The Vital Link

The Tanker's Role in Winning America's Wars

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About the Author

David M. Cohen

Maj David M. Cohen was born in 1965 at RAF South Ruislip, United Kingdom, and grew up in Omaha, Nebraska. Graduating in 1987 from Boston University with a bachelor's degree in aerospace engineering, Major Cohen was commissioned through Air Force Reserve Officer Training Corps (ROTC) and was assigned as a laser systems engineer at the Air Force Weapons Laboratory, Kirtland Air Force Base, New Mexico. After being selected for pilot training, Major Cohen reported to Vance Air Force Base, Oklahoma, in December 1990. Following pilot training, Major Cohen was assigned as a KC-135 copilot at Loring Air Force Base, Maine. Subsequent assignments included Altus Air Force Base, Oklahoma, and McConnell Air Force Base, Kansas.

A KC-135 instructor pilot, Major Cohen has held numerous positions in tanker wings including chief of Wing Long-Range Scheduling and Operations Group executive officer. In August 1999, Major Cohen attended Air Command and Staff College (ACSC) at Maxwell Air Force Base, Alabama, where he earned honors as a distinguished graduate.

His paper, "The Vital Link: The Tanker's role in Winning America's Wars," won the 2000 ACSC/Airlift-Tanker Association Mobility Research Award. Major Cohen is currently assigned to the National Imagery and Mapping Agency in Bethesda, Maryland, as a military liaison. A graduate of the Air Force Advanced Instrument School and the Air Mobility Op-

erations Course, Major Cohen is a senior pilot with over 2,100 hours of worldwide experience in the KC-135, T-37, and T-38.

Major Cohen and his wife Pamela have three children, Connor, Chana, and Benjamin.

Preface

In the fall of 1991, the Air Force was running short of cockpits for their pilots. As a result, about one-half of my pilot training classmates were "banked," that is, they were given nonflying jobs for about three years until cockpits opened up. At the assignment pick for undergraduate pilot training (UPT) Class 92-03, I was faced with the choice of a T-37 to Vance Air Force Base, Oklahoma, a KC-135A to K.I. Sawyer Air Force Base, Michigan, or a KC-135R to Loring Air Force Base, Maine. I took the R-model to Loring, and without sounding too dramatic, it changed my life forever.

With the exception of Antarctica, the tanker has taken me to every continent on the planet. I flew the first KC–135 airlift mission supporting the Somalia relief effort, and earned combat time over Iraq. I greased a landing in Rio de Janeiro with 15 general officers on board, and delivered six new F-16s to the Republic of Singapore. In short, I've done an unbelievable number of things in the "Mighty Stratotanker," and wouldn't trade them for the world (with the exception of the five *summer* tours in Southwest Asia).

I'm told you can't love inanimate objects, and I suppose feelings of affection for an entire weapon system would be ridiculous as well. That said, I have a great deal of respect for the KC-135, its history, and those crews, planners, maintainers, and support personnel who have kept a 40+ year-old airplane flying and supporting vital national objectives. I also give my thanks to those tanker crews and maintainers who have given the ultimate sacrifice, most recently, in the woods outside Geilenkirchen, Germany, nearly two years ago.

My goal in writing this paper was to get the message out that tankers are important. We're usually a footnote in any war story or statistic, but try fighting without us. It just won't happen.

A number of people have helped me with this work by providing background, data, interviews, guidance, and general encouragement. Thanks go to my research advisor, Lt Col Ladonna Idell, who helped me focus and cut through the red tape.

A great deal of appreciation goes out to Maj Scott Wilhelm, AMC/ XPY, who not only sponsored this research project, but coordinated my temporary duty (TDY) to Scott Air Force Base and guided me to a product that I hope will be useful as he finishes up the "Tanker Requirements Study–2005." Thanks to Cols Tom Stickford, John Brower, and Stephen German; Lt Cols Rick Scarine, Ed Breen, Richard Simpson, Steve Adams, Cathy Clothier, and James Mikolajczyk; and Majs Chris Bence, Brad Davis, Dave Ryer, Steve Tucker, Ed Hamby, Terence Holton, Bryan Riba, Bob Green, and John Goff for their time and inputs. A big thanks goes to Dr. Ken Beck at US Transportation Command for the reams of reports and Power Point files he sent me on Operation Allied Force. Special gratitude goes to Maj Scott Mischo for providing a candid, insightful picture of tanker operations during Allied Force, at an Applebee's in the middle of a tornado warning!

Finally, words cannot express the appreciation and love I have for my family. My wife, Pamela, and children, Connor and Chana, have held up like troopers for their first Air Force move. They've been understanding when I've been home late, cooped up in my office at the computer, and frustrated over various problems. Through it all, though, they've been there for me, and they have no idea how grateful I am. To our expected bundle (if you ever stumble across these pages)—I may not always be home for dinner, and I may be gone for a while to far-off places, but know that, like your Grandpa Paul before me, I do these things so that you will grow up safe, strong, and healthy. "Patriotism" and "pride" may seem like sappy clichés; just know that your dad not only believed in them, but dedicated his life to upholding them.

Maj David M. Cohen
Montgomery, Alabama
March 2000

Abstract

This paper focuses on the unique and vital capabilities of the US Air Force's KC-135 tanker fleet. Specifically, historic and current tanker usage, tanker operational employment, and the capability of today's tanker fleet are analyzed, with emphasis on force structure and force management. Given that the KC-135 is the USAF's primary air refueling asset and that no planned replacements are due on the flightline for some time, how can the current KC-135 method of employment and force structure support future DOD and coalition operations?

Since its inception in the mid-1950s, the KC-135 has undergone numerous configuration as well as mission changes. One constant throughout has been the reliance of the nation's airpower on this critical asset, whether it was sitting alert during the cold war, or providing mission essential fuel for F-117s en route to Baghdad during the Gulf War.

The success of combat operations in Operation Allied Force was made possible due to the rapid, massive, and professional employment of the KC-135 in the theater of operations. This success, however, can be attributed more to the actions of the tanker community than to any planned, deliberate inclusion of air refueling assets into the operations plan.

In light of decreasing budgets, aging airframes, increased downtime for maintenance, and an explosion in the operations tempo, this paper proposes a four-pronged methodology addressing tanker vision, organization, training, and employment, as the correction needed to get the KC-135 weapon system back on centerline. This will allow the tanker to effectively aid the Air Force in successfully deterring conflict and if needed, quickly win the nation's future wars.

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Research Study Limitations

The KC-135 shares its air-refueling mission with the younger KC-10 Extender. The KC-10, with its large cargo volume, is also used extensively in the airlift role. Because of this, the relatively fewer number of KC-10s compared to KC-135s, and the need to focus this research, only the KC-135 is addressed. However, any discussion as it relates to the training, planning, and execution of tanker assets can be easily applied to the KC-10 in the tanker role as well.

A great deal of data exists supporting the need for a robust KC-135 aircraft and crew force structure. Unfortunately, due to the nature of this research project, much of this data is beyond the scope of this paper. It is highly recommended that interested readers contact those sources listed in the bibliography to get a better understanding of KC-135 requirements as they relate to future combat scenarios.

Analysis of the future world environment and the subsequent 2-major theater war scenario are based solely on the conclusions of the US Commission on National Security/21st Century (USCNS/21). Though there are numerous studies and analyses of the world of the future, USCNS/21's work was chosen by this author for its completeness and its sponsorship by the Department of Defense.

The commission's prestigious makeup gives its analysis and findings much credibility. Headed by former US Senators Gary Hart and Warren Rudman, the commission includes former Air Force Secretary Donald Rice, former Speaker of the House Newt Gingrich, former Secretary of Defense James Schlesinger, and former United Nations Ambassador Andrew Young.

The intent in using and citing USCNS/21's work exclusively is not to ignore any other opinions on future world events; rather it is used as a background to examine how the KC-135 may be employed in future conflicts to support US national interests.

Chapter 1

Introduction

Expressed in plain English, we're willing to pay the price, willing to do whatever it takes to secure terms favorable to the United States and our allies. Thanks to . . . air refuelers, the message that we're prepared to stick with it—no matter what—resonates loud and clear!

—Sheila Widnall
Secretary of the Air Force
August 1993–October 1997

Aerial warfare has become an intricate ballet. Fighters must be able to hunt down and defeat the enemy, while remaining on station providing protective coverage to friendly aircraft. Bombers need to maneuver to get to their targets, in many cases, thousands of miles away. While all this is going on, personnel and supplies are constantly flowing into the theater in transport aircraft that have been cruising down recently established *airbridges*—airborne lines of communication linking the continental United States (CONUS) and a theater, or multiple theaters.[1] No part of this dance of airpower, though, could be conducted without the use of inflight refueling, providing airlift, combat, and combat support aircraft the means to deploy directly to the theater without making refueling stops.

As the core USAF air refueling asset, the KC-135 Stratotanker is the principal enabler of aerial combat and support operations. With the cold war over and the tanker's nuclear single integrated operational plan (SIOP) mission overshadowed by a conventional 2-major thea-

KC-135 Stratotanker

ter war (2-MTW) concept, the tanker now operates in two distinct, but overlapping environments—airbridge operations, supporting deployment of strategic airlift, bomber, and fighter assets into a theater of operations; and combat support operations, providing needed fuel to shooters and support aircraft in the combat zone.

Unfortunately, current air refueling doctrine is potentially confusing and awkward. Additionally, the current tanker force structure is inadequate for a 2-MTW operation, as shown in a scenario presented in chapter 4 and appendix A. Compounding this, air refueling forces do not train as they should fight, and no common vision exists for tankers. Given that the KC-135 is the USAF's primary air refueling asset and that no planned replacements are due for some time, how can the current KC-135 method of employment and force structure support future Department of Defense (DOD) and coalition operations?

Notes

1. Air Force Doctrine Document 2–6.2, *Air Refueling*, 19 July 1999, 75.

Chapter 2

Stratotanker History: Cold War to Desert Heat

If you gave us money for jet airplanes, I would buy tankers, not airplanes for MATS [Military Air Transport Service, ancestor of Air Mobility Command] . . . I think we would increase our combat capability more in that manner.

—Gen Curtis E. LeMay
Commander in Chief
Strategic Air Command
October 1948–June 1957

On 11 July 1954, the KC-135 was ordered.[1] A little over two years later, the first Stratotanker rolled off the Boeing line and was delivered to Strategic Air Command (SAC), adding to the striking power of the nuclear deterrent, particularly the B-52 intercontinental bomber force Gen Curtis E. LeMay had built.[2]

Gen Curtis E. LeMay, commander in chief, Strategic Air Command, October 1948–June 1957

The primary mission for these new aircraft was to support the B-52s in their nuclear single integrated operational plan (SIOP) missions. As much as one-third of the tanker fleet was preflighted, "cocked on," and ready for immediate launch. For the tanker crews, one out of every three weeks was spent on alert, alongside their bomber brethren at bases throughout the United States.[3] "During the alert tours the aircrews are fed and billeted in close proximity to their aircraft to ensure they can respond in minimum time."[4]

Though away from their families during alert, crews would pull very little temporary duty (TDY) away from their base. This is in contrast to the KB-97 days when tankers had to be prepositioned along the bombers' flight path. "As the Air Force moved

toward an all-jet powered tanker fleet, the need no longer existed for slower tankers to be positioned along the route of flight far in advance of the actual movement of aircraft."[5]

"Peace Is Our Profession": SAC's KC-135 and B-52

F-105s Taking Fuel from a KC-135 during the Vietnam War

The Tanker Goes Tactical: Vietnam

The KC-135 was born to support long-range strategic nuclear attack missions. It is doubtful that in the 1950s anyone could have anticipated the tactical employment of the airplane in a low intensity conflict over the jungles of Southeast Asia (SEA). Nevertheless, SEA is where tankers and their crews found themselves as early as 1964.

