-X program.

Defense Level Playing Field Act (H.R. 6540)

On December 21, 2010, the House of Representatives passed H.R. 6540, which would have required the Secretary of Defense to take into account "any unfair competitive advantage that an offeror may possess" when evaluating KC-X bids, and to submit a report to Congress on such advantages. H.R. 6540 passed by a vote of 325-23.⁵⁵

The operative section of the Act stated:

SEC. 2. CONSIDERATION OF UNFAIR COMPETITIVE ADVANTAGE IN EVALUATION OF OFFERS FOR KC-X AERIAL REFUELING AIRCRAFT PROGRAM.

(a) Requirement To Consider Unfair Competitive Advantage- In awarding a contract for the KC-X aerial refueling aircraft program (or any successor to that program), the Secretary of Defense shall, in evaluating any offers submitted to the Department of Defense in response to a solicitation for offers for such program, consider any unfair competitive advantage that an offeror may possess.

(b) Report- Not later than 60 days after submission of offers in response to any such solicitation, the Secretary of Defense shall submit to the congressional defense committees a report on any unfair competitive advantage that any offeror may possess.

(c) Requirement To Take Findings Into Account in Award of Contract- In awarding a contract for the KC-X aerial refueling aircraft program (or any successor to that program), the Secretary of Defense shall take into account the findings of the report submitted under subsection (b).

(d) Unfair Competitive Advantage- In this section, the term "unfair competitive advantage", with respect to an offer for a contract, means a situation in which the cost of development, production, or manufacturing is not fully borne by the offeror for such contract.

H.R. 6540 was not passed by the Senate prior to the adjournment *sine die* of the 111th Congress.

(...continued)

⁵⁴ Jim Wolf, "House Votes Pro-Boeing In Tanker Contest," *Reuters.com*, May 28, 2010.

⁵⁵ Roll call vote No. 658, December 21, 2010.

FY2011 Defense Appropriations Bill (S. 3800)

Senate

The Senate Appropriations Committee, in its report (S.Rept. 111-295 of September 16, 2010) on S. 3800, recommends \$538.9 million for the Next Generation Aerial Refueling Aircraft, a reduction of \$325 million from the Administration request.

House

The House Appropriations Committee did not report a separate defense bill for FY2011.

Appendix B. Legislative Activity for FY2010

FY2010 Funding Request

The Administration's proposed FY2010 defense budget requested \$439.6 million in Air Force research and development funding to begin a new program for acquiring new 179 KC-X aerial refueling tankers. The requested funding is found in the Air Force's research development, test and evaluation (RDT&E) account in program element 0605221F, KC-X, Next Generation Aerial Refueling Aircraft.

FY2010 Defense Authorization Bill (H.R. 2647/S. 1390)

Conference

The conference report (H.Rept. 111-288 of October 7, 2009) on H.R. 2647 authorizes the Administration's request for \$439.6 million in Air Force research and development funding for the KC-X program. (Page 1017)

Section 1081 of H.R. 2647 amends Section 1081(a) of the FY2008 defense authorization act (H.R. 4986/P.L. 110-181 of January 28, 2008) to require the Secretary of the Air Force to conduct a pilot program to assess the feasibility and advisability of using commercial fee-for-service air refueling tanker aircraft for Air Force operations, unless the Secretary of Defense submits a notification that pursuing such a program is not in the national interest.

Section 1082 provides authority to the Secretary of the Air Force to use multiyear contracts to conduct the pilot program described in Section 1081 of the FY2008 defense authorization act.

Section 1052 requires Secretary of Defense to submit to the congressional defense committees a report on the force structure findings of the 2009 Quadrennial Defense Review (QDR). The House report on H.R. 2647 (H.Rept. 111-166 of June 18, 2009—see discussion above) includes report language stating that this report is to include, among other things, “a description of the factors that informed decisions regarding aerial refueling aircraft force structure...”

Section 1081 states:

SEC. 1081. MODIFICATION OF PILOT PROGRAM ON COMMERCIAL FEEFOR-SERVICE AIR REFUELING SUPPORT FOR THE AIR FORCE.

Section 1081(a) of the National Defense Authorization Act for Fiscal Year 2008 (Public Law 110–181; 122 Stat. 335; 10 U.S.C. 2461 note) is amended by inserting before the period at the end of the first sentence the following: “, unless the Secretary of Defense submits notification to the congressional defense committees that pursuing such a program is not in the national interest”.⁵⁶

⁵⁶ The first sentence of Section 1081(a) of the FY2008 defense authorization act (H.R. 4986/P.L. 110-181 of January 28, 2008) states: “The Secretary of the Air Force shall conduct, as soon as practicable after the date of the enactment of this Act, a pilot program to assess the feasibility and advisability of utilizing commercial fee-for-service air refueling (continued...)”

Section 1082 states:

SEC. 1082. MULTIYEAR CONTRACTS UNDER PILOT PROGRAM ON COMMERCIAL FEE-FOR-SERVICE AIR REFUELING SUPPORT FOR THE AIR FORCE.

(a) MULTIYEAR CONTRACTS AUTHORIZED.—The Secretary of the Air Force may enter into one or more multiyear contracts, beginning with the fiscal year 2011 program year, for purposes of conducting the pilot program on utilizing commercial fee-for-service air refueling tanker aircraft for Air Force operations required by section 1081 of the National Defense Authorization Act for Fiscal Year 2008 (Public Law 110–181; 122 Stat. 335).

