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Quarrelsome Committees in U.S. Defense Acquisition: The KC-X Case

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Panel 11. Changing Contours of the Defense Industrial Base

Thursday, May 15, 2014	
9:30 a.m. – 11:00 a.m.	Chair: Jeff Ronka, Managing Partner, Renaissance Strategic Advisors <i>Quarrelsome Committees in U.S. Defense Acquisition: The KC-X Case</i> Raymond Franck, USAF Academy Bernard Udis, University of Colorado Boulder <i>Rethinking the Buy vs. Lease Decision</i> Jacques Gansler, University of Maryland William Lucyshyn, University of Maryland John Rigilano, University of Maryland <i>The Impact of Fiscal Austerity, Macroeconomic Forces, and Shifting Defense Priorities on the Global Defense Industrial Base</i> Nayantara Hensel, Federal Housing Finance Agency



Quarrelsome Committees in U.S. Defense Acquisition: The KC-X Case

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Abstract

With two mature contenders, KC-X source selection should have been concluded quickly and cleanly. Instead, it was a prolonged near-disaster. The original selection of leased KC-767s was made in May 2003. Initial operating capability (IOC) for the Boeing KC-46 is expected in 2017—14 years later.

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This is a much-abridged version of a longer paper. A more complete version is available from the authors on request.

Introduction

"the (KC-X) contest has taught us several lessons—and so far, they are all a bit disappointing."—Pierre Sparaco (2010, p. 51)

As of this writing, the U.S. Air Force Boeing KC-46 program is currently progressing quite nicely and appears to be on schedule for fulfilling the terms of the initial contract (18 operational aircraft delivered by 2017) based on open-source reports (AFNS, 2013a, 2013b; Garamone, 2013; Boeing Media Release, 2013; Spence, 2013; Tirpak, 2014). We're confident there would be similar assessments had the European Aeronautic and Space Company (EADS), now Airbus Group, KC-45 been chosen.

However, prior to the contract award to Boeing on February 24, 2011 (Office of the Assistant Secretary of Defense [Public Affairs; OASD(PA)], 2011), the effort to replace the existing Air Force aerial refueling fleet was quite contentious and was in considerable danger of falling apart. Source selection took a decade, proceeding through multiple attempts.

Generally, root causes for troubled program histories are highly complex systems that rely on immature technology. Neither of these conditions applied here. Contemporary



aerial tankers are rather simple as military systems go. The basics are well known: large, subsonic, off-the-shelf transport airframes; plus the means to transfer fuel to receiver aircraft (“Aerial Refueling,” n.d.).

Moreover, the two main contenders for the contract award brought mature products to the competition. Boeing 767 (KC-46) tanker variants were well into development with international customers. The Airbus A330 tanker (KC-45, with Northrop-Grumman [NG]) was even further along and was also for international customers. Nonetheless, the process that finally chose the KC-46 required more than a decade and included two aborted attempts. The first ended in bizarre circumstances in 2004, and the second ended after Boeing’s successful protest of a contract award to Airbus in 2008.

Moreover, the KC-X program wasn’t a procurement sideshow. It was a necessary part of an Air Force core competency: power projection. The Air Force chief of staff declared in 2006 that tanker recapitalization was his most important program (AFPN, 2006). KC-X priority has been reaffirmed more recently (Pellerin, 2013).

Consistent with these and other considerations, U.S. experimentation with aerial refueling dates back to 1923 (Smith, 1998, p. 3), and the Air Force has maintained large and capable aerial refueling fleets ever since it learned how to do aerial refueling reliably. The most successful tankers have been variants of commercial transports (Smith, 1998, pp. 43–47).

Most current U.S. aerial refueling capability resides in 59 KC-10s and 400+ re-engined KC-135s (“Air Force in Facts and Figures,” 2013). In the immediate post–Cold War period, this force was considered adequate to meet refueling needs well into the future.

However, second thoughts emerged fairly quickly, associated primarily with the age of the KC-135 fleet. Risks associated with these aging airframes were (1) increasing maintenance costs and (2) low availability due, among other things, to structural aging and unforeseen failures (Gertler, 2009, pp. 88–91).

Given the importance of aerial refueling and the risks associated with the KC-135 fleet, it seemed prudent to (a) start recapitalizing the fleet, and (b) hedge against serious availability problems with KC-135s. Accordingly, the new tanker initiatives were one part of a plan to replace the entire fleet over a period of decades (Knight et al., 2008, pp. 16–17).

However, the result was an expensive near-disaster emerging from what should have been a short and simple source selection. The original selection of 100 leased KC-767s was made in May 2003. Initial operating capability (IOC) for the KC-46 (a B767 variant) is expected in 2017—approximately 14 years later (KC-X, 2013).

Accordingly, we consider the following research questions:

First, what have been the key events over the life of the program thus far? We explain the rationale for the program and then provide a short history from its inception to selection of the Boeing KC-46 in February of 2011.

Second, why did a relatively simple acquisition task (from both technical and operational perspectives) become so prolonged and embarrassing? We address that question by focusing on models that promise explanatory power. It seems clear to us that the standard paradigm (sovereign monopsonist) doesn’t work well. *Monopsonist* means one buyer (Department of Defense [DoD]) dominates the market (“Monopsonist,” 2013), and *sovereign* means that, furthermore, the monopsonist also makes the rules for conducting business (“Sovereignty,” 2013).



We search for more useful paradigms based in good part on the U.S. government being better viewed as a “quarrelsome committee.” We consider, for example, Graham Allison’s Model III (Governmental Politics) to be useful (Allison & Zelikow, 1998; see Chapter 5), and this is a central theme in our discussion.

Finally, we consider what the KC-X Affair reveals about the current state of the U.S. acquisition process. We also consider what this case suggests for the next round of defense acquisition reform.

First Attempts: Leasing Initiative and KC-45 Selection

The first tanker recapitalization initiative, an effort to lease 100 tanker versions of the Boeing 767, began in 2001. By acquiring some new tankers, the Air Force would have retired its least-modern KC-135s and provided a warm production line as a hedge against major difficulties in the remaining KC-135 inventory. During fiscal year 2002, the Air Force chose the KC-767 (over the Airbus KC-30). In 2003, a leasing contract for 100 KC-767s (\$20 billion) was awarded to Boeing. As part of the 2004 Defense Authorization Act, a compromise with congressional critics approved leasing 20 aircraft and purchasing 80 aircraft (Knight et al., 2008, p. 31).