The tactical environment may be defined in numerous ways. For purposes of this paper, the tactical environment (and employment in it) will cover those combat and combat support operations occurring near or beyond the forward edge of the battle area (FEBA), in or near weapon range (land, sea, or airborne) of hostile forces, or out of range of friendly rescue forces. It is in this environment in SEA that the KC-135 began to cut its tactical teeth.

The first tactical KC-135 refuelings occurred on 9 June 1964. Operating out of Clark Air Base, Philippines, four tankers provided pre-strike refuelings to eight F-100s.[6] These would be the first of an eventual 194,687 SEA tanker sorties, offloading over eight billion pounds of fuel, as shown in table 1.[7] These air refuelings permitted not only increased striking distances for bombers and fighters, but also allowed for additional loiter

time of combat air patrols assisting in the rescue of downed pilots.[8]

Table 1

Tanker Accomplishments—SEA

Year	*Number of Tankers*	*Tanker Sorties*	*Fuel Offload (billions of pounds)*
1965	55	9,200	.315
1966	75	18,200	.850
1967	75	23,000	1.100
1968	92	32,000	1.600
1969	94	28,000	1.400
1970	91	19,540	.888
1971	51	14,400	.619
1972	172	34,700	1.400
Total	**88 (average)**	**179,040**	**8.200**

Source: Walter J. Boyne, "The Young Tigers and Their Friends," *Air Force Magazine* 81, no. 6 (June 1998): on-line, Internet, 8 December 1999, available from http://www.afa.org/magazine/0698tigers.html.

These tactical, or "Young Tiger," missions were novel for tanker crews. "Tankers had to handle, on an ad hoc basis, dozens of fighters that were sometimes in danger of simultaneous flameouts from fuel starvation. . . . Mission planning times were severely reduced, and the conduct of the mission was continually adjusted to meet current situations."[9] This was a unique situation for crews that were used to a full day of mission planning for orchestrated missions against a single bomber.

The importance of tankers in SEA, presented in table 1, cannot be overemphasized. "Without tankers, the whole character of the war would have changed. The politically sensitive B-52s would have required much closer basing to Vietnam. . . . Tactical fighter missions would have been less effective and far more complicated and hazardous. More ground troops would have been necessary to protect additional bases in South Vietnam. Additionally, it is difficult to conceive of any operation on the scale of Linebacker II without air refueling."[10] Despite operating in the hostile combat environment, tanker crews

routinely went into harm's way to provide gas to imperiled receivers. So many *saves* were credited to tanker crews that the term had to be formally defined.[11] Gen Chuck Horner, joint forces air component commander for Desert Storm sums up his feelings:

> I myself can remember in Vietnam being over Hainan island, almost out of gas. And here comes a KC-135, way up north of where he ought to be because of the enemy threat. And turning around to get in behind, getting enough fuel to get home.[12]

Despite the gargantuan number of sorties flown, only four tankers were lost during the war, none to enemy action.[13]

Refueling across a Line in the Sand: Desert Storm

Two hundred fifty-six KC-135s participated in Operations Desert Shield and Desert Storm.[14] Given the assembly of this massive tanker armada, the operational control (OPCON) of the tankers is interesting. SAC's B-52s that were deployed to the desert had a change of operational control (CHOP) to the commander in chief (CINC) of US Central Command (USCINCCENT), Gen H. Norman Schwarzkopf. The KC-135s, however, were not CHOP'd to US Central Command (USCENTCOM).[15] This remarkable fact speaks volumes to the importance SAC placed on keeping a tight rein on its tanker force. Gen Lee Butler, commander in chief, SAC (CINCSAC), countered those who questioned the CHOP of the B-52s to USCENTCOM, "If I had wanted to have a real impact on the conduct of the war, I would have recalled the tankers!"[16] Later, a SAC post-war after action report would recommend that all tankers in theater be CHOP'd to the CINC.[17] In fact, it is advocated later in this report that in future operations, doctrine specify that deployed tankers engaged in intratheater air refueling be CHOP'd to the theater CINC.

The Gulf War air refueling numbers are most impressive, especially when compared to the extremely short duration of the war relative to that of Vietnam. "Of the total number of Desert Storm sorties by category, air refueling ranked third behind attack and airlift."[18] Nearly 14,000 combat sorties were

flown by US tankers, offloading approximately 725 million pounds of fuel to around 50,000 receivers.[19] This is impressive considering that approximately every minute of each of the 43 days of combat a tanker was offloading 11,700 pounds of fuel to another receiver.

KC-135 Refueling F-4G Wild Weasels during Desert Storm

The operational impact tankers had in Desert Shield and Desert Storm is incalculable. As US forces hurried to establish a presence in the Saudi desert in August 1990, the need to get the personnel and equipment into the theater became imperative. Cargo and supplies required the rapid delivery of airlift. In addition, fighters had to be deployed into the theater. This set up a high demand on the limited air refueling assets. Initially, General Schwarzkopf placed the top air-refueling priority on getting the fighter units into place.[20] This required nearly 100 tankers for both the Pacific and Atlantic airbridges. The airlift air-refueling effort was no slack effort, though. From August to November 1990, an average of 65 airlift missions per day required tanker support. This number swelled to 125 missions per day until the cease-fire.[21]

In the area of combat support missions, the *Gulf War Air Power Survey* noted that air refueling "was absolutely essential. . . . The tanker contribution to Desert Storm is what

made [the air campaign] work."[22] Gen Merrill A. McPeak summed up the tankers' contribution in the Gulf War by saying, "No tankers . . . no Desert Storm."[23]

Notes

1. Robert F. Dorr, "Boeing KC-135 Stratotanker," in "The Making of the Weakest Link," Lt Col Stephen C. German (research paper, Air War College, April 1994), 8.

2. A. T. Lloyd, ed., "Thirty Years Young," in "Air Refueling: The Cornerstone of Global Reach–Global Power," Lt Col Stanley J. Dougherty (research paper, Air War College, April 1996), 27.

3. Maj Henry N. Gant, *Deterrence in the Pace of Explosive Peace*, Research Report number AU-ARI-91-7 (Maxwell Air Force Base [AFB], Ala.: Air University Press, August 1993), 25.

4. Ibid.

5. Maj Philip A. Iannuzzi Jr., "50 Years Without Air Refueling Doctrine," in *Airlift/Tanker Quarterly* 5, no. 2, n.p.; on-line, Internet, 26 October 1999, available from http://www.atalink.org/atq/volume5.2c3.html.

6. Walter J. Boyne, "The Young Tigers and Their Friends," *Air Force Magazine* 81, no. 6 (June 1998) on-line, Internet, 8 December 1999, available from http://www.afa.org/magazine/0698tigers.html.

7. Ibid.

8. Ibid.

9. Ibid.

10. Lt Col Stanley J. Dougherty, "Air Refueling: The Cornerstone of Global Reach–Global Power" (research paper, Air War College, April 1996), 27.

11. Boyne.

12. Lt Gen Charles Horner, interviewed by Kurt Sayenga, *Wings Over The Gulf: Volume III – The Final Assault*, in "Tactical Air Refueling: Undocumented Past, Future Requirement," Maj Keith W. Moncrief (master's thesis, Air Force Institute of Technology, November 1996), 18.

13. Ibid.

14. John Warrick, "Air Force Gives Itself an A-Plus on War Role," in "Tanker Operations in a Composite Wing Concept," Lt Col Roger G. Raper (research paper, Naval War College, 20 May 1991), 3.

15. Lt Col Stephen C. German, "The Making of the Weakest Link" (research paper, Air War College, April 1994), 1.

16. Gen George Lee Butler, address, in "The Making of the Weakest Link," Lt Col Stephen C. German (research paper, Air War College, April 1994), 1–2.

17. Strategic Air Command, *Postwar Tanker Training Conference After-Action Report* (Offutt AFB, Nebr.: Headquarters Strategic Air Command, 19–20 August 1991), part II, para. 3-f.

18. Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey, Summary Report* (Washington, D.C.: Department of the Air Force), 190.

19. United States General Accounting Office (GAO), *Report to Congressional Requesters: Operation Desert Storm—An Assessment of Aerial Refueling Operational Efficiency* in Dougherty's "Air Refueling: The Cornerstone of Global Reach–Global Power," 34.

20. Douglas Menarchik, *Powerlift-Getting to Desert Storm: Strategic Transportation and Strategy in the New World Order,* in "50 Years Without Air Refueling Doctrine," and Maj Philip A. Iannuzzi Jr., *Airlift/Tanker Quarterly* 5, no. 2, n.p.; on-line, Internet, 26 October 1999, available from http://www.atalink.org/atq/volume5.2c8.html.

21. Dougherty, 34.

22. Keaney and Cohen, 228; GAO, "Aerial Refueling Operational Efficiency" in Dougherty's "Air Refueling: The Cornerstone of Global Reach–Global Power," 35.

23. Gen Merrill A. McPeak, *Selected Works 1990–1994* in Dougherty's "Air Refueling: The Cornerstone of Global Reach–Global Power," 35.

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Chapter 3

Aging Tankers Come of Age: Recent Tanker Experience

The tanker has been described as a force multiplier. What it has really been is a **time machine.** *It has flown beyond its expected life span, enabling this nation to prosecute its wars and other operations on its own terms. . . . In return it has demanded very little other than meticulous care in the maintenance of its place in the launch stream.*

—Lt Col Stephen C. German
Student, Air War College
August 1993–June 1994

As the cold war ended and the immediate nuclear threat subsided, Strategic Air Command's (SAC) tanker and bomber fleets came off of alert. Perhaps more significantly, on 1 June 1992, SAC stood down and the tankers were moved under US Transportation Command (USTRANSCOM) and its air component, the recently established Air Mobility Command (AMC). For the single integrated operational plan (SIOP), this required a new command and control system.

SAC's successor for nuclear operations is the unified US Strategic Command (USSTRATCOM). For the tankers, the commander in chief of USTRANSCOM (USCINCTRANS), through AMC, retains operational control (OPCON) until the jets are cocked on SIOP alert, at which time OPCON transfers to the commander in chief of USSTRATCOM (USCINSTRAT).[1]

Day-to-day, peacetime SIOP training activities fall under AMC, in coordination with USSTRATCOM. The 15th Air Force commander is dual-hatted as commander, Combined Task Force (CTF)-294, whose peacetime role is to manage any tanker forces on alert. During increased tensions and war, the CTF-294 commander is USCINCSTRAT's "go-to-guy" for tankers, managing and directing the generation of aircraft and crews for their SIOP mission.[2]

Velocity Equals Distance over Time

The tanker has been described as a time machine.[3] Perhaps a more accurate description would be a time and distance machine.[4] These two factors make the tanker an invaluable keystone across all of the Air Force's core competencies.[5]

The time factor evolves from the fact that the KC-135 supports operations that allow receiver aircraft to remain airborne without stopping to refuel. Depending on the weapon system, this may save many hours, which would otherwise be required for each landing and ground refueling needed to get from one point to another.

