

# Playing With Fire



Operational trends over 40 years have shown that US airpower depends completely on tankers.

By Rebecca Grant

**“Tankers** are the lifeline for our command and for the Air Force.” For Gen. Arthur J. Lichte, who spoke those words, that about sums up the situation with respect to aerial refuelers. And that, in the view of the commander of the Air Mobility Command, tells you why buying a new tanker is USAF’s No. 1 priority.

The Air Force in late 2001 first considered plans to accelerate its planned tanker buy. Since then, the term “KC-X” has become synonymous with scandal, venom, and missed opportunities.

By failing to get started on USAF’s replacement KC-X program, however,

the Defense Department is playing with fire. The most recent conflagration came in 2008. Protests from Boeing were found to have merit, and a tanker award made to a Northrop Grumman-led team that February was overturned.

The tanker controversy “has not been a healthy one” for DOD, the Air Force, or the contractors, said Michael B. Donley, Air Force Secretary.

Late in the Bush Administration, Defense Secretary Robert M. Gates decided the KC-X had become too politically toxic, and put off restarting the competition so the Obama Administration could take over. Little did Gates know he would be staying on as Defense Secretary under Obama.

In February 2009, the next generation KC-X program was revalidated by the Joint Requirements Oversight Council, headed by the Joint Chiefs of Staff vice chairman and charged with blessing requirements for all major acquisition programs.

In April, the KC-X program became something of a rarity—a high-profile Air Force acquisition program supported in the President’s 2010 budget proposal. Plans call for the competition to restart this summer, but there is still no clear methodology for the competition or an announced production rate.

The tanker requirement is documented in war plans. At the top of the official



***A KC-135 Stratotanker from the 117th Air Refueling Wing and two F-15s and an F-22 Raptor from the 325th Fighter Wing on a recent mission.***

USAF photo by MSgt. Scott Reed

statements is the Mobility Capability Study, an exhaustive analysis matching war plans with force structure. In 2006, the MCS called for the Air Force to maintain 520 to 640 aerial refueling platforms.

By that standard, the tanker fleet is already below the minimum. USAF has just 476 viable tankers—417 KC-135R/Ts and 59 KC-10s. That's 44 aircraft short of the number deemed to be the minimum requirement.

To address the shortfall, Air Mobility Command has divided its tanker replacement plans into three discrete sections.

- KC-X would be a medium-size tanker replacing 179 aircraft. At the

expected replacement rate, this will take about 15 years—once a program actually begins producing aircraft.

- KC-Y would begin the next phase, also replacing about 179 aircraft.

- KC-Z might be a different aircraft, perhaps a replacement for the much larger KC-10 tankers.

Whether the Pentagon should pursue a winner-take-all approach, a split buy, or a dual buy is unsettled. Gates has opposed buying new tankers from two contractors, calling such a move “bad public policy” and a “bad deal for taxpayers.” Many lawmakers support the idea, however.

One could make the argument that the KC-X is more crucial to airpower and

joint operations than any other single platform. Decades of taking tankers for granted have obscured the extent to which the tanker force has reshaped the modern air campaign.

Without tankers, the air campaigns of recent decades would not be possible. The power to deliver fuel in the air, rapidly and reliably, makes possible the swift initiation of an air campaign anywhere on the globe.

In US Central Command's theater alone, the statistics are nothing short of compelling. The average day in 2009 sees some 45 to 50 KC-135 tankers in operation, passing fuel to as many as 250 receivers. And that is just in one region of the world.



**In this Vietnam War-era photo taken over North Vietnam, an F-4C Phantom takes on fuel from a KC-135 tanker while two others line up and await their turn at the spigot.**

Picture the scene in the cockpit of a combat aircraft on a long mission with its fuel margins dropping. It may be an A-10 whose pilot is supporting coalition troops in contact in Afghanistan, and could stay with the mission, if only there were more gas.

It may be a B-2 out of Guam heading for a tanker rendezvous over the Pacific, or a C-17 transport ferrying trucks to Afghanistan.

In each case, what the aircrew wants to see is the dark gray speck on the horizon growing, slowly, into the comforting shape of a refueling tanker, boom or basket extended.