However, in December 2003, the project was put on hold, pending investigations into the conduct of Darleen Druyun (a major figure in Air Force procurement), who had left the government for a position at Boeing (Cahlink, 2004a). In 2004, she admitted wrongdoing that included favoring Boeing over Airbus in the tanker leasing competition (Cahlink, 2004b). She began serving a prison term in 2005 (Wall Street Journal Ticker, 2005).

The KC-X program was restarted in 2006 with a draft request for proposal (RfP). After a period of comment by prospective bidders, the final RfP was published on January 30, 2007 (DoD, 2007). Both Boeing and EADS responded.

KC-45 and KC-46 Compared

Basic specifications for a number of U.S. tanker and transport aircraft are summarized in Table 1. The basic size of the airframe (wing span and fuselage length) is a primary determinant of parking ramp “footprint.” Among other things, this determines how many aircraft can be parked at any given airfield. Maximum fuel is a major determinant of overall air refueling capability. The KC-45, a larger aircraft, had more fuel capacity, and accordingly more air refueling capability. Maximum pallets is a measure of ability to carry bulk cargo—stated in terms of standard military 463L cargo pallets (Global Security, n.d.). Both candidates had significant bulk cargo capabilities.



Table 1. Key Characteristics of Selected Tanker and Transport Aircraft
(A330 MRTT, 2013; “Air Force Fact Sheets for C-5,” 2006; C-17, 2004; Global Security, 2013; KC-46, 2011; Knight et al., 2008, pp. 34–37)

	Current Tankers		Current Transports		Proposed Tankers	
	KC-135R	KC-10	C-5	C-17	Boeing KC-46	EADS KC-45
Wing span/Length*	131/136	165/181	223/247	170/174	156/159	198/192
Max. fuel**	200	356	330	--****	200+	245
Maximum Pallets***	6	27	36	18	18	32

*Feet. ** Thousands of pounds. *** Military (463L) pallets. **** Not readily available. Depends on variant.

Conscious of the possibility of an award protest, and the clear possibility of that protest being sustained, the Air Force described the competition as being especially open and carefully conducted.

Because of the high stakes involved, both parties engaged in an energetic campaign to mobilize public support and congressional delegations. Boeing emphasized the number of U.S. jobs attributable to a KC-46 selection, while the KC-45 team countered with an increasingly lucrative industrial participation scheme. This started with a proposal for modifying basic A330 airframes for aerial refueling (KC-45s) in Alabama. In early 2008, the offer was sweetened with announced plans to open an A330 freighter assembly facility in Alabama as well (Franck, Lewis, & Udis, 2008, pp. 108–111).

On February 29, 2008, the Air Force awarded the contract to the NG- EADS KC-45 entry (Michaels & Cole, 2008). Air Force evaluation of the proposals (summarized at Table 2) indicates both proposals met Air Force needs. Life-cycle cost differences were well within cost estimates’ margins of uncertainty. It is reasonable also to conclude that the competition was close (as did the GAO, 2008b, p. 16).

The Protest Sustained

Boeing protested the KC-45 contract award on March 11, 2008. The major complaint was that the KC-767 was closer to being the tanker the Air Force originally had in mind, citing a “significant gap between the aircraft the Air Force set out to procure ... and the much larger Airbus A330-based tanker it ultimately selected.” The Boeing press release continued: “It is clear that frequent and often unstated changes ... —including manipulation of evaluation criteria and application of unstated and unsupported priorities ... resulted in selection of an aircraft that was radically different from that sought by the Air Force” (Boeing, 2008).

Taking full advantage of the 100-day assessment period, the GAO ruled in favor of the Boeing protest on June 18, 2008 (GAO, 2008a; 2008b). The GAO decision was a surprise (Pasztor, 2008). The major GAO conclusion was that the Air Force didn’t follow its own selection rules, a flaw that may well have reversed the choice of winner (GAO, 2008b, p. 2). The report recommended the Air Force basically restart the competition to include “reopen(ing) discussions with the offerors.” It also recommended that the Air Force’s

statement needs be reformulated if the original version did not meet aerial tanker needs (GAO, 2008b, p. 67).

Table 2. Evaluation of KC-767 and KC-30 Proposals

(GAO, 2008b, pp. 17–25)

Mission Capability/Proposal Risk		KC-46 (Boeing)	KC-45 (NG-EADS)
	Key System Requirements	Blue**/Low	Blue/Low
	Systems Integration/Software	Green/Moderate	Green/Moderate
	Product Support	Blue/Low	Blue/Low
	Program Management	Green/Low	Green/Low
	Technology Maturity	Green	Green
Past Performance		Satisfactory Confidence	Satisfactory Confidence
Cost/Price (MLLCC)*		\$108.044 Billion	\$108.010 Billion
	Cost Risk: Development/ Production & Deployment Phases	Moderate/Low	Low/Low
Overall Value Rating		1.79	1.90

* Most likely life-cycle cost ** Color rating scheme (blue, green, yellow, red). Blue is best; red is worst.

The Air Force became a target for public criticism with press and congressional sources openly questioning its competence. Probably the bluntest assessment came from Rep. Norm Dicks (D-WA): “No one has any faith in the Air Force.” Also, the Office of the Secretary of Defense (OSD) replaced the Air Force as the source selection agency with the goal of concluding the revised source selection by the end of 2008 (Associated Press [AP], 2008a). In short, the abortive source selection was viewed as a major Air Force failure—both inside and outside the service.

“Re-Competition” Attempt

The DoD accepted the GAO’s major recommendations regarding amended selection criteria most significantly in awarding credit for additional refueling capability (which clearly favored NG-EADS) and extending life-cycle cost estimates to 40 years (which favored Boeing).