RC-135 Being Refueled by a KC-135

Time also effects combat operations and contributes to economy of force. By allowing certain receivers, such as the RC-135, E-3 airborne warning and control system (AWACS), or a flight of F-15s working a combat air patrol (CAP) to remain airborne longer, fewer aircraft are required to share station-keeping. In the case of the AWACS, an asset in high demand like the KC-135, extending the on-station time from 12 to 18 hours by providing inflight air refueling would de-

crease the number of E-3 airframes required by one-third. For the F-15s flying CAP, two or three air refuelings equates to fewer required jets, fewer pilots (which works to increase crew rest capabilities), and more time between launches (reducing maintenance).

As a distance machine, the tanker offers a relative shortening of distances as airborne forces are no longer married to routings that provide ground refueling stops (table 2). In addition, with fewer forward-deployed bases and limited receiver beddown locations, the tanker's worth mushrooms. "Increase the distance from the point of departure . . . to the target, and you need more tankers."[6] As friendly forces eliminate enemy air defenses and press further into enemy territory, the distances to new targets increase. Tankers support the increased fuel needs generated by these larger distances.[7]

Table 2

Aircraft Combat Radii and Target Distances—Desert Storm

AIRCRAFT	*COMBAT RADIUS (NM)*	*TARGET DISTANCE (NM)*
F-117	550	To Baghdad—905
F-15E	475	To Western Scud Areas—680
F/A-18	434	Red Sea Carrier to Kuwait City—695
B-52G	2,177	Diego Garcia to Kuwait—2,500

Source: Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey, Summary Report* (Washington, D.C.: Department of the Air Force), 228.

Damn the Boneyard: Full Speed Ahead!

As the KC-135 approaches its golden anniversary, some changes will be necessary to not only make the tanker more user-friendly for its crews, but also to allow it to continue to operate worldwide for many years to come. These changes, which the KC-135 force must both undergo and work around, will have an impact on the tanker force structure and how the KC-135 can support future US military operations. An example

of these changes is Pacer CRAG (Compass, Radar, and Global Positioning System[GPS]).

Pacer CRAG is an extensive and radical upgrade to the tanker fleet. Included in the upgrade is the installation of a ring laser gyro, color weather radar, GPS, Traffic Collision Avoidance System (TCAS), a Ground Proximity Warning System (GPWS), a flight management system (FMS), and a "glass cockpit."[8] In addition, the jets will undergo upgrades that will allow them to comply with the new Reduced Vertical Separation Minima standard, being implemented by AMC as the Global Air Traffic Management (GATM) system.[9] The result of all this high-tech wizardry is the eventual phase-out of the navigator position on the aircraft, as the two pilots and boom operator will have the tools at their disposal to execute the mission.

Pacer CRAG-Modified Cockpit in a KC-135

The problem with these upgrades is the time required. Current plans call for the upgrades to be completed by 2005, though recent analysis shows the fleet may not be finished until 2007.[10] Given the timeline and the number of aircraft involved, at any given time a significant portion of the KC-135

fleet may not be available for deployment operations. Two reasons are that the aircraft are undergoing upgrades and unmodified aircraft may not be allowed to operate in certain airspace. During Operation Allied Force, Pacer CRAG-modified aircraft were denied access to 16 of 19 North Atlantic Treaty Organization (NATO) European nations due to concerns about Pacer CRAG components causing radio interference.[11] As a result, non-Pacer CRAG jets had to be swapped out of other operations, sent to Allied Force, and backfilled with Pacer CRAG aircraft.[12] The headache in terms of additional sorties and coordination was enormous. Eventually, waivers were obtained to operate in the airspace of these European countries, though it took two months to secure the waivers that carried the restriction that the aircraft could only operate single-ship, potentially reducing combat capability.[13]

While this illustrates limitations as a result of the upgrades, it is clear that in the future, as international rules increase (particularly the requirement for aircraft to be GATM-compliant) and Pacer CRAG-type equipment becomes the standard, the lack of upgraded aircraft (with accompanying headaches similar to those experienced in Allied Force for modified jets) may cause a significant portion of the fleet, those jets awaiting modifications, to be denied access to the most advantageous airspace or even be shut out of a theater of operations all together. What does this mean to the KC-135 as it shoulders the burden of the next conflict? It means that this limited resource, which is so vitally needed in nearly every US military operation, may be available in such reduced numbers as to severely handicap the operation.

This situation of improvements and upgrades is not unique to the KC-135. However, it may impact the tanker the most. There is a trade-off associated with any upgrade program. If more aircraft are pushed through the modification line to finish sooner, you are left with fewer available jets for any requirement. On the other hand, stretching the process out pushes the final completion date back to the point where you may not have some aircraft available in the out years. How this zero-sum game plays out depends on the situation. Should a major need for more tankers develop, it may be

possible to slow or even stop the modification timeline. Unfortunately, this will further delay the final modification completion date.

Ultimately, any modifications affect the overarching issues, namely tanker force structure and force management. If a robust tanker force structure is required, modifications are delayed. This means that necessary upgrades are postponed. On the other hand, if modifications are continued at the same pace allowing for timely upgrade completion, inadequate assets are available for operations. Constant vigilance is required to monitor this dynamic and adjust upgrade timelines as needed. Failure to properly do so may impact US military operations and hamstring US efforts in global engagement.[14]

Allied Force: The Tanker Shines

In 1998, as the world watched ethnic cleansing produce enormous amounts of human suffering in the former republic of Yugoslavia, US planners began to evaluate possible military options. When Serbian president Slobodan Milosevic refused to allow NATO troops on the ground in Kosovo to protect the Albanian population, US military forces began to mass in the region. In early 1999, the first tanker units deployed to the theater. As the possibility of conflict increased, additional tanker units were deployed.

F-16s Refueling over the Balkans during Allied Force

On 24 March 1999, the US and NATO began Allied Force. As far back as September 1998, a small group of US Air Forces in Europe (USAFE) tanker planners began to produce an air refueling plan for a short air campaign. In fact, the plan that eventually was employed on 24 March was well thought-out had the war lasted for only two or three days.[15] Unfortunately, due to political constraints, it would take 78 days of combat operations before the Serbian leadership would acquiesce to NATO demands.

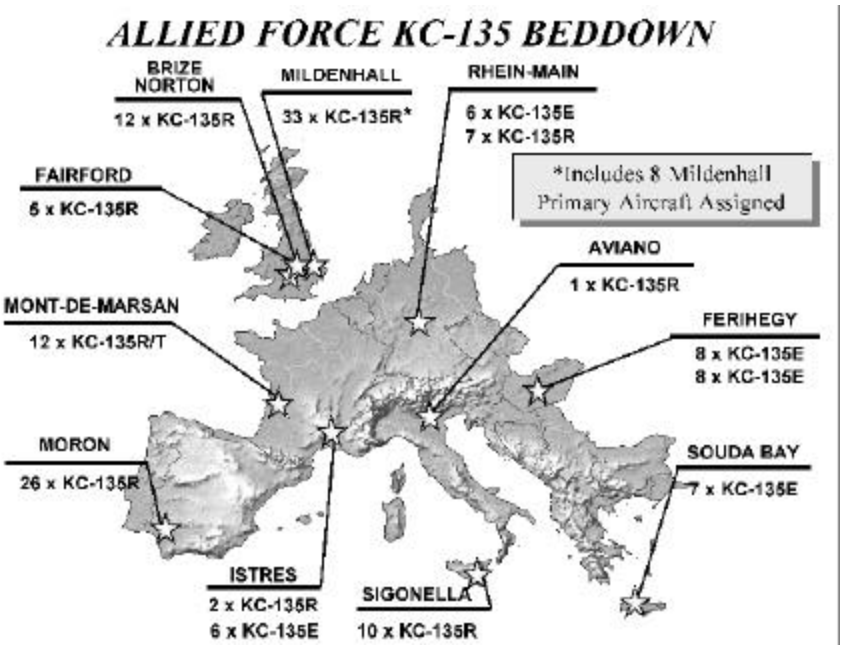
Over the course of these 78 days, KC-135s would fly 4,324 intratheater refueling sorties, offloading 188.1 million pounds of fuel to 17,751 receivers.[16] It took an additional 1,023 sorties to deploy and redeploy Air Force and Navy units. Furthermore, 306 air-refueling sorties were flown to support the B-2s operating nonstop from Whiteman Air Force Base, Missouri, to their targets and back to Whiteman.[17]

KC-135 Refueling a B-2

Tankers prevailed over numerous obstacles to make Allied Force happen. Said Secretary Cohen, “Our aerial-refueling fleet overcame extended sortie durations and high usage rates to deploy and support a multinational air force.”[18] He contin-

ued, "Deployment to Europe of aircraft based across the world, coupled with the wide range of bases used by combat aircraft in the theater, made aerial refueling a challenge. Nonetheless, active and reserve component tankers provided multiple air bridges for aircraft transiting to the theater, while also supporting over 24,000 combat sorties."[19]

Beddown locations became a problem early on. Due to limited beddown bases and the shear volume of tankers, KC-135s were scattered all over the theater, as shown in the following map. The problem was that the tankers had to fly further to get to the refueling tracks. This caused them to burn more of their own fuel and decreased the amount available for offload. The reason for this is that all but a small amount of the fuel in the KC-135 is available for offload. This, however is the same fuel that the tanker burns. Thus, a zero-sum situation exists whereby if the tanker burns more gas, less is available for offload; conversely, if the tanker offloads more gas, it is unable to fly as far (or as



Allied Force KC-135 Basing

long). This point is many times not understood by receiver aircraft planners. The domino effect of this situation was the need for more tankers to accomplish the mission.

This lack of beddown locations will become more the norm than the exception as permanent US overseas presence is reduced. For Allied Force, this created basing and logistics problems. In future conflicts, as is shown in chapter 4, these difficulties may be compounded by extreme distances that require more tankers than are available.

In chapter 5, Allied Force's tanker planning and operations are further examined. Despite problems that may have occurred, it was the yeoman effort of the tanker crews, staffs, maintainers, and other support personnel that allowed the KC-135 to be "at the heart of the fight."[20]

Notes

1. Air Mobility Command (AMC)/DOXS, Presentation, "SIOP Mission in AMC," n.d. Just as the tankers moved under AMC, a similar arrangement holds for the bombers who where transferred to Air Combat Command.

2. Ibid.

3. Lt Col Stephen C. German, "The Making of the Weakest Link" (research paper, Air War College, April 1994), 2.

4. Maj Scott Wilhelm, AMC/XPY, E-mail to author, 8 October 1999.

5. Air Force Doctrine Document 1, *Air Force Basic Doctrine*, September 1997, 29–35. US Air Force core competencies are air and space superiority, precision engagement, information superiority, global attack, rapid global mobility, and agile combat support.

6. Lt Col James Pritchett, chief tanker planner, US Central Command Air Forces, interviewed by author, 20 November 1999.

7. Ibid.

8. 350th Air Refueling Squadron, *Pacer CRAG Spotlight* 1, no. 1 (March 1999): 1.

9. AMC, "KC-135 Modification Schedule," November 1999.

10. Ibid.

11. Operation Allied Force was a NATO air campaign in early 1999, the goal of which was to stop Serbian aggression and allow NATO peacekeeping forces on the ground in Kosovo. US Transportation Command, "CINCUSTRANSCOM Congressional Testimony Support Presentation," 30 September 1999.

12. Ibid.

13. Ibid.

14. Global Engagement: "Our strategic approach uses all appropriate instruments of national power to influence the actions of other states and

nonstate actors, exert global leadership, and remain the preferred security partner for the community of states that share our interests." Department of Defense, *National Military Strategy of the United States of America* (Washington, D.C.: Government Printing Office, 1997), 6.