The fuel figuratively gushing through the boom at thousands of pounds per minute translates into range and persistence. Today's large, highly capable tanker force can be considered a gift of the Cold War, but its time is running short.

The youngest KC-135 aircraft is 44 years old; the eldest is more than 50.

In Lichte's view, "It's unconscionable that we're asking people to fly in combat in 50-year-old airplanes."

The Air Force expects KC-X to go far beyond the capabilities of the KC-135R. The "exact dimensions" are "not the thing that I worry about," Gen. Norton A. Schwartz, Chief of Staff, said in 2005 when he led US Transportation Command.

Lessons from Iraq and Afghanistan have greatly clarified requirements for the next tanker. First comes more fuel, more room for passengers, and more cargo.

No one questions that the No. 1 job for tankers is to refuel receivers.

However, mobility commanders over the past several years have come to depend on tankers for many different roles. With KC-X, they are looking for a platform to give them more capability for these additional missions.

Another lesson has been to build in a capability to deal with increased threats. An AMC study found that, during 2006, US tankers were fired upon 19 times in the CENTCOM region. Advanced defensive systems are a must.

The fleet is sized for global operations and for wartime surge in many types of missions. Tanker fleets must be large enough to meet war plan requirements—the metric of choice here is the number of receiving aircraft per hour that can be refueled. A major operation means putting lots of fighters and bombers over target areas at the same time.

### The Essential Core

These are not "heavy force" requirements only. Irregular warfare still relies on air-delivered fires to dispersed, small teams—again potentially creating high peak demand. There is no reason to believe that fewer tankers will be needed in the future.

A robust fleet of tankers therefore forms the essential core of wartime tanker surge operations for the future.

And yet, the tanker crisis of today has been brewing for a decade. Deep concern first emerged in 1999 during Operation Allied Force—the NATO air war over the former Yugoslavia. Air tankers were heavily used, but older KC-135s could sustain only a 78 percent mission capable

rate—they had begun to break in new and unexpected ways.

Since then, the Air Force has been given more vivid warnings, many from the depot at Tinker AFB, Okla.

In 2003, Gen. John P. Jumper, then Chief of Staff, said, "The KC-135s, when you visit them on depot line at Tinker Air Force Base, you can peel the skin layers apart and powder comes out the middle. Corrosion is overtaking these airplanes, and fatigue cracks them in ways that we have never been able to anticipate."

Operating costs for the oldest KC-135Es started to grow at a rate of 10 to 15 percent per year.

An "analysis of alternatives," directed by Congress and carried out by RAND for senior Pentagon managers, was completed in March 2006. That report said, "There is considerable uncertainty about the future technical condition and sustainment cost of the KC-135."

The KC-135s are, in a word, ancient. Although these aircraft have new engines and updated avionics, they are in danger of sudden and impossible-to-predict failure. The KC-135Rs average almost 49 years of age.

The trends are definitely not good. Average time in depot has climbed from 180 days to 240 days. "That's because every time they open the airplanes up, they are finding more problems," Lichte said.

Two known factors give pause. First, the KC-135s eventually will have to be reskinned. As Lichte explained, it was a skin failure that led to the 1988 incident where a commercial airliner over the Hawaiian Islands lost the top of its fuselage, killing a crew member.

The situation with the tanker is analogous.

Second, corroded wires likely were contributing, if not primary, factors in the explosion that took down the TWA flight off Long Island in 1996. This risk could soon affect the safety of the KC-135 fleet.

It is not really possible to anticipate when the KC-135 fleet will be forced to depart the scene for being too dangerous to fly. According to Lichte, the window of danger will begin to open long before USAF can complete a new tanker buy. "I feel very confident that they have the ability to continue to fight tonight, but I start worrying about what happens 10, 20, 30 years down the road. Unfortunately, the answer still comes up that we're going to be using KC-135s."

The DOD plan for the KC-X program has included annual buys that range from



Boeing illustration

**A Boeing artist's conception of a KC-767 refueling a much larger KC-777 in flight.**

12 to 15 aircraft. It will take decades to fully replace the KC-135s now flying. If a catastrophic event grounds the KC-135 fleet, there is no real way to compensate.