Perceiving an uneven playing field (Pasztor, 2008), Boeing threatened not to bid, repeating a NG-EADS ploy of 2007 (Cole & Lunsford, 2008). Boeing publicly stated that the timelines for the new draft RfP did not permit time to submit a competitive proposal (Franck, Lewis, & Udis, 2008, pp. 108–111), which could take the form of a tanker version of the Boeing 777. Some observers concluded that Boeing’s ploy was intended to threaten a non-competitive source selection that Congress would not tolerate (Weber & Epstein, 2008).

In the event, the DoD blinked in 2008. On September 10, the DoD announced a postponement to some unspecified time in 2009 (Cole & Lunsford, 2008). As a result, the KC-X program experienced yet another significant delay.

Boeing and EADS Again

The third chapter of the KC-X saga opened in 2009. A new KC-X draft RfP was released on September 24. It included a fixed-price contract award for 179 aircraft with a heavy emphasis on cost (Air Force Materiel Command, 2009).



However, the game was well afoot prior to that—both in the press and in Congress. Boeing, NG-EADS, and their supporters were heavily engaged in press releases, advertising, and public statements. In addition, there was a congressional impetus led by Representative John Murtha (D-PA) in favor of a dual (or split) buy (Tiron, 2009).

An Air Force–DoD briefing explained the RfP and the selection process (Lynn, Carter, & Donley, 2009; see Figure 1). With the total number of aircraft fixed, the announced emphasis on a 40-year life-cycle cost seemed to favor the smaller Boeing aircraft over the Northrop Grumman (NG)-European Aeronautic Defence and Space Company (EADS) offering.

Responses From the Industrial Players

The Northrop Grumman and European Aeronautic Defence and Space Company

The NG-EADS team had previously stated that it would not respond to the KC-X RFP without substantial changes (Wolf, 2009; Shalal-Esa, 2009; Tiron, 2009). The Air Force and the DoD indicated a willingness to consider changes but no inclination to make the sorts of changes the KC-30 team apparently demanded (Shalal-Esa & Hephner, 2009; Gertler, 2010, pp. 6–7).

The Air Force remained close to its original specifications in the RfP published on February 24, 2010. NG-EADS supporters were decidedly negative. Sen. Sessions (R-AL) stated that “the final RfP discredits the integrity of the entire process” (Matthews, 2010).

On March 8, not long after the final RfP’s release, NG announced that it would not continue in the KC-X competition. Being “very disappointed” with terms that “dramatically favor” the expected Boeing proposal, CEO Wes Bush announced NG’s withdrawal (Hennigan, 2010; Northrop Grumman, 2010).

It appeared that the entire NG-EADS team was dropping out of the competition. As EADS Chairman Louis Gallois put it, “We will not compete because the RfP is based on the smaller, less capable airplane. This is giving a huge advantage to the 767” (Tran, 2010).

European Aeronautic Defence and Space Company Acting Alone

However, the Europeans reconsidered and prepared an EADS-only proposal. In April, EADS confidently described the KC-45’s strengths and EADS’s ability to compete (Reed, 2010). Among the advantages cited for the KC-30 proposal was a more mature design. It was already flying as part of the A330 Multi-Role Tanker Transport (MRTT) program, which had significant commonality with EADS’ planned KC-X proposal (Butler, 2010). EADS also announced its intention to assemble tankers in the United States (Mobile, AL), as well as A330 freighters (Talbot, 2010). EADS submitted its KC-X proposal by the agreed suspense (Scully, 2010) and officially opened its Mobile office on July 12 (Douglas, 2010).

Boeing Company

Boeing had misgivings as well and seriously considered not bidding. The issues aired in public were Airbus subsidies and the fixed-price nature of the upcoming competition. There was some concern that even a winning bid would not be profitable: “Your heart says you have to be part of it, but (our) job is to make sure that the heart doesn’t make a decision the head can’t live with” (Muradian & Reed, 2010).

However, airing the internal no-bid debate might have been motivated by Boeing’s desire to have A330 subsidies factored into the source selection criteria. Indeed, legislation to that effect was introduced in Congress by Boeing supporters—with the sum of \$5 million



per airplane being mentioned (Muradian & Reed, 2010). Also, a Boeing executive spoke publicly in favor of such legislation (AFP, 2010).

However, Boeing submitted a bid on the due date of July 9, 2010 (Scully, 2010). Boeing chose a 767-based proposal. New features included structural enhancements, a digital cockpit (based on 787 designs), larger wings, and a newly designed refueling boom (Butler, 2010).

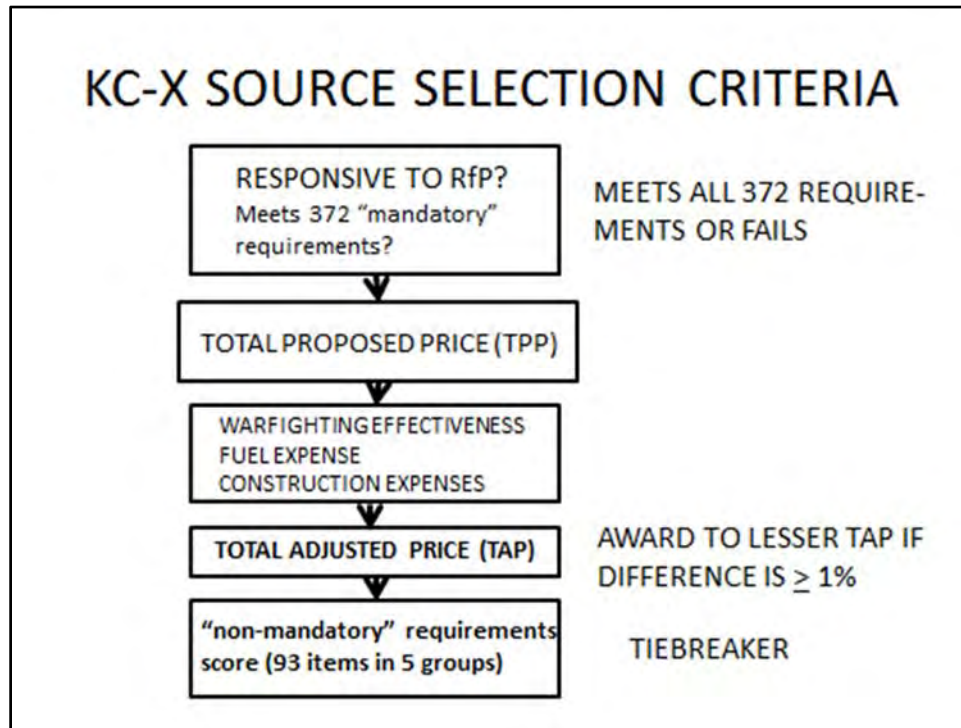


Figure 1. Summary Depiction of KC-X Source Selection Criteria
(Adapted from Lynn et al., 2009)

An Unhurried Selection Process

The original schedule included 120 days for the DoD to evaluate the proposals. But the Air Force adopted a deliberately measured approach (Tiron, 2010). The process was further delayed by an administrative error. In November, the operational effectiveness assessments were mixed up, and each party received the assessment applying to the other's aircraft (Drew, 2010). Given the political dimensions of this competition, Congress demanded hearings about the incident (Bennett, 2011), which added to the delay.