15. Maj Scott Mischo, chief of Readiness, 32 AOS, interviewed by author, 2 December 1999.

16. Lt Gen William Begert, USAFE/CV, Presentation, "Kosovo Lessons Learned: Air Force and Air Mobility," n.d.

17. Ibid.

18. Senate Armed Services Committee, *Hearing on Kosovo After-Action Review*, Joint Statement of Secretary of Defense William S. Cohen, and Gen Henry H. Shelton, chairman of the Joint Chiefs of Staff, 14 October 1999, 10–11.

19. Ibid.

20. Lt Gen William Begert, "Kosovo & Theater Air Mobility," *Aerospace Power Journal* XIII, no. 4 (Winter 1999): 12.

Chapter 4

KC-135 Force Structure: When to Say When

Air refueling tankers are critical to the national strategy. Initially, they are required to establish the airbridge to get combat, combat support, and air mobility forces to the theater of operations. Once in theater, combat and combat support forces depend upon refueling assets used in a warfighting role to allow them to prosecute the air war.

—Air Mobility Command
Strategic Mobility Plan

A National Security Strategy [NSS] for a New Century identifies three core objectives: enhance US security, bolster America's economic prosperity, and promote democracy abroad.[1] Additionally, the *National Military Strategy [NMS] of the United States of America* lists two national military objectives: promote peace and stability, and defeat adversaries.[2] The KC-135 is, in fact, an integral component in the achievement of these objectives.

That both of these documents imply a globally capable military force dictates the need for air-refueling capability. The KC-135's force multiplier and enhancement qualities fit perfectly into the NMS's definition of *strategic enablers*—those assets, "critical to the worldwide application of US military power and our military strategy."[3] A keystone to the success of both the NSS and NMS is that the United States maintain and enhance its air-refueling capability to ensure the capacity to remain engaged worldwide.[4] Without an adequate tanker force structure, US forces would not be able to rapidly project national power worldwide. Additionally, insufficient air-refueling assets would limit US ability to employ force, if required. Clearly, the tanker force is crucial to US national security and military strategies.

The Monsters under the Bed

"There is an unfortunate tendency today to assume that the end of the Cold War has resulted in a more stable global environment and a more secure future for America. Unfortunately, reality does not support this assumption. . . . In many respects, the world is a more unstable and dangerous place today than it was 25 years ago."[5]

The Department of Defense (DOD) has commissioned a group to examine what the world of tomorrow may look like from a security perspective. The United States Commission on National Security/21st Century (USCNS/21) has completed the first phase of its charter by taking a look at several factors effecting future world security issues and hypothesizing how these may effect US interests.[6]

The commission has identified a number of possible occurrences that do not bode well for a stable, secure international environment, requiring minimal US military involvement. Though it is not likely that "total wars" will erupt, conflict will undoubtedly be present, and as was shown during Allied Force, US air assets can be employed to major theater war (MTW) levels without the conflict itself being an MTW. "While the likelihood of major conflicts between powerful states will decrease, conflict itself will likely increase."[7] The commission also believes, "The United States will be called upon frequently to intervene militarily in a time of uncertain alliances and with the prospect of fewer forward-deployed forces."[8] Specifically, USCNS/21 identifies a number of conflict-prone regions. "Major powers—Russia and China are two obvious examples—may wish to extend their regional influence by force or the threat of force. Conflicts among old adversaries may continue, such as between India and Pakistan."[9] To understand what this means for the US military and more specifically, the KC-135 force, examine three regions where US interests and the chance for military conflict are high—Europe, East Asia, and the Greater Near East (Morocco to India).

In Europe, two areas could spark conflict. First, "Russia's post-communist future could mire Europe in pressing security concerns if that future produces either chaos and disintegration or a reborn authoritarianism prone to imperial ambi-

tion."[10] Second, "trouble could come from the states located between western Europe and Russia, where the prospects of economic and political reform vary markedly."[11] To be sure, any conflict in Europe would be of vital concern to the United States. In addition, the potential for escalation of any conflict involving nuclear-capable Russia is cause for global concern.

In the Balkans, USCNS/21 sees continued unrest, with little end in sight. "No enduring settlements to the conflicts in Bosnia or Kosovo are likely to emerge from the US and North Atlantic Treaty Organization (NATO)-brokered agreements that ended the wars there."[12] This portends another region of "permanent temporary" presence for US military forces (as in Southwest Asia [SWA]), stretching them thinner and increasing the operations tempo. While basing on the continent may be available, it is unlikely that the capacity of potential beddown locations and their proximity to the fight would be advantageous given the recent experience of Allied Force and the commission's prediction of conflict areas.

In East Asia, the commission has identified a traditional, but very real threat. "A new nationalist China could become decidedly hostile to the United States, and that hostility could be reciprocated."[13] One of the most devastating conflicts USCNS/21 predicts could revolve around "Taiwan in which the United States strongly sides with Taipei, a crisis made much more likely by Taiwan's renouncing of its 'one China' policy in July 1999."[14] But Taiwan is only one source of ignition for a US-China military conflagration. An aggressive China confronting a nuclear-armed, reunified Korea and/or a militarily assertive Japan may also bring the United States into a confrontation with China.[15] The threat in this region may be even higher than that of Russia due to tremendous Chinese military, economic, and technological advances in recent years.

Finally, in the Greater Near East, USCNS/21 believes, "Avoiding major warfare and the occasional violent regime collapse will not be easy over the next 25 years. . . . More than one major regional war will probably occur, causing a deterioration of the general regional security environment."[16] The commission identifies three sets of state actors who may be

involved in armed conflict in the future: India and Pakistan, Iran and Iraq, and Israel and its Arab neighbors. Though the United States maintains a presence in the region, it may be insufficient to stem the tide of war. "It is highly unlikely that all or most of these conflicts will actually break out over the next 25 years. *But it is even less likely that none of them will*" (emphasis in original).[17]

How does all this effect the US military in general and the KC-135 force in particular? First, the commission sees warfare continuing to push the technological envelope for weapons. "Conventional weapon systems will be characterized by an increasing emphasis on speed, stealth, lethality, accuracy, range and networked operations."[18] In addition, "There will be a greater premium on highly integrated and rapidly deployable forces."[19] As a "time and distance machine," the tanker will enable and enhance these capabilities by reducing movement time of aircraft, equipment, and personnel, increasing combat distances, and extending sortie duration.

Second, it is apparent that a permanent US forward presence will become difficult. "The political cost of such bases within American alliances will likely rise."[20] For the KC-135 force, this means more deployments from stateside bases. More significantly, though, it means the shooters and supplies will have to travel farther to get to the fight, necessitating a greater reliance on air refueling. In a joint Kosovo after-action report to the Senate Armed Services Committee (SASC), Secretary of Defense (SECDEF) William S. Cohen and Gen Henry H. Shelton, chairman of the Joint Chiefs of Staff (CJCS) said that Allied Force "tanker missions were longer than would typically be the case in a major theater war."[21] A soothing statement, but why would this be the case? How would an MTW cause our tanker bases to be closer and the missions to be shorter? Consider operations near Taiwan or Pakistan, where potential beddown bases may be further from the battle area than they were during Allied Force. The fact is that, despite large investments in overseas infrastructure, the current environment consists of limited access to useable beddown bases in non-traditional theaters. Tanker and receiver missions will be

longer, driving a need for more tanker aircraft and crews than are currently required.

Consider Europe, where, for almost 60 years, US military forces have been permanently based, providing a strong, stabilizing force. This force has operated within NATO for the better part of six decades. In the face of the European Union and the amalgamation of the continent's states, USCNS/21 believes this force may change. "It is hard to see how a truly integrated and independent European defense force could coexist with NATO."[22] A nonexistent or weakened NATO could cause the permanent US presence in Europe to evaporate. "The US military presence would probably diminish sharply, though the United States might still remain engaged in peacetime through periodic deployments."[23] These deployments during peacetime and the movement of forces during a conflict scream for a robust, modern tanker force. This need and the requirement for combat support tankers to operate from widely dispersed bases highlight the importance of maintaining current tanker assets, employing them wisely, and quickly evaluating candidates to fill future air refueling requirements.

"We interrupt this program . . ."

To evaluate whether the current KC-135 force structure is appropriate for today and the future (as presented by USCNS/21), this paper examines a scenario in which US forces must use current assets to handle two nearly simultaneous major theater wars. It is early January. United Nations (UN) sanctions against Iraq have been relaxed based on pressure from France, Russia, and China. China has continued its development of high technology weapons, both conventional and nuclear. In response, Taiwan has protested that this development and subsequent buildup are threatening Taipei's security. The United States issues statements supporting Taiwan's independence and makes vague promises to help assist Taiwan should China become overtly aggressive.

The Chinese announce a major arms sale to Iraq, including new aircraft, surface-to-air missiles, and an upgraded com-

mand and control system. US protests are answered by Iraqi claims of self-defense, based on Iran's increasing capabilities.

As February ends, the Chinese begin moving troops and equipment south, causing an increased state of alert for the Taiwanese military. US forces in the Pacific are also in higher readiness states. In late March, US satellites detect a missile launch from China with a southern trajectory. Taiwan is notified and launches alert aircraft to thwart a potential Chinese attack. The Chinese missile, a test shot over Taiwan, suffers a major engine malfunction not long after launch. This failure causes the missile's flight path to shorten, impacting just 20 miles south of Taipei. Luckily, the missile is unarmed. Nevertheless, the Taiwanese alert jets are directed to attack a Chinese naval vessel monitoring the test in the Formosa Straight. As the fighters engage the ship, alert messages are sent by both militaries. Within 24 hours, aerial engagements dominate the skies. Despite US and UN diplomatic efforts, neither side will back down. China sees a unique opportunity to retake "its" island. Taiwan is fighting for its survival.

US forces are directed into the theater under the command of the commander in chief of the US Pacific Air Command (USCINCPAC). An airbridge is begun almost immediately with US tanker resources based in Japan and the United States. Fighters and bombers from various US bases are deployed, utilizing the airbridge tankers and tankers deployed to the region. Beddown bases are not plentiful, with Korea, Japan, Australia, and Diego Garcia selected for US aircraft. C-5s and C-17s bring in Army troops for forward positioning, while Marines plan to go ashore in Taiwan and help with the island's defense. The initial stages of the Civil Reserve Air Fleet (CRAF) are activated. A presidential selected reserve call-up is underway for Air National Guard (ANG) and Air Force Reserve Command (AFRC) units.

The Formosa War, as it is being called, does not go well for Taiwan. Chinese fighters are rapidly gaining air superiority, while their bombers attack strategic positions and soften the area targeted for invasion. As US air forces enter the fight, able to transit the long distances from their bases to the combat zone due to an increasing number of tankers arriving

in theater, they are challenged by the high number of Chinese aircraft.

Approximately three weeks into the Formosa War, two corps of Iraqi troops, supposedly in eastern Iraq to thwart Iranian aggression, suddenly drive into Kuwait. US forces engage, but due to surprise and the speed of the attack, are forced to withdraw toward the Saudi Arabian border. Unlike the last invasion of Kuwait, Iraq does not stop, nor does it appear as if it will wait for massive US reinforcements to arrive prior to invading Saudi Arabia. Within hours, the president orders forces into the Gulf region, calls up more Reserve and National Guard units, and activates the Voluntary Intermodal Sealift Agreement (VISA) forces and increases stages of the CRAF.