(b) COMPLIANCE WITH LAW APPLICABLE TO MULTIYEAR CONTRACTS.—

Any contract entered into under subsection (a) shall be entered into in accordance with the provisions of section 2306c of title 10, United States Code, except that—

(1) the term of the contract may not be more than 8 years; and

(2) notwithstanding section 2306c(b) of such title, the authority under section 2306c(a) of such title shall apply to the fee-for-service air refueling pilot program.

(c) COMPLIANCE WITH LAW APPLICABLE TO SERVICE CONTRACTS.—A contract entered into under subsection (a) shall be entered into in accordance with the provisions of section 2401 of title 10, United States Code, except that—

(1) the Secretary shall not be required to certify to the congressional defense committees that the contract is the most cost-effective means of obtaining commercial fee-for-service air refueling tanker aircraft for Air Force operations; and

(2) the Secretary shall not be required to certify to the congressional defense committees that there is no alternative for meeting urgent operational requirements other than making the contract.

(d) LIMITATION ON AMOUNT.—The amount of a contract under subsection (a) may not exceed \$999,999,999.

(e) PROVISION OF GOVERNMENT INSURANCE.—A commercial air operator contracting with the Department of Defense under the pilot program referred to in subsection (a) shall be eligible to receive Government-provided insurance pursuant to chapter 443 of title 49, United States Code, if commercial insurance is unavailable on reasonable terms and conditions.

House

The House Armed Services Committee, in its report (H.Rept. 111-166 of June 18, 2009) on H.R. 2647, recommends approving the Administration’s request for \$439.6 million in research and development funding for the KC-X program. (Page 190, line 88) The committee’s report states:

(...continued)

tanker aircraft for Air Force operations.”

KC-X

The committee notes that the KC-X program is planned to replace the Department of the Air Force's KC-135 aerial refueling tanker fleet, which now has an average aircraft age of 47 years. The committee also notes that the KC-X program has been subject to delays resulting from contractor protests to the Government Accountability Office, and believes that further delay in the acquisition of the KC-X aerial refueling tanker could jeopardize Department of Defense requirements for global mobility. Accordingly, the committee strongly urges the Department to include the necessary funds in its Future Years Defense Program to rapidly conduct source selection and to award a KC-X aerial refueling tanker contract as expeditiously as possible. (Pages 100-101)

The report also states:

KC-X tanker replacement program

The committee believes that the Department of Defense should implement measures to ensure competition throughout the lifecycle of the KC-X tanker replacement program to ensure that the program delivers the best capability to the warfighter and the best value to the U.S. Government. Accordingly, the committee urges the Secretary of Defense to utilize as many of the competitive measures specified in subsection (b) of section 202 of the Weapon Systems Acquisition Reform Act of 2009 (Public Law 111-23) as is practicable when developing the acquisition strategy and source selection plan. The committee notes that the intent of section 202 is to require the Secretary of Defense to plan for persistent competition to control program costs and improve the reliability of the KC-X tanker acquired by the Department throughout the program's lifecycle, including development, procurement, and sustainment. (Page 203)

Section 1032 of H.R. 2647 requires Secretary of Defense to submit to the congressional defense committees a report on the force structure findings of the 2009 Quadrennial Defense Review (QDR). Regarding Section 1032, the committee's report states:

The committee expects that the analyses submitted will include details on all elements of the force structure discussed in the QDR report, and particularly the following:...

(3) A description of the factors that informed decisions regarding aerial refueling aircraft force structure, including: the modeling, simulations, and analyses used to determine the number and type of aerial refueling aircraft necessary to meet the national defense strategy; the force sizing constructs used including peak demand; the number and type of aerial refueling aircraft necessary to meet the national security objective; the changes made, and supporting rationale for the changes made, to the aerial refueling aircraft force structure from that proposed in MCS-05; and the operational risks associated with the planned aerial refueling aircraft fleet, based on requirements of combatant commanders, and measures planned to address those risks;... (Page 388)

Section 1044 of H.R. 2647 would repeal Section 1081 of the FY2008 defense authorization act (H.R. 4986/P.L. 110-181 of January 28, 2008), which directed the Secretary of the Air Force to conduct a pilot program of at least five years' duration to assess the feasibility and advisability of utilizing commercial fee-for-service air refueling tanker aircraft for Air Force operations. Regarding Section 1044, the committee's report states:

The committee is aware that the Air Force has conducted initial analysis to develop the program structure for the pilot program, based on two diverse options, and has received feedback from potential providers in the aviation industry. However, based on its review of

data gathered to date, the committee is concerned that the pilot program will be a costly alternative with little operational benefit and is not in the best interest of the Air Force. (Page 391)

The committee's report also states:

Fee for Service Refueling

The budget request contained \$10.0 million for a fee-for-service refueling pilot program. The committee recommends eliminating the funds for the pilot program.

A provision is included elsewhere in this title [Section 1044] that would repeal the requirement to conduct a fee-for-service pilot program. (Page 284; see also page 282 for the recommended line-item reduction)

Senate

Division D of S. 1390 as reported by the Senate Armed Services Committee (S.Rept. 111-35 of July 2, 2009) presents the detailed line-item funding tables that in previous years have been included in the Senate Armed Services Committee's report on the defense authorization bill. Division D recommends approving the Administration's request for \$439.6 million in research and development funding for the KC-X program. (Page 687 of the printed bill, line 88) The committee's report states:

KC-X tanker replacement program

The committee regards the need to modernize the current fleet of KC-135 aerial refueling tanker aircraft as a vital national security priority and supports the KC-X tanker recapitalization program, as well as efforts by the Air Force both to maintain the existing fleet and augment capability with aerial fee-for-service, if it proves cost-effective under the pending pilot program. Given the troubled history of the program, the committee expects that the Department of Defense will pursue a process of procuring replacement tankers that will ensure that the joint warfighter receives the best capability at the best price. The committee believes that this can only be achieved by an acquisition strategy that does not pre-determine the outcome of the competition and a competition that is fair and open. In addition, the committee believes that, in accordance with the principles of the Weapon Systems Acquisition Reform Act of 2009 (Public Law 111-23) and as a means of improving contractor performance, the Department of Defense must ensure that the acquisition strategy of the KC-X program includes measures that ensure competition, or the option of competition, throughout the life cycle of the program, where appropriate and cost-effective. (Page 99)

Section 1058 of S. 1390 would amend Section 1081 of the FY2008 defense authorization act (H.R. 4986/P.L. 110-181 of January 28, 2008), which directed the Secretary of the Air Force to conduct a pilot program of at least five years' duration to assess the feasibility and advisability of utilizing commercial fee-for-service air refueling tanker aircraft for Air Force operations. The committee's report states:

The committee recommends a provision [Section 1058] that would provide an exemption to the 5-year limitation on multiyear contracts and make other minor changes to enable the Air Force to implement a fee-for-service air refueling support pilot program.

Section 1081 of the National Defense Authorization Act for Fiscal Year 2008 (Public Law 110–181) directed the Secretary of the Air Force to conduct a pilot program to assess the feasibility and advisability of utilizing commercial fee-for-service air refueling tanker aircraft for Air Force operations.

The Air Force has been working with the private sector to implement this pilot program. The Air Force has informed the committee that results from their formal request for information process indicate that a multiyear contract that exceeds the current 5-year limit would be necessary to promote adequate competition and reduce program costs. The Air Force needs to have authority to make commitments for the 8-year pilot program in order to issue a request for proposal. The Air Force also needs to be able to offer carriers insurance coverage similar to that provided to civil reserve air fleet (CRAF) program partners. This provision would provide the Air Force with those authorities. (Page 179)

The text of Section 1058 is as follows:

SEC. 1058. MULTIYEAR CONTRACTS UNDER PILOT PROGRAM ON COMMERCIAL FEE-FOR-SERVICE AIR REFUELING SUPPORT FOR THE AIR FORCE.

(a) Multiyear Contracts Authorized- The Secretary of the Air Force may enter into one or more multiyear contracts, beginning with the fiscal year 2011 program year, for purposes of conducting the pilot program on utilizing commercial fee-for-service air refueling tanker aircraft for Air Force operations required by section 1081 of the National Defense Authorization Act for Fiscal Year 2008 (P.L. 110-181; 122 Stat. 335).

(b) Compliance With Law Applicable to Multiyear Contracts- Any contract entered into under subsection (a) shall be entered into in accordance with the provisions of section 2306c of title 10, United States Code, except that—

(1) the term of the contract may not be more than 8 years;

(2) notwithstanding subsection 2306c(b) of title 10, United States Code, the authority under subsection 2306c(a) of title 10, United States Code, shall apply to the fee-for-service air refueling pilot program;

(3) the contract may contain a clause setting forth a cancellation ceiling in excess of \$100,000,000; and

(4) the contract may provide for an unfunded contingent liability in excess of \$20,000,000.

(c) Compliance With Law Applicable to Service Contracts- A contract entered into under subsection (a) shall be entered into in accordance with the provisions of section 2401 of title 10, United States Code, except that—

(1) the Secretary shall not be required to certify to the congressional defense committees that the contract is the most cost-effective means of obtaining commercial fee-for-service air refueling tanker aircraft for Air Force operations; and

(2) the Secretary shall not be required to certify to the congressional defense committees that there is no alternative for meeting urgent operational requirements other than making the contract.

(d) Limitation on Amount- The amount of a contract under subsection (a) may not exceed \$999,999,999.

(e) Provision of Government Insurance- A commercial air operator contracting with the Department of Defense under the pilot program referred to in subsection (a) shall be eligible to receive government provided insurance pursuant to chapter 443 of title 49, United States Code, if commercial insurance is unavailable on reasonable terms and conditions.

FY2010 DOD Appropriations Bill (H.R. 3326)

Final Version

In lieu of a conference report, the House Appropriations Committee on December 15, 2009, released an explanatory statement on a final version of H.R. 3326. This version was passed by the House on December 16, 2009, and by the Senate on December 19, 2009, and signed into law on December 19, 2009, as P.L. 111-118. The explanatory statement states that it “is an explanation of the effects of Division A [of H.R. 3326], which makes appropriations for the Department of Defense for fiscal year 2010. As provided in Section 8124 of the consolidated bill, this explanatory statement shall have the same effect with respect to the allocation of funds and the implementation of this as if it were a joint explanatory statement of a committee of the conference.”

The explanatory statement provided \$15.0 million in Air Force research and development “for program management” of a “next generation air refueling aircraft,” reduced from an Administration request for 439.6 million; \$30.0 million of the reduction was attributed to savings due to a delay in awarding the tanker contract. Another \$394.6 million was transferred to Title VIII, the General Provisions section of the bill. Of that transferred money, \$291.7 million was made available for a Tanker Replacement Transfer Fund.