The misrouting also complicated the process. The Air Force chose to level the playing field by giving both sides both operational assessments (Drew, 2010). Because a major selection criterion was operational effectiveness, both parties had significantly more information than was intended from which to base their revised offers.

EADS' KC-45 as the Clear Favorite

Even without a U.S. partner, EADS was rated a solid favorite to win the source selection. The A330 tanker had won international competitions against Boeing 767 for service with the air forces of the UK, Saudi Arabia, Australia, and the UAE (28 total aircraft; Rothman 2010; Airbus Military, n.d.). More recently, the French Air Force has announced plans to procure 12 A330 MRTTs to replace its C-135 aerial tankers (Tran, 2014). By

comparison, the Boeing 767 had been chosen by Italy and Japan (eight total aircraft; “Italian Air Force,” n.d.; “Japan Air Self-Defense Force,” n.d.).

Since the A330 can carry (and offload) more fuel (Fulghum, 2010), it would be awarded a reduced adjusted cost according to the source selection criteria (Lynn et al., 2009). Boeing was reported to be “downright alarmed.” Even the *Seattle Times* reported that Boeing expected to lose the KC-X competition (Gates, 2010).

The Final Offers

In preparing their final offers, both Boeing and EADS were unusually well informed (Muradian, 2010). Both parties knew the operational assessments and how the Air Force would proceed from the bid price to the total evaluated price for its KC-X proposal (Lynn et al., 2009). Boeing was especially well informed because part of the debriefing following the 2008 KC-45 decision included the pricing strategy associated with the NG-EADS bid (Reed, 2009). Boeing calculated that its bid would not win the competition without a significant revision.

EADS was highly confident, however, stating in early February 2011 that it did not intend to adjust its bid (Siebold, 2011). In mid-February, however, EADS lowered its price somewhat for its best and final offer (BAFO; Smith, 2011).

Boeing had a serious problem in preparing its BAFO (AFP, 2011). The company could lose the competition or submit an uncomfortably low bid. Boeing chose the latter. It revised its bid price to a level that was essentially the bare minimum. As Boeing’s CEO put it, “I think the (shareholders) would be glad if we won at the bid level we put in and would be happy if we lost at a lower level” (Drew, 2011a).

Explaining Boeing’s Win

So why did Boeing’s KC-46 become the Air Force’s choice, despite the KC-45 being regarded as the more likely winner? The remainder of this section essays multiple explanations that we believe are useful in understanding this result.

The major proximate causes were (a) Boeing’s revised bid for the development contract, and (b) the new selection criteria. In short, Boeing’s rock-bottom bid put the KC-46 in position to win a competition that was heavily price oriented. Also, the revised selection criterion was more tilted toward “good enough” (Censer, 2011), or recapitalization over modernization. The remainder of this section essays an analysis of the root causes.

Boeing’s Best and Final Offer: A Rational Actor Reconstruction

The Unitary Rational Actor Model posits that all organizational decisions are value-maximizing choices (e.g., Allison & Zelikow, 1999, pp. 23–26). In that spirit, methods such as business-case analysis (BCA) provide a systematic approach to understanding the best course of action. It is therefore possible to construct a plausible rationale for Boeing’s final offer, using BCA methodology.

The alternatives in February 2011 were to reduce its original bid or accept a probable EADS victory. We are confident Boeing addressed three basic questions, perhaps implicitly:

1. Was a reduced bid consistent with the Boeing’s corporate mission, vision, and strategy?
2. Was Boeing capable of executing the contract if the KC-46 were selected?
3. Would Boeing make money by making the aggressive bid needed to win?



In reverse order, the answers to those questions were roughly as follows. The company's decision-makers must have known the answer to Question 3 was not a lot, if any (at least not from the initial contract).

Boeing clearly had the capability to execute the contract (Question 2). The technical pieces were well on the way to being in place, based on the KC-767 program experience and cockpit displays developed for the B787 program.

As an issue of vision (Question 1), winning the KC-X competition was central to Boeing's view of itself as an aircraft manufacturer. Boeing had been the main tanker supplier to the U.S. Air Force for many decades. Although debatable as a financial move, it was clearly part of Boeing's image of itself, and integral to the corporate vision. As one knowledgeable DoD official put it, Boeing's final offer was an "existential moment" for the company.

Moreover, other strategic issues were involved. Given the size and winner-take-all nature of the competition, an unsuccessful bid meant decades outside the aerial tanker market. Being out of the U.S. market was especially worrisome for Boeing; EADS had been more successful in selling its A330 MRTT to other nations.

Because EADS had tied its proposed U.S. production facility to success in the KC-X competition, winning the contract might keep Airbus airframe production facilities outside the United States for a considerable time. Also, a KC-X win would keep Boeing's 767 production line open for perhaps two decades. Boeing would then have the opportunity to make other 767 sales with aircraft improvements derived from the KC-46 program.

KC-46 Selection Viewed From the Revised Selection Criteria

As noted, both proposals were evaluated in three consecutive phases (Air Force Materiel Command, 2010b, pp. 1–11). These phases are summarized in the following text and Figure 1. In addition, the evaluations are described in Table 3.

First, proposals were screened for acceptability against 372 requirements, with a satisfactory rating needed for all of them.