Active duty tanker forces are now augmented heavily by ANG and AFRC units. An additional airbridge is constructed to SWA. Additional fighters, bombers, and combat support aircraft are directed (and in some cases redirected) to Saudi Arabia, streaming into what is now the second major theater war.

How does this scenario play out? Good question. Appendix A shows a table indicating the number of KC-135s being used by day for this scenario, as well as the assumptions and planning factors used to produce the numbers.[24] Particular attention should be paid to days 32 through 59. For these 28 days, tanker requirements exceed the 472 combat-coded KC-135s currently owned by the US Air Force.[25] In plain language, the Air Force is short of tankers; a shortage that could be compounded because the further the conflict moves from the established support infrastructure, the worse this scenario gets. This will force the Joint Force Air Component Commanders (JFACC) to play a negative sum game, effectively choosing the lesser of all evils. Take tankers away from the counterair mission and air superiority is at risk. Pull tankers from airbridge missions and critical supplies and equipment may not arrive in theater on time. Short tanker support for the strategic attack mission, and the enemy may not be defeated quickly. Clearly, there is reason for serious concern about the current tanker force structure's ability to support US military operations.

Some may argue that the force structure's basis of "nearly simultaneous" provides a longer gap between the two conflicts than just the three weeks given in the scenario. Why? How does one dictate to an opponent when he may or may not begin aggressive actions? "It is foolish to assume . . . that an adversary could not move fast enough on a second front to take advantage of heavy US engagement on a first front."[26]

This raises the question about the entire force structure basis, the 2-MTW. Is it really a strategy, or is it justification for not being able to counter anticipated threats? "The 'two-war strategy' often referred to, is a misnomer. It is not a strategy. It is a force-sizing standard."[27] Obviously, some measure must exist on which to base force structure. However, when that force structure is short of the critical resource of air-refueling capability, the needed combat and combat support aircraft cannot get to the theater quickly, vital supplies and equipment do not arrive in time, and the shooters in the fight will not have the endurance or distance capability to accomplish their missions. In short, without adequate air-refueling assets, the United States and its allies spill more blood and expend more resources in a longer, more protracted war. The only thing worse would be if the previous sentence ended in a plural.

On the Horizon

What does this mean? It certainly indicates that the USAF cannot afford to lose any KC-135s. In fact, it speaks loudly to needing more tanker aircraft. A Tanker Requirements Study for Fiscal Year-2005 (TRS-05) is being conducted at AMC with final results due out early in 2001.[28] It is vital that the TRS-05 recommendations be reviewed and acted upon quickly. The AMC Strategic Mobility Plan doesn't forecast a new tanker coming online until 2013.[29] Given that it takes approximately 17 years to achieve initial operating capability (IOC) of a new tanker, the acquisition timeline is already four years late to meet a 2013 IOC.[30] All the while, the KC-135 is aging as the average age of the Stratotankers approaches 60 years![31] Waiting 13 years to begin to fill the tanker requirement gap is an

eternity considering the consequences of not being fully able to fight the nation's wars. It is a gap that must be closed quickly and with an airframe that fully supports the air-refu - eling mission.

One area of force structure shortfall that can be remedied much quicker is that of crew ratio. Currently, AMC active duty units are manned at a 1.36-crew ratio (1.36 crews per aircraft), while other active duty units and the ARC are manned at 1.27.[32] These ratios are based on cold war SIOP mission requirements.[33] It has become clear from recent operations that these numbers are inadequate to support contingency operations. In testimony to the Senate Armed Services Committee on Allied Force, the SECDEF and CJCS reported, "Although we succeeded in providing the tanker support needed to sustain the air campaign, we are reviewing our tanker forces and crew ratios to determine whether they are sufficient to meet future needs in either major theater wars or other contingencies."[34] Generally in contingencies, higher crew ratios are requested to support alerts, improve crew rest capability, and help augment staffs. Allied Force operations required equivalent crew ratios of 1.8.

The AMC initiative is to increase the number of KC-135 crews by 75, thereby upping the crew ratio to approximately 1.56.[35] This will achieve two outcomes. First, it will work toward lowering the operations tempo and number of TDY days for the crew force. Second, and perhaps more importantly, an increased crew ratio of 1.56 will make any required increases in crew ratios for future contingencies less difficult to achieve, and therefore, better support the CINCs in achieving their objectives.

Notes

1. The White House, *A National Security Strategy for A New Century*, December 1999, iii.

2. Department of Defense, *National Military Strategy of the United States of America*, 1997, 11.

3. Ibid., 27.

4. Ibid., 7.

5. Congressman Floyd D. Spence (Indiana), chairman of the House Armed Services Committee, *Opening Statement for the Full Committee*

Hearing On Hart-Rudman Commission Report, 5 October 1999; on-line, Internet, 11 January 2000, available from http://www.house.gov/hasc.

6. The commission is also referred to as the Hart-Rudman Commission for its co-chairs, Gary Hart and Warren Rudman.

7. USCNS/21, *New World Coming: American Security in the 21st Century, Major Themes and Implications*, 15 September 1999, 8; on-line, Internet, 15 January 2000, available from http://www.nssg.gov.

8. USCNS/21, *New World Coming: American Security in the 21st Century, Supporting Research and Analysis*, 15 September 1999, 140; on-line, Internet, 15 January 2000, available from http://www.nssg.gov.

9. Ibid., 47.

10. Ibid., 59.

11. Ibid.

12. Ibid., 66.

13. Ibid., 78.

14. Ibid.

15. Ibid., 79.

16. Ibid., 90.

17. Ibid., 91.

18. Ibid., 49.

19. Ibid.

20. Ibid., 56.

21. Senate Armed Services Committee, 14.

22. Ibid., 63.

23. Ibid.

24. This discussion does not include KC-10s operating in the tanker role. The premise of the scenario was to address KC-135 requirements only. Additionally, a 2-MTW scenario will require a tremendous amount of airlift, no doubt, to opposite ends of the planet. The KC-10's invaluable airlift capability will remove many of its kind from the air refueling arena.

25. Specifically, these are primary mission aircraft inventory (PMAI). PMAI are aircraft assigned to a unit for performance of its wartime mission. This includes all USAF KC-135s, subtracting maintenance, modifications, and training and test aircraft. Additionally, 24 training-coded aircraft are assigned to the KC-135 schoolhouse at Altus Air Force Base, Oklahoma. Given that tanker pilots still need to be produced, even in a war, one scenario may have 14 jets called up for combat duty. This raises the number of available KC-135s to 486. In spite of this augmentation, tanker shortages still would exist from day 34 through day 54.

26. John T. Correll, "Back to Win-Hold-Win," *Air Force Magazine* 82, no. 10 (October 1999): n.p.; on-line, Internet, available from http://www.afa.org/magazine/editorial/10edit99.html.

27. Ibid.

28. Air Mobility Command, 50.

29. Ibid.

30. Headquarters AMC, *Air Mobility Master Plan*, in "The Making of the Weakest Link," Lt Col Stephen C. German (research paper, Air War College, April 1994), 23.

31. "Air Force Almanac," *Air Force Magazine* 82, no. 5 (May 1999): 64-65.

32. Air Mobility Command/XP, "Initiative Background Paper FY02-07 POM On KC-135 Squadrons (PE 41218F) KC-135 Aircrew/Maintenance Shortfall CCN 02A2M121MM," n.d.

33. Ibid.

34. Senate Armed Services Committee, 14.

35. USTRANSCOM, Presentation: "USCINCTRANS House Armed Services Committee Hearing Information," n.d.

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Chapter 5

"VOTE" for Air Refueling

Unlike airlift, which must maximize efficiency because requirements often exceed available resources, combat support air refueling places a premium on effectiveness.

—Lt Gen William Begert
Vice Commander
US Air Forces in Europe
August 1997–August 1999

Identifying problems in the force structure alone is insufficient. Force structure is only one part of the bigger picture for the KC-135; force management must also be reviewed. For the tanker force, Allied Force would expose both operational and doctrinal weaknesses. Having been in the inventory for nearly half a century, it would seem that KC-135 employment concepts would be tried, true, and etched in stone. However, since the KC-135 moved from SAC's single integrated operational plan (SIOP) mission to one of "Global Reach" under Air Mobility Command (AMC), the tanker has been a square peg forced to fit into the round hole of airlift. The ensuing discussion and recommendations fall short of recommending Tanker Command. However, tankers are not airlifters and attempting to force them into airlift doctrine and operating structures creates ineffective command and control arrangements which will only confuse the war-fighting commanders in chief (CINC) and diminish the effectiveness of this limited national resource.

To help correct some of the air-refueling shortcomings, recommendations will be made for the KC-135, founded on a focused methodology the author calls vision, organization, training, and employment (VOTE). This four-pronged approach to improve the effectiveness of tankers will reap rewards in the form of better planning and provide the war-fighting CINC with the force multiplier and enabler that is the KC-135.

If It IS Broken . . .

One hundred seventy-five KC-135s were deployed to Allied Force with the percentage of available tankers deployed nearly equal to that of Desert Storm.[1] Initially, the analysis justifying the tanker requirement went very well. However, as the major North Atlantic Treaty Organization (NATO) offensive, Papa Bear, progressed in its planning, the tanker requirements could no longer be evaluated accurately due to a lack of experienced tanker planners.[2] This caused the initial Papa Bear requirement for tankers to be exaggerated.[3] The reasons for this are discussed later.

Three areas of the operation require review to help find and fix problems: (1) tanker planning available to the combatant commands (specifically looking at US Air Forces Europe [USAFE], but also focusing on other commands); (2) difficulties assembling tanker planning expertise once the shooting started; and (3) the implementation of tanker doctrine and the Director of Mobility Forces (DIRMOBFOR).

Maj Scott Mischo was the chief of Tanker Plans for USAFE prior to and during Allied Force. He and a handful of others were the only air-refueling experts resident in USAFE.[4] As the theater's link back to AMC, the Air Mobility Operations Control Center (AMOCC) in USAFE coordinated the movement of AMC aircraft in Europe. However, despite this conduit, AMC was not actively engaged in determining tanker requirements for Allied Force. This situation was exacerbated by the fact that no US European Command (USEUCOM) deliberate plan for an Allied Force-type operation existed that Major Mischo and his planners could modify.[5] This situation, however, is not unique to USAFE.

The mindsets that "tankers will always be there" and "tankers are assumed" have become part of the Air Force's mental lexicon. In 1994, the Air War College's wargaming exercise, CAMPEX, addressed tanker employment by saying, "Air refueling . . . assumed to be present in adequate supply. Our experience in testing Campex with previous classes showed that the addition of these assets increased the complexity of the simulation without contributing to the outcome."[6] Five years later, the Air Command and Staff College war game, Tropic Thunder, made a similar claim.[7] It is not surprising

then, that the Air Force fights, and plans to fight, using the same inadequate assumptions with which it trains. Under US Southern Command, US Army South Functional Plan 6150-99, Ecuador Volcano Response Plan lists the following under paragraph 1-f, Assumptions: "(7) (U) Refueling support will be available to support the deployment of forces."[8] A slew of questions abounds. Where will the tankers come from? How many tankers will be needed? From where will the tankers operate? Is sufficient ramp space and ground support equipment available at the beddown locations? Has any thought been given to employing KC-135s in a region of active volcanoes given that the KC-135 operating manual is clear that the jet will not be flown through volcanic ash?[9]

Likewise, the US Pacific Command's (USPACOM) war plans may be incomplete. Despite detailed plans for the first 72 hours, tanker requirements for the Korean theater have many holes, including unknown Navy air-refueling requirements due to lack of inputs from Navy planners.[10]

Certainly, these tanker considerations should not drive these or any other operation. However, it is becoming nearly impossible to simply assume unlimited, timely tanker support. For all intents and purposes, though, that is where the combatant commands have migrated, and one of the only things that didn't cause this line of reasoning to blow up in NATO's face during Allied Force was a lack of (another?) MTW.[11] Tankers may not always be available in the unlimited quantities the CINCs presume and desire.