Section 8119 of H.R. 3326 explains the Tanker Replacement Transfer Fund thusly:

In addition to funds made available elsewhere in this Act, there is hereby appropriated \$291,715,000, to remain available until transferred: *Provided*, That these funds are appropriated to the ‘Tanker Replacement Transfer Fund’ (referred to as ‘the Fund’ elsewhere in this section): *Provided further*, That the Secretary of the Air Force may transfer amounts in the Fund to ‘Operation and Maintenance, Air Force’, ‘Aircraft Procurement, Air Force’, and ‘Research, Development, Test and Evaluation, Air Force’, only for the purposes of proceeding with a tanker acquisition program: *Provided further*, That funds transferred shall be merged with and be available for the same purposes and for the same time period as the appropriations or fund to which transferred: *Provided further*, That this transfer authority is in addition to any other transfer authority available to the Department of Defense: *Provided further*, That the Secretary of the Air Force shall, not fewer than 15 days prior to making transfers using funds provided in this section, notify the congressional defense committees in writing of the details of any such transfer: *Provided further*, That the Secretary shall submit a report no later than 30 days after the end of each fiscal quarter to the congressional defense committees summarizing the details of the transfer of funds from this appropriation.

The explanatory statement also includes this provision:

AERIAL REFUELING TANKER PROGRAM

The recommendation includes \$15,000,000 in Research, Development, Test and Evaluation, Air Force for program management and a general provision providing \$291,715,000 in a Tanker Replacement Transfer Fund.

Not later than 10 days after the release of the final request for proposal soliciting bids for an aerial tanker replacement aircraft, the Secretary of the Air Force is directed to submit a report to the congressional defense committees that includes a description of changes from the draft proposal to the final request for proposal and the rationale for each change.

The Secretary of the Air Force is encouraged to pursue tanker recapitalization at a rate of 36 aircraft per year instead of 12 or 15 aircraft in the current plan. This quantity will recapitalize the fleet in one-third the time and allow for a rapid retirement of the aging KC-135 aircraft. Furthermore, a more accelerated procurement strategy will avoid the large sustainment and modernization costs associated with keeping the legacy KC-135 fleet in the inventory longer.

House

The House Appropriations Committee, in its report (H.Rept. 111-230 of July 24, 2009) on H.R. 3326, recommends \$439.6 million in research and development funding for the KC-X program, as requested by the Administration, but transfers this funding from the Air Force's research and development account to a "Tanker Replacement Transfer Fund" established by Section 8112 of the bill as reported. (See also page 273, line 88.) The text of Section 8112 is as follows:

Sec. 8112. (a) In addition to funds made available elsewhere in this Act, there is hereby appropriated \$439,615,000 to remain available until transferred: Provided, That these funds are appropriated to the 'Tanker Replacement Transfer Fund' (referred to as 'the Fund' elsewhere in this section): Provided further, That the Secretary of the Air Force may transfer amounts in the Fund to 'Operation and Maintenance, Air Force', 'Aircraft Procurement, Air Force', and 'Research, Development, Test and Evaluation, Air Force', only for the purposes of proceeding with a tanker acquisition program: Provided further, That funds transferred shall be merged with and be available for the same purposes and for the same time period as the appropriations or fund to which transferred: Provided further, That this transfer authority is in addition to any other transfer authority available to the Department of Defense: Provided further, That the Secretary of the Air Force shall, not fewer than 15 days prior to making transfers using funds provided in this section, notify the congressional defense committees in writing of the details of any such transfer: Provided further, That the Secretary shall submit a report no later than 30 days after the end of each fiscal quarter to the congressional defense committees summarizing the details of the transfer of funds from this appropriation.

(b) The Secretary of Defense is directed to award one or more contracts for the aerial refueling tanker replacement program according to either of the following alternatives:

(1) A contract to a single offeror based on a best value or lowest cost source selection derived from full and open competition, subject to the condition that non-development aircraft produced under such contract must be finally assembled in the United States. Such competition and source selection shall include evaluation of the life-cycle costs of each aircraft over a 40-year period (including costs of fuel consumption, military construction and other factors normally associated with operation and support of tanker aircraft) and shall include an independent 40-year life-cycle cost estimate conducted by a federally funded research and development center.

(2) Contracts awarded to each of the two offerors that responded to Request for Proposal No. FA8625-07-R-6470 (as released on January 29, 2007) subject to the condition that all non-development aircraft produced under any such contracts must be finally assembled in the United States.

(c) The Secretary of Defense shall certify in writing to the congressional defense committees by October 1, 2009, which of the procurement alternatives in subsection (b) represents the most cost-effective and expeditious tanker replacement strategy that best responds to United States national security requirements. The certification shall be accompanied by a report to the congressional defense committees detailing the rationale for such certification.

The committee's report states:

AERIAL REFUELING TANKER REPLACEMENT PROGRAM

The Committee firmly believes that the Department must act promptly to recapitalize the aging Air Force aerial refueling fleet. The Department's current program has been beset with countless setbacks, from allegations of corruption to a protest of the previous source selection decision. In the meantime, our nation's aerial refueling tankers continue to age, with the average age of a KC-135 being almost 50 years old today. The aerial refueling replacement program (KC-X, KC-Y and KC-Z) plans to procure between 12 and 15 aircraft per year to eventually replace the current fleet of 513 aircraft. This method of recapitalization will take decades to complete, with the current fleet of Eisenhower-era tankers being 80 years old by the time the last legacy aircraft is retired. During this period, the Air Force will invest billions of taxpayer dollars in maintenance of an ever aging and increasingly unreliable fleet. Based on studies conducted by the Department of Defense, total fleet costs are anticipated to increase from \$2.1 billion per year to \$3 billion per year by 2040 due to increasing depot maintenance and forecasted modernization programs in avionics and aircraft systems. Additionally, the Department anticipates depot maintenance costs increasing from \$320,000,000 to \$1,100,000,000 in 2040 due to aging aircraft related maintenance. Never in the history of our Nation has the military purposely planned to maintain aircraft past 50 years, much less 80 years of operation so even these estimates may understate the actual cost. In addition to the cost of maintaining the aging tanker fleet, the cost per flying hour of a new tanker is almost half the cost of the existing fleet. The lower cost per flying hour alone will save the taxpayer \$1,795,500,000 per year for a fleet of 513 aircraft (current total aircraft inventory) or \$3,500,000 per plane per year replaced.