Second, the total proposed prices were adjusted for (a) operational effectiveness, (b) fuel costs, and (c) basing infrastructure costs. The superior proposal in each category received a downward adjustment to reach a total evaluated price (TEP). This second phase of the evaluation is depicted in Table 3. If the lowest TEP differed by more than 1% from the other, then the award would go to the proposal with the lowest TEP. The adjustments were determined as follows:

- Both aircraft were assessed for operational effectiveness with respect to an operational scenario (taken from the DoD [2005] "Mobility Capabilities and Requirements Study"). The EADS KC-45 received an \$800 million reduction.
- Fuel adjustment was based on expected annual flying hours per aircraft over a 40-year operational life. The candidate with lower estimated fuel costs (KC-46) received an adjustment to reflect the discounted fuel savings. Boeing reduction of \$500 million.
- Base infrastructure cost comparisons were based on a notional set of 10 bases with a notional deployment schedule. Another Boeing reduction of \$300 million.

Third, if the TEPs were within 1%, then the evaluation would proceed to the last phase—assessment according to 93 "non-mandatory" requirements. Because Boeing's TEP was 9% less than EADS', those factors were not considered.



As the evaluation played out, the adjustments to the TPPs were reported as stated in Table 3.

Why the New Selection Criteria?

Some commentators (e.g., Drew, 2011b) noted changes in the selection criteria (2010 versus 2007) as being key to Boeing's win. Some specific ways the revised selection criteria improved the KC-46's chances follow.

The 2010 selection criteria included a harder look at basing (primarily ramp space) limitations for the KC-45 and KC-46. This undoubtedly favored the smaller KC-46 and would have reduced the KC-45 operational effectiveness rating due to longer transit distances to accomplish the aerial refueling mission used for assessing operational effectiveness (Thompson, 2011).

The relatively short list of "mandatory requirements" included technical risk, which was stated to be a major sorting factor for the KC-45 selection in 2008. In the revised rules, both proposals were assessed as having acceptable risk—with no sorting beyond that (Air Force Materiel Command, 2010a, Section M). Moreover, with the fixed-price nature of the contract this time, the contractor would bear more of the risk, making risk of less import to the Air Force (Butler, 2011c).

Extending the evaluated operational life from 25 to 40 years was an advantage to the smaller KC-46 (Drew, 2011b). The fuel expense difference was considered over a longer period (Air Force Materiel Command, 2010b, Section M).

Table 3. Calculating Total Evaluated Prices
(Butler, 2011a; 2011b)

CATEGORY	BOEING (KC-46)	EADS (KC-45)
TOTAL PROPOSED PRICE (TPP)	21.4*	23.4
FUEL SAVINGS	(0.5)	0
BASING INFRASTRUCTURE	(0.3)	0
WARFIGHTING EFFECTIVENESS	0	(0.8)
TOTAL EVALUATED PRICE (TEP)	20.6	22.6

* US\$B (constant 2012, discounted)

Why the Changed Criteria? Changing Operational Assets and Needs

Also favoring the KC-46 was the changing airlift picture. With continued procurement of C-17s, the Air Force turned out to have more-than-adequate airlift capability. The most significant capability gap, revealed in the DoD (2010) "Mobility Capability and Requirements Study 2016 (MCRS-2016)," concerned relatively minor refueling shortfalls in two of three assessment scenarios (pp. 4–6).

The relatively minor refueling shortfall indicated was undoubtedly a matter of less concern than most aerial refueling capability (78%) residing in aging KC-135s. This could well have been sufficient to shift attention toward the need to simply recapitalize the aerial tanker fleet with less interest in (for example) the KC-45's greater airlift capabilities.



Why the Changed Criteria? Organizational Behavior

Allison's Model II (Organizational Behavior) is about decisions made within established governmental agencies (Allison & Zelikow, 1999, pp. 163–185). The key organization was the United States Air Force. It was tasked with selecting the source for the new aerial tanker (KC-X). The Air Force recognized aerial refueling as one of its core competencies and considered tanker recapitalization its most important acquisition program.

As noted above, the overturned 2008 source selection can be regarded only as a major organizational failure for the Air Force. Accordingly, the Air Force chief of staff, General Norton Schwartz, called for a new approach that was very well organized (“perfecto”) with results that could not be successfully contested (“bulletproof”; Gnau, 2009).

However, the Model II paradigm predicts mostly incremental changes (Allison & Zelikow, 1999, pp. 171–172, 180–182). And the new selection criteria were consistent with this hypothesis. That is, the KC-X selection procedure was modified more than the organization itself. The selection process was specifically designed to be protest-proof, designed to be as simple as reasonably possible and accordingly to offer fewer prospects for successful protests.

Why the Changed Criteria? Governmental Politics (Model III)

A separate, and not inconsistent, view is that the competition was really predetermined by governmental politics (Allison's Model III; Allison & Zelikow, 1999, pp. 294–313). The issue at hand was who would get the winner-take-all contract for a number of new aerial tankers produced over an extended period of time, and with a long operational life expected.

The key players in this last version of the competition were industrial and governmental. The industrial players were Boeing (KC-46) and EADS (KC-45). Judging from published reports (e.g., Lynn et al., 2009), the Air Force and OSD had pretty much mended their fences prior to the draft RfP of 2009 and could be regarded as working together. In addition, the governmental players included congressional groupings associated with the industrial players. These were determined more by state than party. Thus, for example, the Boeing congressional delegation included Rep. Todd Tiahrt (R-KS), along with the largely Democratic Washington State delegation. The congressional EADS supporters included Sen. Jeff Sessions (R-AL).

And political figures stepped up to claim a major role in changing the selection criteria. Particularly noteworthy was Rep. Norm Dicks (D-WA), who insisted that fuel savings should be assessed over a 40-year operational life (Drew, 2011b).

However, the most persuasive point in the Governmental Politics hypothesis is that choosing the KC-46 was the path of least political resistance. Most observers assessed the Boeing delegation in Congress to be larger and more powerful than EADS' (e.g., Butler, 2011a).

Explanations for Changing the Selection Criteria

The discussion above provides four separate (but not necessarily conflicting) explanations for the selection of the Boeing KC-46. These explanations correspond to standard models of organizational behavior, including those found in Allison and Zelikow (1999). Model I (Chapter 1) posits decisions by a Unitary Rational Actor; Model II (Chapter 3, Organizational Behavior) is about action taken within a bureaucracy, following established rules and processes. Model III (Chapter 5) concerns governmental politics with outcomes determined by the interaction and bargaining among various governmental agencies and personalities.