During Allied Force, as the supporting command, US Transportation Command (USTRANSCOM) was to provide USEUCOM what they requested under the secretary of defense's (SECDEF) tasking. The issue though, becomes who is validating the tanker requirements for the CINCs? Typically, a third party confirms the need for, and level of refueling support requested and USTRANSCOM, AMC, and the Tanker Airlift Control Center (TACC) process this validated request. For Allied Force, J-33, the Joint Operations Division-Europe was supposed to balance USEUCOM's tanker requests with other priorities and validate them. However, with no tanker expertise in J-33, the philosophy was that the CINC knew best and

he was given a blank check for tanker requests.[12] And with over one-half of the KC-135 fleet residing in the ANG and AFRC, these ARC jets and crews would have to be tapped. The method to accomplish this was through a presidential selected reserve call-up (PSRC), mostly of tanker units, and the institution of a stop-loss program, preventing active duty personnel in specific career fields from separating or retiring.[13]

The long-term effects of using the Air Force Reserve Command (AFRC) for Allied Force, especially the PSRC, may not be known for some time. Civilian employers of those reservists called up may be hesitant in the future to allow the reservist leave for voluntary reserve days. Against the background of this call-up (that actually covered less than two months of operations), many senior AFRC leaders believe that a PSRC for anything less than 180 days does more damage to employer-AFRC relations than the good of the call-up. Given the desperately needed support of civilian employers for guard and reserve members participating in other than planned training activities and deployments, PSRCs must be evaluated carefully.[14]

Another question, already alluded to, lurks in the darkness. What if a second large operation occurred simultaneously with Allied Force? It is not inconceivable that Iraq or North Korea would have found US preoccupation in Kosovo an ideal opportunity to further their interests militarily. Given that tankers are nearly irreplaceable in almost any air campaign, where would the extra tankers have come from?[15] The point of these questions is that once shooting starts, it is nearly impossible to plan for future operations and execute today's missions with a small staff, led by an O-4 with no "top cover," as occurred during Allied Force.

This discussion, then, leads to the second argument, namely, that once the war started, a lack of experienced personnel stretched the tanker planning shop to the breaking point. This contributed to the Papa Bear requirement for additional tankers that may not have been needed in such quantities—there were not enough qualified tanker planners to analyze the numbers.[16] Major Mischo was extremely qualified; he was a former KC-135 instructor pilot, had training in air operations center (AOC) operations, and had been involved in

the Allied Force tanker plan from day one. As talented as he was, though, he could not run the operation by himself while also developing future tanker requirements. Requests for augmentees in most cases provided motivated, but untrained personnel. In one case, an officer in a nonflying staff assignment had been sent, despite almost no recent experience in the KC-135 or tanker operations. Given the amount of time and energy needed to train him that would have detracted from prosecuting the war, he was returned home.[17]

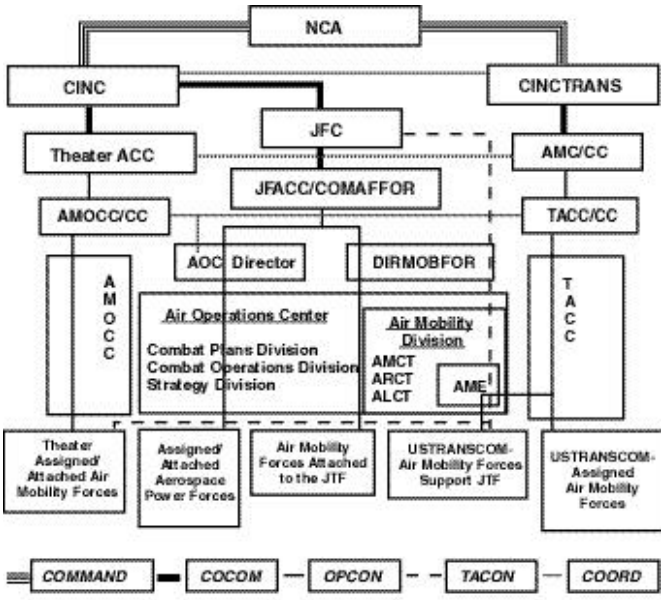
While the war was progressing, Headquarters AMC was not directly involved in the tanker planning. This is curious given the need for additional tanker planners in the theater. As the KC-135 weapon system manager, AMC had access to an entire headquarters staff and the resources of four active duty KC-135 wings. Nevertheless, the resources were never requested. There are some possible reasons for Headquarters AMC's extremely low profile regarding tanker planning during Allied Force. First, Lt Gen Michael C. Short, the combined forces air component commander (CFACC), had worked with Major Mischo on the initial plans and put a lot of faith in him.[18] It is understandable that General Short felt comfortable with his tanker planner, wanted to maintain that relationship during the war, and may have been concerned about using unknown AMC planners. Clearly, he wanted to own the guy that wrote his tanker plan. To their credit, AMC had, in fact, been attempting to place an O-6 KC-135 operations group commander in the theater to act as a tanker director in the CAOC. For reasons explained later, it would take nearly two months for this colonel to arrive at the CAOC in Vincenza.[19]

Lt Gen Michael C. Short, combined forces air component commander, Operation Allied Force

Second, the tanker combat planning background of some officers on the Headquarters AMC staff was questionable. As AMC was attempting to analyze the Allied Force air tasking order (ATO) to confirm the need for the tanker force requested

from USAFE, the US Air Forces in Europe (USAFE) AMOCC was informed that the Headquarters AMC personnel involved could not read the air tasking order.[20] Obviously, there are personnel at HQ AMC, most notably in the tactical air control center (TACC), who would have experience in tanker combat operations and with ATOs. Nevertheless, the staff members responsible for the analysis of the tanker requirements were not experienced and provided little in the way of support to the air refueling plans of Allied Force. Thus, despite what would have seemed like a natural source of tanker combat planning and expertise, AMC was, for the most part, out of the loop.

This Air Force-wide tanker planning problem was highlighted when the SECDEF and the chief of the Joint Chiefs of Staff (CJCS) told SASC, "We also found that our ability to plan in theater, in real time, for the most effective use of our tanker fleet was limited."[21] How did the Air Force get to this situation where building tanker planning experience and including competent tanker planners in sufficient quantities has become



Source: Air Force Doctrine Document 2-6.2, *Air Refueling,* 19 July 1999, 34.

Figure 1. Command and Control for Air Refueling Forces

such a problem? To look for answers, first consider current tanker doctrine.

Figure 1 identifies the command and control structure as described in AFDD 2-6.2, *Air Refueling Doctrine*. In the words of Bill Paxton's character in the movie *Twister*, "What the hell is that!?"[22] Simplicity, a fundamental principle of war, is violated with every twisted turn, overlapping box, and intersecting line in the above "spaghetti diagram."[23] In addition, consider the descriptions of this command structure from AFDD 2-6.2 in appendix B.

If the wiring diagram appears confusing, the description only exacerbates this chaos. For example, five different organizations, TACC, AMOCC, AMD, ARCT, and the air refueling plans section within the combat plans division of the AOC, are responsible for planning, tasking, and executing air refueling missions. If the AOC director controls combat and combat support, why is the DIRMOBFOR responsible for air refueling (as an air mobility function)? Who does the air refueling planning section (collocated with combat plans—not part of combat plans!) report to—the DIRMOBFOR, the AOC director? Who has final approval of the air refueling part of the ATO—the DIRMOBFOR, the AOC director? Clearly, this whole organizational scheme is confusing at best, unmanageable at worst.

The entire DIRMOBFOR and subordinate structure exists because "the global nature of air mobility [requires] special attention . . . to balance these resources with national requirements and priorities."[24] On an intertheater level, this makes sense, and will, in fact, be advocated later. However, in an intratheater role, what makes air refueling so special as to require its own separate organizational arrangement? Airborne warning and control system (AWACS) aircraft, in high demand globally, are in shorter supply than tankers and they don't have their own command structure separate from the joint forces air component commander (JFACC) and AOC.[25]

Air Force doctrine, as defined, is "authoritative, but not directive."[26] Against this background, it is easy to see why General Short may have preferred to use his own tanker planning organization and people that he knew and trusted, versus trying to build a system around the doctrine of air refueling

command and control. Additionally, the Allied Force command and control "fell onto an existing AOC structure. The CAOC at Vicenza, Italy, was formed in 1993 for Balkan operations, and it evolved over the years as the focus of operations shifted from a no-fly zone to peacekeeping in Bosnia-Herzegovina."[27] Mobility command and control, as prescribed, is simply too confusing to comprehend in a peacetime situation, and a nightmare maze of thin, thick, and dashed lines of even less relevance when preparing to kill people and destroy things. If the JFACC/CFACC can't readily understand and use a tanker command and control structure, then the structure serves no purpose. Adding more people to an already mind-boggling air refueling and mobility command and control system would only add extra confusion and uncertainty. This might explain why General Short may have balked at not only additional help for his tanker planners, but also the addition of a senior AMC officer to act as AMC's air-refueling liaison to the CAOC.

VOTE Early and Often

The KC-135 weapon system can be much more effective in helping the combatant commanders implement the US's military instrument of power. Four areas must be addressed to make this happen. First, the tanker force must have a **vision** of its own creation and development. Second, the **organization** of tanker assets and planning functions, both in the peacetime training environment and in a shooting war, must be overhauled and simplified to infuse tankers directly into the tactical planning functions and conduct training along these lines to mirror how the tankers intend to fight.

Third, this **training** must be formalized within a peacetime structure and given senior leadership oversight to ensure that not only will the tanker crews successfully accomplish their combat missions, but that they will survive in the process. Fourth, tanker **employment** during war and other contingencies, as it relates to doctrine, must be simplified and acknowledge that in the combat support role, the tanker is no longer a mobility asset, but a combat aircraft and a shooter's best friend.

I Can See Clearly Now . . . Or Can I?

A vision is "a long-term conception of where we are going . . . [it] is also a picture of the future."[28] For the KC-135 weapon system, there appears to be no vision.[29] Where is the KC-135 going? How is the tanker adapting to a changing environment? Who should be asserting this vision? In the "good old days" of alert, there was no question that "Mother SAC" was the custodian of the tanker force and provided it with a very clear mission: be prepared to get the bombers to their targets and act as America's guardians of peace through nuclear deterrence. Today, though, who is providing the stewardship for the tanker force, so that it may help further US interests? It appears that air refueling's senior leadership as well as its customers have defined the KC-135's vision for it without a clear understanding of how air refueling enables, enhances, and extends our military forces.

Tanker crews have long prided themselves on "always being on time, on track" and have a reputation for making the mission happen.[30] The anecdotal stories of tankers "leaning forward" abound.[31] While this is excellent customer service, it does little to insert the KC-135 into the fight. Rather, it makes the tanker an ancillary piece of the air campaign. Instead of being handed the air-refueling requirement after the shooters have developed their plan, a tanker planner should work with the shooters as they develop their strike packages and ingress/egress routes to offer suggestions on how best to maximize the limited tanker assets.