When the fleet goes down, it will probably happen because of irreversible corrosion of the airframe. To sense the gravity of the tanker imperative, one must look at how air refueling is supporting American military power.

"I don't know any other theater that's more dependent on the tanker force than the Pacific," said Gen. Carrol H. Chandler, commander of Pacific Air Forces. "Today it takes about seven hours on the ground for maintenance for every hour in the air, ... so I would tell you that the new tanker is at the top of our priority list," Chandler said.

More concrete were the events of Sept. 11, 2001. America was under attack and the first response was an instant air campaign. NORAD fighters set up combat air patrols—and CAPs meant tankers.

A KC-135 from Maine was on a scheduled training mission near New York City when it was called to help. The crew set up an orbit over Kennedy Airport to help two F-15s. With the tanker in place, one F-15 would refuel while the other stayed on station or intercepted unknown aircraft over New York. More F-15s arrived shortly and they, too, needed fuel.

Later, a KC-10 from McGuire AFB, N.J., replaced the Bangor crew.

All over America tankers were scrambling. Remote areas in the western United States lacked radar and communications coverage but they did have tankers.

Alaska's air defense command center picked up the track of an inbound Korean

airliner squawking a hijack code. Four fighters scrambled to intercept and track the jet aircraft. Tankers with call signs Arctic 61 and Arctic 64 took off to support the fighters and an AWACS.

### Post Sept. 11 Surge

Arctic 61 followed the fighters and airliner on a parallel heading so the fighters could talk to the airliner on VHF via the tanker. But soon the fighters were "getting too far away from our radios for us to maintain communication with them," said Capt. Steven J. Thomas, who, along with MSgt. David G. Rafferty, served then in the Alaskan Air Defense Sector center. Rafferty suggested Arctic 64 hold and act as radio relay with the fighters.

"That worked great and we had a radio relay," Thomas added. "We were quite relieved to have KAL 85 land, learn it

had not been hijacked, and no one was harmed."

Tankers flew 6,175 Noble Eagle sorties during its first year. The need for homeland security in time generated a new tanker mission. In 2002, authorities phased in a graduated alert posture. The minimum posture tasked about 35 fighters and eight refueling tankers to be constantly on alert. Higher alert postures called for considerably more.

The post-Sept. 11, 2001 tanker upsurge in American skies was just the beginning. Many tanker crews were going to the skies over Afghanistan. The opening days of Enduring Freedom illustrated the dependence of American military power on long-range tankers as never before.

Plans for Enduring Freedom called for helicopters, tankers, and transports to operate in Afghan airspace.

- Navy carrier decks held enough F-14s and F/A-18s to guarantee air superiority—if they could stay on station. Enter the tankers. From a handful of theater bases, tankers set up orbits to support Navy fighters and Air Force bombers that opened the campaign.

- Tankers enabled C-17s to fly from Germany to drop relief supplies on Night 1.

- Tankers kept E-3 AWACS aircraft on station.

- Tankers met inbound Navy fighters heading north on six-hour missions.

- Tankers soon were gassing up F-15Es and F-16s on extraordinarily long flights to attack key targets.

After the first few days, the number of preplanned targets diminished. The only way to provide on-call firepower was with frequent, dependable refueling. Air strikes hit Taliban strongpoints as they were identified. In late November, two F-15Es flying out of Kuwait were



Northrop Grumman illustration

**A Northrop Grumman artist's illustration of the KC-30 refueling another KC-30 in flight.**





**A1C Louis Martens (l) and SSgt. Joseph Dodson (r) install safety wires on the engine mounts of a replacement engine for a KC-10.**

rerouted near the end of a mission as an AWACS dispatched two tankers to provide poststrike refueling. The Strike Eagles hit their new target and made it back home after a 13-hour mission.

All told, tanker aircraft flew more than 5,000 sorties in Enduring Freedom's peak phase from October 2001 through February 2002. For persistence and endurance, this was a new high water mark.