In the previous example, the first explanation offered is that the Air Force simply followed the rules laid out in the RfP. This is a Model II explanation: a bureaucracy proceeding according to a set of agreed rules and processes. It is also essentially the official explanation from the Air Force and DoD. Moreover, the Air Force made relatively minor changes to the KC-X selection process in response to its perceived failure in 2008.

The third explanation involves governmental politics. That is, the KC-46 selection was really the result of contending factions within the U.S. government—some favoring the EADS KC-45, and others favoring the Boeing KC-46. Viewed from this perspective, the apparent main cause for the KC-46 selection is that the Boeing faction in Congress had more power than the EADS supporters.

Finally, the changing-rules explanation has something to do with all three Allison models. To the extent that the changing rules reflected changing circumstances (like more C-17s), we have a Model I explanation. To the extent that the rule changes were the results of political maneuvering, we have a Model III explanation. To the extent that the new selection criteria reflected a bureaucratic search for an executable (and protest-resistant) set of rules and processes, we have a Model II explanation.

Conclusions: Some Lessons From the KC-X Case

To the extent that the KC-X melodrama is indicative of the state of the U.S. defense acquisition system, there are at least three useful observations.

First, the government indeed resembles more of a quarrelsome committee than a sovereign monopsonist. Standard microeconomics (Allison's Model I) has some use in understanding the behavior of industrial firms; Allison's Model III is more useful for the study of quarrelsome committees, a central theme of this discussion.

It appears, among other things, that major military contracts have become yet another point of contention between the executive and legislative branches. A legislature that trusted the executive branch to make sensible contract-award decisions would likely not have institutionalized a means to protest (appeal) the original award and would likely not have designated a congressionally affiliated agency (i.e., the GAO) as something of an appellate court.

If the KC-X story is indeed typical of the U.S. defense acquisition process, then it appears that standard models of that defense acquisition process are in need of some restructuring.

Second, and a related point, is that the power relationships between the U.S. defense establishment and its major suppliers have shifted considerably since the end of the Cold War. The post—"Last Supper" (Wayne, 1998) consolidation in the defense industrial base means fewer potential suppliers for many categories of defense goods. *Defense industrial firms have exploited the market power associated with their smaller numbers, as well as by influencing the government's various factions.* The legislature (one of the major members of the quarrelsome committee) insists upon competition (due in part to distrusting the executive) even when there are only two plausible bidders. In that environment, both bidders have a great deal to say about the nature of that competition based simply on the threat not to respond with a bid. In the summer of 2008, Boeing made that threat and succeeded in getting that iteration of the KC-X competition cancelled (Cole & Lunsford, 2008). Interestingly, however, the NG-EADS team made similar threats, which were not effective, in 2009. And, in the end, EADS did enter the competition, albeit without NG.



Third, it appears that bid protests, and their possibility, have become a major factor in the U.S. defense acquisition system (Melese et al., 2010). The successful Boeing protest in 2008 was a serious setback to the Air Force, both in terms of delays to its most important acquisition and in its reputation. *One visible response was to simplify the selection criteria, as part of an explicit pursuit of a protest-proof selection process.* Similarly, the specifications for the new rescue helicopter were apparently so narrowly specific that only one firm chose to respond (Shalal-Esa, 2012). And we note that the DoD's revised selection criteria for the presidential helicopter replacement (VXX) reduced the number of actual proposals to just one (Carey, 2013).

Acquisition Reform for a Second-Best World

While the DoD's Better Buying Power initiative is ongoing (Kendall, 2012; Muradian, 2013), Congress has also taken up the matter of acquisition reform. And perhaps the only point of agreement on defense acquisition reform is that previous efforts have not been successful (e.g., Goure, 2013; Clark, 2013).

Although suggestions on the table (such as workforce development and regulatory simplification) are excellent ideas, the KC-X story suggests why focusing exclusively on achieving "better-faster-cheaper" acquisition hasn't gotten very far. The players envisioned in the standard acquisition reform initiative consist of the DoD and defense industrial firms as an existent body of suppliers. The role of the legislative branch is regarded as merely a body that can enact necessary legislation to enable the reforms.

However, the KC-X drama suggests that the acquisition system is more complicated than the reformers have assumed. First, the government should consider explicitly industrial-base issues in source selection decisions. The DoD has, like it or not, been engaged in industrial policy since the "last supper" of 1993—and arguably well before that.¹

In that regard, Better Buying Power does indeed call for promoting effective competition (Kendall, 2012; Muradian, 2013). However, it seems to us that competition means, at minimum, having more than one response to an RfP. We note the DoD's recent proclivity for long-term, winner-take-all awards in large acquisition programs—JSF aircraft (Lockheed-Martin F-35), F-35 engine (Pratt & Whitney F-135), and KC-X (Boeing KC-46). *That strategy entails a significant risk that the also-rans won't be around when contracts for replacement are to be let* (Erwin, 2014).

Second, acquisition reformers need to include the legislature in their view of the acquisition system. Among other things, any major acquisition decision needs to be ratified by, or pass muster with, Congress (e.g., through GAO review of contract awards protests). In short, defense acquisition reform must address the issue of political pragmatism.

A view of acquisition processes that incorporated both industrial policy and political pragmatism would quite possibly have resulted in a dual buy for the KC-X—the EADS KC-45 and the Boeing KC-46. Making KC-X a winner-take-all affair might well have left the Air

¹ Worth noting is that the DoD has formalized an interest in industrial-base policy with the Office of Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy reporting to the under secretary of defense for acquisition, technology, and logistics (USD[AT&L]; OSD, 2011). In addition, DoD leadership announced that the 2015 president's defense budget included provisions for maintaining the defense industrial base (Cameron, 2014; Weisgerber, 2014).



Force with only one supplier for the rest of the tanker recapitalization program (which nominally included a KC-Y and a KC-Z; Gertler, 2009). Keeping both EADS and Boeing in the game would have meant at least two competitors in later stages of tanker recapitalization.