With the absence of a formal current vision, the KC-135 vision statement appears to be "Whatever You Want." Instead, it should read more like, "Air Refueling Experts and Integral Team Members, Vital to Supplying the Force and Bringing the Fight to the Enemy." Without this vision, the tanker force will continue to wallow in an ethereal plane, as pseudo-mobility assets—not a part of the shooter community, yet not totally integrated into the airlift world. The KC-135 is a major weapon system. It should act and be treated as such.

Train Like You Fight

"On the day of battle, soldiers and units will fight as well or as poorly as they are trained."[32] This seemingly logical statement is lost on the tanker community and its senior leadership. Training requirements exist for crews to maintain currency, but what about to fight? What training exists to prepare crews and planners to integrate and participate in the process of executing an air campaign? Where is the combat mentality in the tanker community?

Red Flag exercises allow some semblance of combat simulation for KC-135s, but tanker crews' participation is limited at best.[33] The shooters get their fuel prior to the start of the war, marshal, fight, conclude the war, take a post-strike fuel onload if needed, and then go home.[34] Rarely do the tankers get the opportunities to practice their tactical maneuvers.[35] Even if targeted, the tankers would not have enough room to maneuver defensively due to the limits placed on their airspace at the Nellis range complex.[36] More importantly, though, tanker planners are not involved. The AMC detachment at Red Flag is simply told what time the tankers need to be on track and how much to offload.

A step in the right direction can be found at Fairchild Air Force Base, Washington. Here, the KC-135 Combat Employment School teaches a five and one-half month-long course to KC-135 crews.[37] The goal is to provide KC-135 crews hands-on experience in dealing with crisis and combat flying scenarios, a working knowledge of joint combat environments, and a baseline of planning and doctrinal procedures in combat and contingency operations.[38] This course, along with the new Tanker Planner Course at Hurlburt Field, Florida, represents initiatives designed to integrate tankers into the fight.[39]

More can be done, though. A wider-reaching solution is to create Combined Task Force-Combat Air Forces, or CTF-CAF. This would be a peacetime organization much like CTF-294 is in relation to US Strategic Command (USSTRATCOM). It would be responsible for the integration and planning of tanker assets into Air Combat Command exercises and daily training activities. Since this function will entail much scheduling coordination, the TACC will be the responsible AMC

organization, with the TACC vice commander dual-hatted as CTF-CAF commander. A small planning staff will be assigned to integrate with Air Combat Command (ACC) planners and schedulers as well as staff agencies at Joint Forces Command.

On selected daily training sorties (likely for a week at a time) and for larger exercises, tanker planners will work side-by-side with their shooter counterparts. For exercises, the tanker planners will be part of the ACC strategy, combat plans, and combat operations sections, where they will learn how the combat air forces put missions together, while showing what the tanker brings to the fight and how it can best be used. This will allow the tankers and shooters to develop an understanding of each other's planning processes and requirements. For the next war, these same people, having trained together, will be better able to fight together.

A critique of CTF-CAF may be the sheer cost of temporary duties to facilitate these meetings. Using the tanker to shuttle people during regularly scheduled training sorties will alleviate the airfare. The investment of per diem and billeting costs for two tanker planners for a week at their ACC host's base (approximately $1,100) is pittance compared to saving just an hour of KC-135 flying time (approximately $2,000) in combat when the air-refueling asset could be better used elsewhere. Additional administrative and budgetary issues may surface, though they could undoubtedly be worked out.

The Family that Trains Together, Fights Together

Now that the tankers and shooters have trained together and been integrated into the combat plans and combat operations sections for peacetime exercises through CTF-CAF, it is time to restructure the doctrine that currently places artificial barriers between them. To begin, the proposed structure (fig. 2) is such that a continuum of force types exists. On the far left reside the combat forces, to include combat supporting tankers. Integrated into the Combat Plans, Combat Operations, and Strategy Divisions are tanker planners working directly for the AOC director. These air-refueling experts' only

mission in life is to plan, coordinate, and develop air tasking order inputs for combat (shooters) and combat support (AWACS, etc.) air refuelings. The tankers in theater executing combat air refueling are under the operational control of the JFACC/COMAFFOR and dedicated to that mission. These tankers and their planners are dedicated to the combat theater just like the fighters and bombers. Should the DIRMOBFOR or TACC need any of them to support theater or strategic mobility operations, the JFACC will set priorities and decide if they can be spared for noncombat operations.

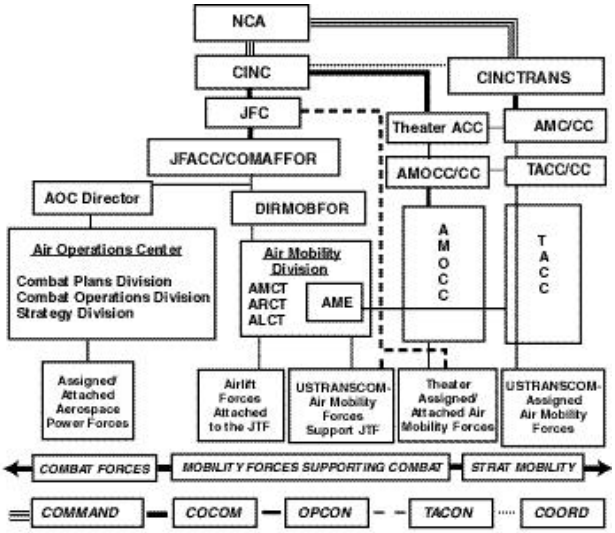


Figure 2. Proposed Command and Control for Air-Refueling Forces

In the center are mobility forces supporting combat. These are forces that support the combat and theater operations but are not involved with the actual "shooting." Here, the DIRMOBFOR has authority under the JFACC and directs the Air Mobility Division (AMD), consisting of the Air Mobility (AMCT), Air Refueling (ARCT), and Airlift Control Teams (ALCT). The AMCT and ALCT teams' responsibilities are the same as those spelled out in the current mobility and air refueling doctrine. The ARCT works those air-refueling missions not involving

combat operations. In addition, TACC directs AMC-controlled mobility assets coordinated through an AMC-provided Air Mobility Element (AME). Air refueling operations that may reside in this area include terminal legs of an airbridge moving fighters or supporting strategic or noncombat lift into/out of theater, or the rotation of tanker units into/out of theater.

The far right end of the spectrum deals with strategic mobility. Here is where the heavy strategic airlift activities are controlled. Air-refueling operations under this area may be airbridges or support for the strategic airlift, flown from home station or an intermediate location outside of the combat theater. These assets are controlled exclusively by AMC's TACC.

To summarize this new air refueling command and control structure, it is important to note that the DIRMOBFOR and associated structure is removed from controlling tankers involved in combat operations. These assets are managed solely through the AOC director and his strategy, combat plans, and combat operations staffs. These staffs will include not only fighter, bomber, intelligence, and surveillance planners, but also the air refueling experts, working directly with the same people they trained with as a result of CTF-CAF.[40] These tanker aircraft and their planners belong to the combat theater in exactly the same way as the fighters and bombers they are supporting, with no requirement for "top cover," because they work for the same "team."

VOTE Yes!

A vision created by the KC-135 community, for the KC-135 community is vital to establishing a direction and sense of purpose within the weapon system. But a vision alone is not enough. Organizational changes must follow. These include establishing CTF-CAF with the full support of, and direction from Air Force senior leadership, and reorganizing how we conduct wartime air refueling operations. This will allow tanker crews and planners to best learn, coordinate, and insert themselves into the Combat Air Forces' planning and execution process. This will benefit both communities and ease the transition when it's time to fight the nation's wars.

The same people who trained together will fight together in a nearly seamless arrangement and with a spirit of cooperation. Finally, air refueling will be executed in the theater using a continuum that defines operations more clearly and will allow the JFACC to view integrating his air-refueling assets as a sound process, not a nightmarish coordination exercise. With the implementation of these changes, the headaches and possibly wasteful use of air refueling resources will be blunted before they become detrimental to US military capability.

Notes

1. A few disclaimers: first, the following discussion of US operations in the Kosovo campaign, also known as the "Air War Over Serbia" (AWOS), is held in absence of the final after-actions report. At the time of this writing, the official analysis is still being compiled and reviewed. Nevertheless, as presented here, the data assembled and interviews conducted provide a reliable, beneficial review of events as they occurred in the eyes of those involved. Lt Gen William Begert, USAFE/CV, Presentation: "Kosovo Lessons Learned: Air Force and Air Mobility," n.d. Additional aircraft were deployed to theater outside of the map titled Allied Force KC-135 Basing. Additionally, numerous tankers transited in and out of the theater supporting airbridge activities.

2. Maj Scott Mischo, chief of readiness, 32 AOS, interviewed by author, 9 January 2000.

3. Ibid.

4. Mischo interview, 9 January 2000. A total tanker planning staff of four officers (two each, USAFE Air Mobility Operations Control Center and 32 AOS) and two NCOs (USAFE AMOCC) are assigned in USAFE.

5. Maj Scott Mischo, chief of Readiness, 32 AOS, interviewed by author, 2 December 1999.

6. Air War College, "Campaign Planning," *CAMPEX 94* in "The Making of the Weakest Link," Lt Col Stephen C. German (research paper, Air War College, April 1994), 13.

7. Air Command and Staff College, "ACSC Distance Learning, Multimedia Edition Version 2.1," CD-ROM, Maxwell Air Force Base, Ala.: ACSC/DED June 1998. Beginning with the 1999–2000 version, the ACSC Distance Learning program no longer uses Tropic Thunder. The replacement does account for the need for air refueling assets.

8. US Army South Functional Plan 6150-99 (U), *Ecuador Volcano Response Plan* (Fort Buchanan, Puerto Rico: Headquarters, US Army South, 1 December 1999), 2.

9. Air Force Technical Order (T.O.) 1C-135(K)R-1, "Flight Manual—USAF Series KC-135R/T Aircraft," Change 46, 15 August 1998, 7–14.

10. Maj Steve Tucker, AMC, Regional War Planner, interviewed by author, 7 December 1999.

11. As shown previously, the Pentagon does not consider Allied Force a "major theater war," though the Air Force does.

12. Col Stephen C. German, vice commandant, Air Command and Staff College, interviewed by author, 25 February 2000.

13. Office of Assistant Secretary of Defense (Public Affairs), News Release, "Secretary Cohen Announces Presidential Selected Reserve Call-Up," 27 April 1999, n.p.; on-line, Internet, 21 October 1999, available from http://www.defenselink.mil/news/Apr1999/b04271999_bt197-99.html.

14. Lt Col James Mikolajczyk, Air National Guard advisor, Air War College, interviewed by author, 16 December 1999.

15. Col Stephen C. German, vice commandant, Air Command and Staff College, interviewed by author, 14 January 2000. The tankers would have most likely been pulled from Allied Force.

16. Mischo interview, 2 December 1999.

17. Ibid.

18. Ibid.

19. Ibid.

20. Mischo interview, 2 December 1999.

21. Senate Armed Services Committee, *Hearing On Kosovo After-Action Review*, Joint Statement of William S. Cohen, Secretary of Defense, and Gen Henry H. Shelton, chairman of the Joint Chiefs of Staff, 14 October 1999: 14.

22. Bill Paxton, *Twister*, Warner Brothers and Universal Pictures, 1996.

23. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, September 1997, 11.

24. AFDD 2, *Organization and Employment of Aerospace Power*, 28 September 1998, 57.

25. 32 E-3s versus 550 KC-135s. "Air Force Almanac," *Air Force Magazine* 82, no. 5 (May 1999): 63.