To address these concerns, the Committee recommendation includes a general provision providing \$439,615,000 and the option for choosing one vendor or dual sourcing for the aerial refueling Tanker replacement program. Along with this authority, the Committee believes that it is in the best interest of the taxpayer to pursue recapitalization at a rate of 36 aircraft per year vice 12 or 15 aircraft. This quantity will allow for recapitalization in one-third the time and thus allow for a rapid retirement of the current KC-135 aircraft. This plan will result in avoiding a large sustainment and modernization cost of the legacy KC-135 fleet by allowing them to retire earlier than is currently programmed. Additionally, having more than one aircraft provider will allow for competition to help control the procurement cost, promote cost reduction measures, and allow for a faster aircraft replacement rate.

Further, the Committee directs the Secretary of Defense to, prior to the release of a draft or final request for proposal soliciting bids for an aerial tanker replacement aircraft, submit a report to the congressional defense committees that includes a description of key mission requirement and performance parameters that will be used as the basis for determining the key selection criteria in the source selection process; a full and complete characterization and definition of "best value"; a description of the process that the Department of Defense intends to use to ensure open, balanced and transparent communications with potential

offerors; and a full description of the corrections made to the source selection process that addresses the issues raised by the Government Accountability Office in its “Statement Regarding the Bid Protest Decision Resolving the Aerial Refueling Tanker Protest by the Boeing Company, B311344 et. al, June 18, 2008”. (Pages 276-277)

The report also states:

A major imperative of the Committee’s funding recommendations is to improve the efficiency with which Department of Defense resources are expended. The Committee believes that one of the best ways to support United States forces is to improve the stability of acquisition programs and increase quantities to field new equipment more rapidly. In many cases, the procurement rates for new equipment are well below what could reasonably be described as economic order quantities. The practice of stretching out procurement schedules not only delays fielding modernized weapons but is costly as well. For example, in the case of the aerial refueling tanker, annual maintenance costs are expected to climb by \$900,000,000, and Depot maintenance costs are expected to increase by \$780,000,000. In contrast, the lower cost per flying hour for a new fleet of tankers will save taxpayers \$3,500,000 per aircraft per year. The Committee also notes that the aerial refueling tankers are a crucial piece of our nation’s ability to deploy and operate anywhere in the world. (Page 4)

The report also states:

FEE-FOR-SERVICE REFUELING

The Committee provides no funding for the fee-for-service refueling pilot program due to concerns with the lack of a validated requirement for the program. The Air Force should instead focus on the KC-135 tanker replacement program which is a Joint Requirements Oversight Council validated requirement. The Committee recommends \$439,615,000 in title VIII of this Act only for the recapitalization of the aging KC-135 fleet with a competitive procurement of a commercial derivative tanker aircraft. (Page 91)

Senate

The Senate Appropriations Committee, in its report (S.Rept. 111-74 of September 10, 2009) on H.R. 3326, recommends \$409.6 million in research and development funding for the KC-X program—a \$30 million reduction from the Administration’s request, with the reduction being for “Contract award delay.” The recommended funding is located in the Air Force’s research and development account, as requested. (Page 197, line 88)

Appendix C. KC-X Competition of 2007-2008

This appendix provides additional information and discussion on the KC-X competition of 2007-2008.

Request for Proposal

In January 2007, the Air Force released its formal RFP for the KC-X acquisition program. Assistant Secretary of the Air Force Sue Payton reportedly emphasized that the Air Force had completed a rigorous review process for KC-X to ensure the RFP mirrors joint war-fighting requirements.⁵⁷ The RFP outlined nine primary key performance parameters:

- Air refueling capability
- Fuel offload and range at least as great as the KC-135
- Compliant Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) equipment
- Airlift capability
- Ability to take on fuel while airborne
- Sufficient force protection measures
- Ability to network into the information available in the battle space
- Survivability measures (defensive systems, Electro-Magnetic Pulse (EMP) hardening, chemical/biological protection, etc.)
- Provisioning for a multi-point refueling system to support Navy and Allied aircraft⁵⁸

In November 2007, Ms. Payton explained the evaluation criteria that the Air Force used in determining the KC-X competition. The KC-X evaluation factors are:

- Factor 1—Mission Capability. Mission capability includes five subfactors listed in descending order of importance:
 - Subfactor 1.1—Key System Requirements
 - Subfactor 1.2—Subsystem Integration and Software
 - Subfactor 1.3—Product Support
 - Subfactor 1.4—Program Management
 - Subfactor 1.5—Technology Maturity and Demonstration
- Factor 2—Proposal Risk

⁵⁷ “Air Force Posts KC-X Request for Proposals,” *Air Force Print News Today*, Press Release 070107, January 30, 2007, online at http://www.af.mil/pressreleases/story_print.asp?id=123039273.