Purchasing both aircraft would also have been politically pragmatic, having at least one influential supporter (Rep. John Murtha, D-PA). The Engine Wars of the 1980s could have provided a precedent ("The Lesson of the Great Engine War," 1984). Because both the congressional delegations from Boeing and EADS were highly confident (at least in public) of their entry's superiority, it's unlikely a dual-buy decision would have encountered any serious opposition in Congress. Moreover, a dual-buy decision in 2008 would have accelerated the availability of replacement tankers by about three years.²

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² According to off-record conversations with knowledgeable DoD officials, Secretary Gates' position on the dual-buy approach was based primarily on not having enough money to fund both programs simultaneously. But since the DoD's expenditure authority comes from Congress (which would likely have supported a dual buy), this rationale strikes us as unpersuasive.



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Quarrelsome Committees in US Defense Acquisition: the KC-X Case

Chip Franck and Bud Udis
Acquisition Research Symposium
PANEL 11, 15 MAY 2014

KC-X SOURCE SELECTION

- “... the (KC-X) contest has taught us several lessons— and so far, they are all a bit disappointing.” Pierre Sparaco (2010)
- “...one of the most screwed up programs in Pentagon history long history of cock-ups” Colin Clark, 2014

OUTLINE

- INTRODUCTION
- KEY EVENTS IN THE SOURCE SELECTION PROCESSES
- EXPLAINING BOEING'S 2011 WIN ...
EMPHASIZING USEFUL MODELS
- SO WHAT?
 - OBSERVATIONS FROM THE KC-X CASE
 - ACQUISITION REFORM FOR A SECOND-BEST WORLD
- THE IMPORTANCE OF PARADIGMS

INTRO: Why the KC-X is interesting

- IMPORTANCE OF AIR REFUELING
- MATURITY OF SYSTEMS OFFERED
 - KC-767 (KC-46)
 - A330 MRTT (KC-45)
- 14 YEARS FROM INITIAL SOURCE SELECTION TO IOC ... ABOUT EQUAL TO F-22
- AN EXPENSIVE, EMBARRASSING NEAR-DISASTER

Key Events: The Leasing Initiative

- 100 AC FOR 20 YEARS FOR \$20B
- KC-767 CHOSEN OVER A330 MRTT
- SIDETRACKED BY DRUYEN INVESTIGATION
- LEASING AGREEMENT ON HOLD DEC 2003
- OFFICIALLY CANCELLED JAN 2006

THE NEXT ATTEMPT

- SOURCE SELECTION RESTARTED IN 2006
- EXTENSIVE PUBLICITY AND LOBBYING CAMPAIGNS BY BOEING AND EADS
- EADS WINS (FEB 2008)
- BOEING PROTESTS (MAR)
- GAO RULES IN FAVOR OF BOEING (JUN)
- DOD ATTEMPTS A RECOMPETITION ... REPLACING AF AS SOURCE SELECTION AUTHORITY
- MAJOR AF FAILURE: “No one has any faith in the Air Force.”

TANKER-TRANSPORT COMPARISONS

	Current Tankers		Current Transports		Proposed Tankers	
	KC-135R	KC-10	C-5	C-17	Boeing KC-46	EADS KC-45
Wing span / Length (ft)*	131/136	165/181	223/247	170/174	<u>156/159</u>	<u>198/192</u>
Max. fuel (K#)	200	356	330	-----	<u>200+</u>	<u>245</u>
Pallet Capacity	6	27	36	18	<u>18</u>	<u>32</u>

2008 AF EVALUATIONS (close)

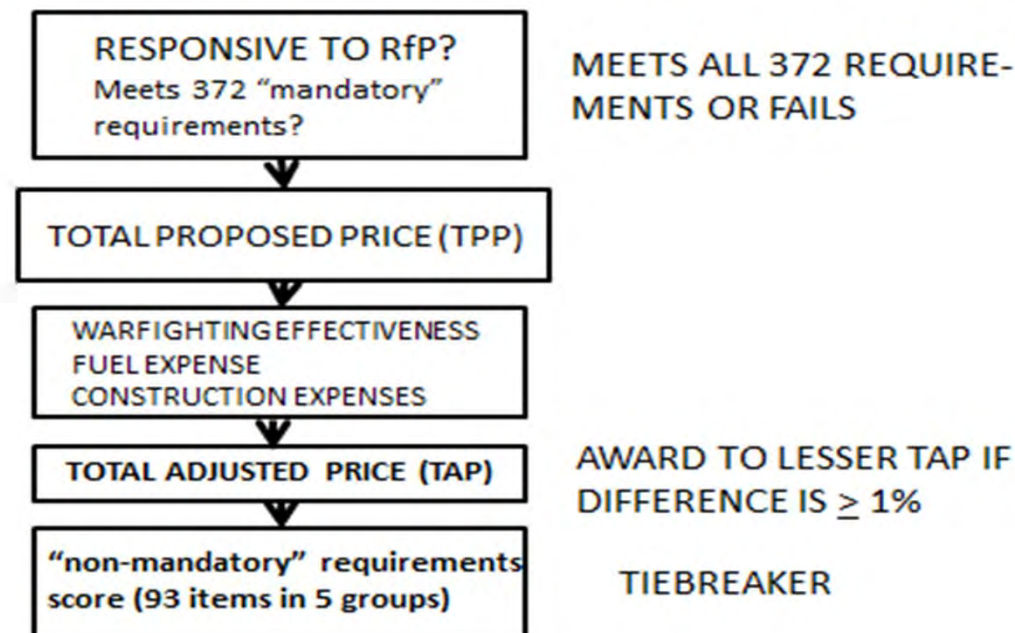
Mission Capability/Proposal Risk		KC-46 (Boeing)	KC-45 (NG-EADS)
	Key System Requirements	Blue/Low	Blue/Low
	Systems Integration/Software	Green/moderate	Green/moderate
	Product Support	Blue/Low	Blue/Low
	Program Management	Green/Low	Green/Low
	Technology Maturity	Green	Green
Past Performance		Satisfactory Confidence	Satisfactory Confidence
Cost/Price (mostly likely LCC)		\$108.044 Billion	\$108.010 Billion
	Cost Risk: Development/ Production & Deployment Phases	<u>Moderate</u> /Low	<u>Low</u> /Low
Overall Value Rating		1.79	1.90