By March 2003, Army Gen. Tommy Franks, CENTCOM commander, was ready to unleash Operation Iraqi Freedom. Franks had a plan for Iraq that called on airpower to be ready with maximum firepower and flexibility.

Plans called for the air component to conduct five air wars across Iraq all at the same time, but "not a single bomb gets dropped, not a single air-to-air engagement happens, or missile is fired unless tankers make it happen," said Col. Cathy Clothier, as an expeditionary operations group commander.

CENTCOM initially scrambled to find tanker basing locations, but soon the coalition's aerial refueling capacity grew. A total of 149 KC-135s and 33 KC-10s deployed for OIF; Clothier based 30 tankers at a British base on a Mediterranean island.

The pace of operations was high. "At least a third to a half of our aircraft are in the air at any given time, and as the operation tempo increases, so will the number of sorties we fly," said Lt. Col. James Vechery, as commander of an expeditionary refueling squadron.

As air component commander, then-Lt. Gen. T. Michael Moseley soon pushed tanker crews right up to the battle's edge. What the joint force needed was for tankers to come closer, to cut the time fighters spent returning to refueling tracks. "By the third day of the war, we

were operating 60 miles out of Baghdad," said Wing Cmdr. R. A. D. Greene, of RAF 216 Squadron.

US Air Force tankers racked up 6,193 sorties during the main phase of Iraqi Freedom and off-loaded 376,391,000 pounds of fuel.

The mission morphed, and Lichte described how tankers integrated with stability operations. "When the fight's going on and you have troops in contact, and the F-16s and F-15s are down helping protect the Army, if they have a tanker right overhead, [the pilots] just pop up, they hit it, and they go right back.

"If that tanker has the capability of staying on station a very long time, either because it can carry more fuel or because another tanker can come and dump the fuel into it, that gas station stays right over the fight."

### **An Amplified Mission**

The work of today's tanker force amplifies the mission set seen in past air campaigns. Current operations in Iraq and Afghanistan have placed a premium on what fighter and bomber crews call loiter time: Staying in the air as long as possible pays major dividends.

"They are there when you need them," said Lichte. On numerous occasions, firefights went on for several hours. If troops are inserted by helicopter and encounter resistance, fighters and bombers may have to be overhead most of the day to provide direct air strikes and cover extractions. Controllers on the ground benefit from working with the same strike aircrews as long as possible.

Tankers are crucial to keeping the ammunition coming. "Having a tanker up there gives you more loiter time on fighters and bombers," said Lichte. Without tankers, planners would need "quadruple the number of fighters to cover the same time period," Lichte explained.

Today's tankers have also become valuable conduits of information, especially in Central Command's far-flung theaters of operation. Experiences in Afghanistan pointed out the limitations of line-of-sight communications. One solution was the "smart" tanker, which began as a quick-fix installation of Link 16 antennae. Additional enhancements included a package known as Roll-on Beyond Line of Sight Enhancement or ROBE, which debuted in October 2002.

"It's like instant text messaging for war—with pics," Lt. Col. Pamela Freeland, a KC-135 pilot who was deployed to Manas AB, Kyrgyzstan, said of the smart tanker upgrades. This gives pilots "a common operating picture of all of Afghanistan that gives us a better understanding of what's going on in the battlespace we're supporting. Even the boom operators like how easy it is to use the system."

"ROBE ensures I have the total air picture available," said Lt. Gen. Gary L. North of today's capabilities. "To have a synchronized communications capability overhead on our tanker fleet that can reach down into the valleys in Afghanistan is very critical," North added.

The "smart" tanker has become essential for air operations.

Operational trends over the last 40 years have shown that airpower today depends completely on tankers.

Without a reliable air refueling fleet, the Air Force's expeditionary operations would be curtailed. Forward air bases would have to be near battle areas. Humanitarian relief missions would take days longer. The ability to operate in multiple theaters at the same time would wither.

The clock is ticking for the KC-135, but the replacement program remains stalled. Policy-makers would be wise to remember that, were the United States forced to stand down the KC-135R fleet, America would lose its rapid global reach instantly.

"Everything comes to a grinding halt," said Lichte. ■

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