⁵⁸ *Ibid.*

- Factor 3—Past Performance
- Factor 4—Cost/Price
- Factor 5—Integrated Fleet Air Refueling Assessment⁵⁹

The Air Force considered the first three KC-X evaluation factors of equal importance. The final two factors were considered of equal importance, but less important relative to the first three criterion. Lastly, the Air Force regarded “Factors 1, 2, 3, and 5, when combined, [to be] significantly more important than factor 4.”⁶⁰

Boeing Protest

Air Force officials debriefed both Boeing and Northrop officials on how their respective bids were scored in March 2008. On March 11, 2008, Boeing protested the Air Force’s decision to the GAO.⁶¹ On March 26, 2008, both the Air Force and Northrop separately filed motions for the GAO to dismiss portions of Boeing’s protest.⁶² GAO rejected these motions.⁶³ Work on the KC-45A stopped while the GAO considered the protest.⁶⁴

Boeing’s protest was based on a perception that the Air Force used a flawed process in the KC-X selection process. For example, in a press release detailing Boeing’s rationale for protesting, Boeing stated:

It is clear that frequent and often unstated changes during the course of the competition—including manipulation of evaluation criteria and application of unstated and unsupported priorities among the key system requirements—resulted in selection of an aircraft that was radically different from that sought by the Air Force.⁶⁵

Boeing stated that both teams received identical ratings across the five evaluation areas in the KC-X competition. Boeing claimed that the Air Force’s treatment of both Boeing’s cost estimates and Boeing’s past experience of building Air Force tankers, if scored differently, could have affected the outcome of the source selection.⁶⁶ In response to Boeing’s protest, an Air Force press release stated:

Proposals from both offerors were evaluated thoroughly in accordance with the criteria set forth in the Request for Proposals. The proposal from the winning offeror is the one Air Force officials believe will provide the best value to the American taxpayer and to the

⁵⁹ USAF slide obtained from “Performance Comes First,” Air Force Association Daily Report, November 21, 2007, online at <http://dailyreport.afa.org/AFA/Reports/2007/Month11/Day21/1028factors.htm>.

⁶⁰ Ibid.

⁶¹ Boeing News Release, “Boeing Protests U.S. Air Force Tanker Contract Award,” March 11, 2008, online at http://www.boeing.com/ids/globaltanker/news/2008/q1/080311b_nr.html.

⁶² Andrea Shalal-Esa, “Air Force, Northrop Ask GAO to Dismiss Boeing Protest,” *Reuters*, March 26, 2008.

⁶³ Susanna Ray and Edmond Lococo, “Northrop Loses Effort to Dismiss Boeing Protest,” *Bloomberg News*, April 2, 2008, online at <http://www.bloomberg.com/apps/news?pid=newsarchive&sid=a2hruo2xpyFQ>.

⁶⁴ Sean Reily, “Air Force Keeps Tanker Freeze,” *Mobile Press-Register*, March 18, 2008, online at <http://www.al.com/press-register/stories/index.ssf?base/news/120583171412090.xml&coll=3>.

⁶⁵ Boeing Company News Release, “Boeing Protests U.S. Air Force Tanker Contract Award,” March 11, 2008, online at http://www.boeing.com/news/releases/2008/q1/080311b_nr.html.

⁶⁶ Ibid.

warfighter. Air Force members followed a carefully structured process, designed to provide transparency, maintain integrity and promote fair competition. Air Force members and the offerors had hundreds of formal exchanges regarding the proposals throughout the evaluation process. Air Force officials provided all offerors with continuous feedback through discussions on the strengths and weaknesses of their proposals. Several independent reviews assessed the process as sound and thorough.⁶⁷

GAO Ruling on Protest

On June 18, 2008, the GAO announced that it had completed its examination of DOD's decision to award Northrop the KC-X contract (for 80 aircraft) and found that Boeing's complaint had merit.⁶⁸ GAO's managing associate general counsel for procurement law, Michael R. Golden, stated:

Our review of the record led us to conclude that the Air Force made a number of significant errors that could have affected the outcome of what was a close competition between Boeing and Northrop Grumman. We therefore sustain Boeing's protest. We also denied a number of Boeing's challenges to the award to Northrop Grumman, because we found that the record did not provide us with the basis to conclude that the agency had violated the legal requirements with respect to those challenges.

GAO recommended that discussions between the government and the bidders be resumed, that bidders be given the opportunity to submit revised proposals, and that the Air Force make a new decision based on this additional input. The Air Force is not statutorily obliged to heed GAO's recommendations but must respond to them within 60 days (i.e., by August 17, 2008).⁶⁹

GAO made clear that it was not passing judgment on the relative merits of the proposed aircraft. Instead, GAO stated that it assessed whether the Air Force complied with statutory and regulatory requirements in evaluating the competing bids. GAO cited seven specific reasons for sustaining portions of the Boeing protest, which are summarized below:

1. The Air Force evaluation did not follow the prioritization of technical requirements specified in its own solicitation. Nor did it give credit to the Boeing proposal for satisfying the greater number of non-mandatory technical criteria, though the solicitation expressly requested this.
2. The Air Force used the degree to which the Northrop Grumman bid exceeded a specific key performance objective as an important discriminator between proposals, despite the solicitation's provision stating that this would not be the case.
3. Solicitation required that proposed tankers be able to refuel all fixed-wing, tanker-compatible Air Force aircraft using existing Air Force procedures. The protest record did not support the Air Force's determination that the Northrop Grumman proposal did so.

⁶⁷ "Air Force Officials Respond to Boeing Protest," Air Force Print News Today, March 12, 2008, online at http://www.af.mil/news/story_print.asp?id=123089878.

⁶⁸ GAO, "Statement Regarding the Bid Protest Decision Resolving the Aerial Refueling Tanker Protest By The Boeing Company B-311344 et al.," Government Accountability Office (Washington, D.C.), June 18, 2008. Available on the World Wide Web at <http://www.gao.gov/press/boeingstmt.pdf>.