BLUE (best), GREEN, YELLOW, RED (worst)

THIRD ATTEMPT

- DRAFT RFP (2009)
 - SIMPLE CRITERIA
 - STRONG EMPHASIS ON COST

KC-X SOURCE SELECTION CRITERIA



THIRD ATTEMPT (2)

- BIDDERS' VISIBLE HESITATIONS (after RFP)
 - NG DROPS OUT (Mar 2010)
 - EADS GOES IT ALONE (Apr)
 - BOEING'S ANGST (perhaps strategic): "Your heart says you have to be part of it, but (our) job is to make sure that the heart doesn't make a decision the head can't live with"
- KC-45 AND KC-46 PROPOSALS IN JULY OF 2010

THIRD ATTEMPT (3)

- EADS AS FAVORITE: refueling effectiveness
 - Assessments accidentally shared with both
 - Boeing reported to be “downright alarmed.”
 - Even the *Seattle Times* reported Boeing expected to lose.
- BOEING’S ROCK-BOTTOM FINAL OFFER: “I think the (shareholders) would be glad if we won at the bid level we put in and would be happy if we lost at a lower level.”
- BOEING WINS, FEBRUARY 2011

THE 2011 EVALUATION

CATEGORY	BOEING (KC-46) \$B	EADS (KC-45) \$B
Total Proposed Price (TPP)	21.4	23.4
Fuel Savings	(0.5)	0
Basing Infrastructure	(0.3)	0
Warfighting Effectiveness	0	(0.8)
Total Evaluated Price (TEP)	20.6	22.6

EXPLAINING BOEING'S WIN

- MAJOR CAUSES
 - BOEING'S VERY "AGGRESSIVE" BID
 - CHANGING CRITERIA
- EXPLAINING BOEING'S BID (MODEL I)
 - PROFITABLE? PROBABLY, BUT ONLY LATER
 - DOABLE? YES
 - CONSISTENT WITH CORPORATE "VISION:" DARN RIGHT ("an existential moment for Boeing")
 - OTHER ISSUES
 - STAYING IN THE TANKER MARKET
 - CONTINUING B767 PRODUCTION
 - KEEPING AIRBUS PRODUCTION OUT OF US

EXPLAINING THE NEW CRITERIA:

- THE OFFICIAL EXPLANATION: AF simply followed the rules laid out in the Request for Proposal
- AN ALTERNATE EXPLANATION (MODEL II)
 - INCREMENTAL CHANGE, IN RESPONSE TO ORGANIZATIONAL FAILURE
 - SIMPLIFIED CRITERIA (PROTEST-RESISTANT)
 - ... WHICH EMPHASIZE PRICE (but not exclusively)

NEW CRITERIA: CHANGING CIRCUMSTANCES

- CONTINUED C-17 PRODUCTION REDUCES CONCERN ABOUT AIRLIFT CAPACITY
- MCRS-16: IN OUR OPINION, ONLY IDENTIFIED WORRIES ARE RELATIVELY MINOR REFUELING CAPACITY SHORTFALLS (2 OF 3 SCENARIOS)
- ... WHICH FOCUSES ATTENTION ON AGING KC-135 FLEET AND ASSOCIATED ADVANTAGES OF RECAPITALIZING AND HEDGING

NEW CRITERIA: GOVERNMENTAL POLITICS (Model III)

- THIS OUTCOME CAME FROM VARIOUS FACTIONS
CONTENDING WITHIN THE US. GOVERNMENT
AND DEFENSE INDUSTRY
 - INDUSTRIAL PLAYERS: BOEING AND EADS
 - GOVERNMENTAL PLAYERS: AF/DOD; CONGRESSIONAL
DELEGATIONS FROM BOEING AND EADS
- PLAYERS ACTED TO CHANGE CRITERIA
 - NG-EADS OBJECTIONS TO DRAFT RFP
 - REP DICKS FOR 40-YEAR ASSESSMENT (VS. 25)

GOVERNMENTAL POLITICS (cont)

- CHOOSING BOEING WAS THE PATH OF LEAST POLITICAL RESISTANCE
- BOEING DELEGATION HAD MORE POWER THAN THE EADS DELEGATION

“Many observers believed [Rep] Dicks [D,WA] successfully drove the military to reshape the contest to Boeing’s advantage.” (Colin Clark, 2012)

SO WHAT?: Three Observations

- The government resembles a “quarrelsome committee” more than a monopsonist.
 - Models of the defense acquisition process may need major restructuring.
- Power relationships have shifted considerably since the end of the Cold War.
 - Defense industrial firms have more market power
 - ... and worked actively to influence the quarrelsome committee deciding on the KC-X
- Protests have significantly changed the process ... apparent initiatives for protest-proofing

Acquisition Reform for a Second-Best World

- WE'VE HAD LITTLE SUCCESS IN DECADES OF REFORM ATTEMPTS.
- A NECESSARY CONDITION FOR SUCCESS MEANS INCLUDING THE LEGISLATURE (IN OUR VIEW OF THE SYSTEM).
- REFORM ALSO INVOLVES INDUSTRIAL POLICY ... A CONSEQUENCE OF THE "LAST SUPPER"

WHAT DIFFERENCE WOULD IT MAKE

- FEWER, WINNER-TAKE-ALL COMPETITIONS – EXECUTED OVER VERY LONG PERIODS
- DUAL (OR SPLIT) BUYS ... LIKE REP. MURTHA WANTED FOR KC-X
 - POLITICALLY PRAGMATIC
 - WOULD HAVE GUARANTEED MORE THAN ONE QUALIFIED SUPPLIER FOR THE KC-Y (& Z)
 - FEWER ONE-RESPONSE RFPs
 - LESS ONLY-GAME-IN-TOWN SYNDROME

THE ABIDING IMPORTANCE OF PARADIGMS

- STRUCTURING THE ENVIRONMENT TO CONSIDER (What do the industrial players and the Congress really do?)
- ASKING THE RIGHT QUESTIONS (Does Congress exist to parachute in to provide enabling legislation, or is it really part of the problem?)
- ...