⁶⁹ GAO also recommended that the Air Force consider amending its proposal solicitation before engaging the companies in the discussions, that it reimburse Boeing for the cost of filing and pursuing the protest, and that it terminate the existing contract with Northrop Grumman if Boeing's proposal is ultimately selected.

4. Air Force discussions with each of the bidding companies were unequal and misleading. Boeing was told that it had fully satisfied a key operational utility parameter, yet the Air Force later determined that the Boeing proposal only partially met the requirement. The Air Force continued its discussion with Northrop Grumman on the same key parameter without informing Boeing that its assessment had changed.
5. Northrop Grumman refused to agree to a specific solicitation requirement regarding the development of Air Force maintenance capability within a specified period. The Air Force unreasonably assessed this to be an “administrative oversight” and awarded the contract improperly in light of this exception to a material solicitation requirement.
6. The Air Force unreasonably evaluated the military construction (hangers, runways, parking aprons, etc.) required to sustain each of the proposed aircraft. During the protest proceedings, the Air Force conceded that calculations properly performed would have resulted in a most probable life cycle cost for the Boeing offer lower than that for the Northrop Grumman proposal.⁷⁰
7. The Air Force improperly adjusted upward Boeing’s estimate of the non-recurring (i.e., one-time) engineering portion of its most probable life cycle cost value. The Air Force would have been able to do so had it found the cost to be unreasonably low, but it did not. Additionally, the cost model used by the Air Force to adjust this cost estimate was unreasonable.

⁷⁰ Life cycle cost refers to the total cost of owning, operating, maintaining, and disposing of a given asset. It is often referred to as “cradle-to-grave” cost. Life cycle costs are calculated within a range, from lowest to highest. The “most probable” cost is the one calculated to have the statistically highest probability of being true.

Appendix D. Boeing 767 and Airbus 330 Suppliers

Table D-I. Boeing 767 Suppliers

Supplier	Parent Country	Component(s)
Aero Vodochody	Czech Republic	airframe parts (for BAE Systems)
Alenia	Italy	wing control surfaces, flaps and leading-edge slats, wingtips, elevators, fin rudder, nose radome
Avcorp	Canada	front and rear spar stiffeners, floor grid details and assemblies, aft strut fairings
Boeing Canada	Canada	fixed trailing edge panels, composite wing-to-body fairings, engine strut fairings
Bombardier (Learjet)	Canada	wing trailing edge support structures
Bombardier (Canadair)	Canada	rear fuselage, pressure bulkhead
Daido Steel	Japan	steel sheets
Embraer	Brazil	flap supports
Fuji	Japan	wing fairings, main landing gear doors
Fujukawa Aluminum	Japan	forgings and extensions
GKN Aerospace (Westland Aerospace, formerly BP Chemicals; with Lucas Aertspace Cargo Systems)	United Kingdom	flap track fairings
Goodrich (Cleveland Pneumatic)	United States	main landing gear
Hitco Carbon Composites	United States	flap track fairings
IPTN	Indonesia	flaps, keel beams (for Mitsubishi)
Kaman Aerospace	United States	wing trailing edges
Kawasaki Heavy Industries	Japan	center-fuselage body panels, exit hatches, wing in-spar ribs
Korean Aerospace (Samsung)	Republic of Korea	wing trailing edges
LMI Aerospace	United States	skins, wing panels, floor beams, curtain tracks
Lunn Industries (Alcore)	United States	leading edge slat core assemblies (for ASTA)
Menasco Aerospace	United States	nose landing gear unit
Mitsubishi Heavy Industries	Japan	rear fuselage body panels, stringers, passenger and cargo doors, dorsal fin
Nihon Kokuki (Nippi)	Japan	wing in-spar ribs, various structural components for Mitsubishi
PPG Industries	United States	landing light lens assemblies, cockpit windows
Shin Meiwa	Japan	tailplane trailing edges (for Northrop Gumman/Vought)

Source: Teal Group

Note: Commercial 767 variants are powered by engines manufactured by either General Electric, Pratt & Whitney, or Rolls Royce.

Table D-2. Airbus 330/350 Suppliers⁷¹

Supplier	Parent Domicile	Component(s)
Advanced Technology and Research (ATR) Corp.	United States	graphite epoxy underwing fairings (for Aerostructures Corp.)
Aerostructures Corp. (Now Vought)	United States	inner spoilers/airbrakes, center spar, upper wing skin panels, inner and outer wingbox leading edge assemblies (for BAE), outer flaps, flap track shrouds, spoiler parts (for DASA-EADS)
AHF-Ducommun	United States	leading edge wing skins
Boeing (Aerospace Technologies of Australia)	United States	main gear doors, floor support structure, pressurization bulkhead between passenger cabin, main landing gear compartment (for Aérospatiale-EADS)
Bombardier (Canadair)	Canada	leading edge wing assemblies, nose gear bay and doors, nose bottom fuselage, rear sealed frame, ventral beam, pressurized lateral floor, aft pressure bulkhead (for Aérospatiale-EADS), inboard front spar assembly (for BAE)
BTR Aerospace	Canada	main landing gear fairings
CC Industries	United States	outer rear spar, main landing gear support, ribs (for BAE)
Ciba-Geigy Corp.	Federal Republic of Germany	HTA/6376 prepreg on wings
Dowty Aerospace Canada	Canada	center landing gear
Dowty Rotol (with Cleveland Pneumatic)	United Kingdom	design and manufacture of main landing gear
Fairchild Dornier	Federal Republic of Germany	fuselage and wing components, interior panels
Fischer Advanced Composite Components	Federal Republic of Germany	interior components (for DASA-EADS)
GKN Aerospace (formerly BP Advanced Materials)	United Kingdom	composite panels (for BAE)
General Engineering	Unknown	side stay fairing
Hawker de Havilland, Australia	Australia	wingtips, winglets, wing root fillet, ribs (for BAE)
Heath Techna Aerospace	United States	composite components (for BAE)
IPTN	Indonesia	flap track carriages, sheet metal parts (for BAE)
Korean Aerospace Industries (Daewoo)	Republic of Korea	wing components
Korean Air (with Silat)	Republic of Korea	upper fuselage panels of Section 15 (for Aérospatiale-EADS)
Marion Composites	United States	flap track fairings (for Aerostructures Corp.)

⁷¹ The Airbus 350 is a planned model that will be similar in size to the Airbus 330. It was originally expected to be a derivative of the Airbus 330, but is now expected to be a new design aircraft.

Supplier	Parent Domicile	Component(s)
Marvin Group	United States	large ribs (for BAE)
Messier-Hispano-Bugatti	France	nose landing gear, wheels and brakes (option)
Mitsubishi Heavy Industries	Japan	cargo doors
PPG Industries	United States	cockpit windows
RTI International Metals	United States	titanium on A350
SABCA	Belgium	tailcones (for DASA)
Shin Meiwa	Japan	wing fairings
Socea	France	rear upper panels of center fuselage section
SOCATA	France	composite belly fairing
SONACA	Belgium	full-span leading edge slats, slat tracks
Xian Aircraft Co. (AVIC-I)	Peoples Republic of China	avionics access doors

Source: Teal Group

Note: Commercial variants of both aircraft types are powered by engines manufactured by either General Electric, Pratt & Whitney, or Rolls Royce.

Appendix E. Potential Longevity of KC-135 Fleet

2004 DSB Report and 2006 RAND Analysis

A 2004 Defense Science Board (DSB) task force report examined, among other things, the potential longevity of the KC-135 fleet.⁷² The 2006 RAND Analysis of Alternatives (AOA) on aerial refueling also examined the technical condition of the KC-135 fleet.

The DSB report stated that airframe service life, corrosion, and maintenance costs factors would potentially determine the KC-135s operational life expectancy. Each of these factors is discussed briefly below.

Airframe Service Life

KC-135s, along with their associated B-52 bombers, were originally purchased to give the United States a strategic nuclear strike capability. As a result, both fleets of airplanes spent a significant amount of time during the Cold War on ground alert. Consequently, in 2004, the average KC-135 airframe had flown only about 17,000 hours of an estimated service life of 36,000 hours (KC-135E) or 39,000 hours (KC-135R). On this basis, the DSB report concluded that KC-135 airframes were viable until 2040 at “current usage rates.”⁷³ The 2006 RAND AOA similarly concluded that the KC-135 fleet “can operate into the 2040s,” but not without risks.⁷⁴

Corrosion

The 2004 DSB report concluded that corrosion did not pose an “imminent catastrophic threat to the KC-135 fleet” and that the Air Force’s maintenance practices were postured “to deal with corrosion and other aging problems,”⁷⁵ but also stated:

However, because the KC-135s are true first generation turbojet aircraft designed only 50 years from the time man first began to fly, concerns regarding the ability to continue operating these aircraft indefinitely are intuitively well founded.⁷⁶

Maintenance Costs

A 2004 GAO report stated that KC-135 flying hour costs increased in real (i.e., inflation-adjusted) terms by 29% between 1996 and 2002.⁷⁷ The DSB report agreed that KC-135 maintenance costs had increased significantly, but found that they had leveled off due to Air Force changes in KC-

⁷² *Defense Science Board Task Force Report on Aerial Refueling Requirements*, May 2004, p. iv.

⁷³ *Ibid.*

⁷⁴ Michael Kennedy et al., *Analysis of Alternatives (AoA) for KC-135 Recapitalization, Executive Summary*, RAND Corporation, 2006, pp. 15-16.

⁷⁵ *Defense Science Board Task Force Report on Aerial Refueling Requirements*, May 2004, p. iv.

⁷⁶ *Ibid.*, p. 17.

⁷⁷ General Accounting Office, *Military Aircraft[:] DOD needs to Determine Its Aerial Refueling Requirements*, GAO-04-439, June 2004, p. 13.

135 depot processes. The DSB report forecasted modest growth in maintenance costs in the future.⁷⁸

Risks Of Flying Older Aircraft

Some observers express about potential problems that may arise in flying 50- to 80-year-old tankers that could possibly ground the entire KC-135 fleet. The DSB report examined the issue and concluded that “although grounding is possible, the task force assesses the probability as no more likely than that of any other aircraft in the inventory of the Services.”⁷⁹ The 2006 RAND analysis expressed a belief that it is possible that KC-135s will be able to operate into the 2040s, but the report expressed a lack of confidence that KC-135s could continue to be operated that long without risks of major maintenance cost increases, poor fleet availability, or possible fleet-wide grounding. The RAND analysis concluded that “the nation does not currently have sufficient knowledge about the state of the KC-135 fleet to project its technical condition over the next several decades with high confidence.”⁸⁰ The analysis recommended more thorough scientific and technical study of the KC-135 to provide a more reliable basis for future assessments of the condition of the KC-135 fleet.⁸¹

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⁷⁸ *Defense Science Board Task Force Report on Aerial Refueling Requirements*, May 2004, pp. iv-v.

⁷⁹ *Ibid.*, p. 18.

⁸⁰ Michael Kennedy et al., “Analysis of Alternatives (AoA) for KC-135 Recapitalization, Executive Summary,” RAND Corporation, 2006, p. 16.

⁸¹ *Ibid.*