26. AFDD 2-6.2, *Air Refueling*, vii.

27. Begert, "Kosovo & Theater Air Mobility," 16–17.

28. Maj Bryan Zak, "Today's Air Force Requires Big *L*'s That Support and Encourage Little *l*'s," *Concepts for Leadership*, AU-24 (Maxwell Air Force Base, Ala.: Air University Press, 1996), 221.

29. Maj Brad Davis, AMC/DOOO, Chief of Tanker Operations Policy, interviewed by author, 6 December 1999.

30. "Without tankers, we could not have fought this war." General Short, Operation Allied Force Combined Forces Air Component Commander in "Air Mobility Doctrine Implications Of The Air War Over Serbia: An Interim AMC/XPD Assessment," Lt Col D. Richard Simpson, Directorate of Plans and Programs, Air Mobility Command, n.d.

31. Anecdotal examples include: "If four tankers are needed, six are provided;" "If you need your tankers at 1300, they'll be there at 1230."

32. Mischo interview, 2 December 1999. No excess tanker capability existed in Allied Force. Due to the limited airspace and tanker tails, the exact number of KC-135s had to arrive at the assigned track, precisely at the ATO-directed time.

33. Field Manual 100-5, *Operations* (Washington, D.C.: Headquarters, Department of the Army, 14 June 1993), 1–5.

34. Lt Col Richard Scarine, Mobility Operations, Red Flag Operations, interviewed by author, 9 November 1999.

35. Ibid.

36. Ibid.

37. TSgt Karen Petitt, "KC-135 pilots, navigators become multi-dimensional experts with new Combat Employment School," *AMC News*, 7 January 2000, np.; on-line, Internet, available from http://public.safb.af.mil/hqamc/news/january/000104.htm.

38. Ibid.

39. Ibid.

40. The JFACC and AOC director may build their staffs based on whatever expertise they feel is needed. AFDD 2, 68.

Chapter 6

Conclusions

People hate change, and with good reason. Change makes us stupider, relatively speaking. Change adds new information to the universe; information that we don't know. Our knowledge—as a percentage of all the things that can be known—goes down a tick every time something changes.

—Scott Adams
Author, *The Dilbert Principle*

Without a doubt, air refueling is an indispensable capability that the United States Air Force possesses; it is critical to fighting today's wars. It is "important to the style of waging war that we've built."[1] Air refueling allows the war fighter to get to the fight. "Global Power" is only a catch phrase without the nearly unlimited range tankers give the combat air forces. Not one single fighter or bomber is able to "reach out and touch someone" without first having made the journey into the theater—a journey that would be much more time consuming and costly (in terms of national treasure and precious resources) without air refueling.

A C-141 Heads Down: An "Airbridge" behind a KC-135

Tankers also enable the logistics flow by building airbridges, allowing the people, supplies, and equipment necessary for the prosecution of war to arrive over great distances in time frames measured in hours, not days.

Once in theater, tankers assume a new role—combat support. Providing vital air refueling to the shooters allows their effective combat range to increase dramatically. Air patrol, command and control, interdiction, close air support, and reconnaissance missions provide longer coverage and require fewer aircraft and crews in theater when supported by tankers.

Tankers, however, are not an unlimited resource—only a fixed number remain, with no replacement due for some time. In addition, while continuing to age, KC-135s exist in inadequate numbers to support the strategy of fighting two nearly simultaneous major theater wars. For the crews, increasing the KC-135 crew ratio is imperative. Referring to the cold war era, Gen Charles T. Robertson Jr., USCINCTRANS and AMC commander said, "Today, the tanker crew ratio that served us well through those years . . . simply can't, I repeat 'can't', sustain the pace of modern high intensity air operations."[2]

Tankers must be better integrated into combat operations. Simply assuming air refueling will be provided is a thought process that has become inadequate and potentially dangerous. KC-135s don't just appear. They must be integrated into operations from the beginning.

Finally, a course of action must be put in place to revitalize and restructure the tanker force and the manner in which it supports the US military strategy. Developing a vision for the weapon system establishes a basis for all other actions and defines for air-refueling customers what the tanker's capabilities are and what it brings to the fight.

Tankers need to work in peacetime with those they will support in war. Establishing CTF-CAF enables the tankers to be integrated into the combat planning and operations activities while giving the shooters and air-refueling experts insights into what each does to create a better synergy with these national resources.

Finally, it is critical to the future success of the tanker that the doctrine for command and control of air-refueling assets

be changed. Tankers working with combat and combat support aircraft need to fall directly under the JFACC with their planners working in the AOC directly for the AOC director. The DIRMOBFOR has a place, but *not* in the role of intratheater air-refueling operations.

America's Core Tanker for Many Years to Come

Where to, Mister?

The future for the US military is uncertain. To be sure, it will include a changing world environment where technology and information create battlefields devoid of the human carnage of past conflicts, but with devastating destruction nevertheless. For the USAF, the ability to project and utilize massive, precise force will still be an option that the political leadership will look to for quick, "clean" results.

To support this worldwide presence, air refueling will be crucial. With fewer overseas bases available and conflict-ravaged regions stretching to the far reaches of the globe, the KC-135 will continue to be the US military's force enabler and force multiplier—a role it has played exceptionally well for nearly half a century, and will continue to play long into the future.

Notes

1. Maj Scott Wilhelm, AMC/XPY, interviewed by author, 7 December 1999.

2. Gen Charles T. Robertson Jr., commander, US Transportation Command and Air Mobility Command, address to the Airlift/Tanker Association Annual Convention, Dallas, Texas, 6 November 1999; on-line, Internet, 4 January 2000, available from http://public.scott.af.mil/hqamc/speeches/ata_99.htm.

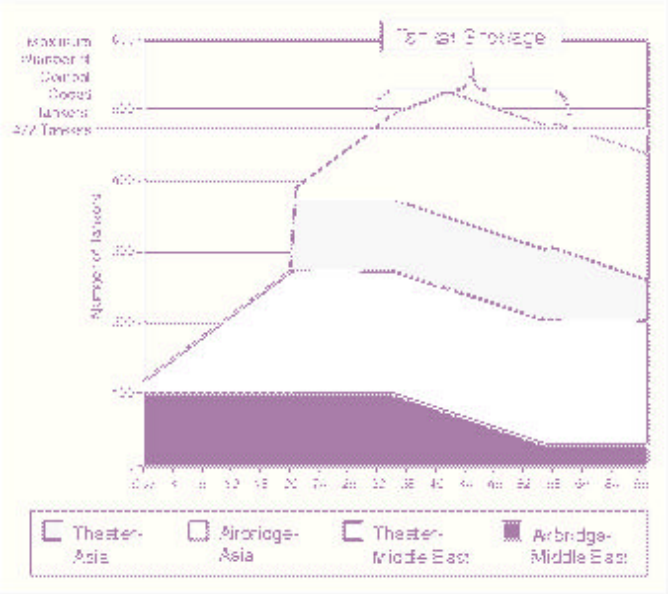
Appendix A

KC-135 Usage
in a 2-Major Theater War Scenario

Day	1	2	3	4	5	6	7	8	9	10	11
Airbridge-Asia	100	100	100	100	100	100	100	100	100	100	100
Theater-Asia	23	31	38	46	54	62	70	77	85	93	101
Airbridge-Middle East											
Theater-Middle East											
TOTAL	**123**	**131**	**138**	**146**	**154**	**162**	**170**	**177**	**185**	**193**	**201**
Day	12	13	14	15	16	17	18	19	20	21	22
Airbridge-Asia	100	100	100	100	100	100	100	100	100	100	100
Theater-Asia	109	116	124	132	140	148	155	163	171	175	175
Airbridge-Middle East											100
Theater-Middle East											21
TOTAL	**209**	**216**	**224**	**232**	**240**	**248**	**255**	**263**	**271**	**275**	**396**
Day	23	24	25	26	27	28	29	30	31	32	33
Airbridge-Asia	100	100	100	100	100	100	100	100	100	100	100
Theater-Asia	175	175	175	175	175	175	175	175	175	175	175
Airbridge-Middle East	100	100	100	100	100	100	100	100	100	100	100
Theater-Middle East	29	36	44	52	60	68	75	83	91	99	107
TOTAL	404	**411**	**419**	**427**	**435**	**443**	**450**	**458**	**466**	**474**	**482**
Day	34	35	36	37	38	39	40	41	42	43	44
Airbridge-Asia	100	100	97	93	90	87	83	80	77	73	70
Theater-Asia	175	175	175	175	175	175	175	175	175	175	175
Airbridge-Middle East	100	100	100	100	100	100	100	100	100	100	100
Theater-Middle East	114	122	130	138	146	153	161	169	175	175	175
TOTAL	**489**	**497**	**502**	**506**	511	**515**	**520**	**524**	**527**	**523**	**520**
Day	45	46	47	48	49	50	51	52	53	54	55
Airbridge-Asia	67	63	60	57	53	50	47	43	40	37	33
Theater-Asia	175	175	175	175	175	175	175	175	175	175	175
Airbridge-Middle East	100	100	100	100	100	100	100	100	100	100	100
Theater-Middle East	175	175	175	175	175	175	175	175	175	175	175
TOTAL	**517**	**513**	**510**	**507**	**503**	**500**	**497**	**493**	**490**	**487**	**483**
Day	56	57	58	59	60	61	62	63	64	65	66
Airbridge-Asia	30	30	30	30	30	30	30	30	30	30	30
Theater-Asia	175	175	175	175	175	175	175	175	175	175	175
Airbridge-Middle East	100	100	97	93	90	87	83	80	77	73	70
Theater-Middle East	175	175	175	175	175	175	175	175	175	175	175
TOTAL	**480**	**480**	**477**	**473**	**470**	**467**	**463**	**460**	**457**	**453**	**450**
Day	67	68	69	70							
Airbridge-Asia	30	30	30	30							
Theater-Asia	175	175	175	175							
Airbridge-Middle East	67	63	60	57							
Theater-Middle East	175	175	175	175							
TOTAL	447	443	440	437							

Total Number of KC-135s Employed for a Hypothetical 2-MTW.

White Numbers on Black Background Indicate Exceeding Total of 472 Available Combat-Coded KC-135s



Graphic Display of Total Number of KC-135s Employed for a Hypothetical 2-MTW.

A number of assumptions are made to produce the above information. These assumptions, however, are based on documented operational usage, rates, and support for combat and airlift forces.[1] They are, however, based solely on open-source material (unclassified) and represent a number of interpretations, interpolations, and extrapolations of the published data. The intent is not to prove conclusively that inadequate KC-135 forces exist; rather it is to show the thin line between tanker force structure capabilities and requirements. The assumptions are highlighted below:

(1) The initial baseline for airbridge tankers is 100 KC-135s for five weeks. One hundred tankers were used in Desert Shield/Desert Storm to support both the Pacific and Atlantic airbridges, helping to move both the shooters and the strategic airlift forces into the theater.[2]

(2) The airbridge begins to decrease after five weeks. This is based on the fact that approximately five weeks after the deployment of forces to Saudi Arabia for Desert Shield, Gen Chuck Horner told Gen Norman Schwarzkopf that he now had logistics capability for a seven-day conflict.

The interpretation of this is that US forces could fight at least a defensive holding action, with some offensive capability, for an initial period of seven days.[3] Therefore, the rate at which combat forces and material enter the theater decreases, since adequate numbers of shooters and amounts of material are already in place.

(3) After the initial five-week airbridge push of 100 tankers, the airbridge decreases over three weeks to a constant level of 30 aircraft for the duration of the conflict. The airbridge then becomes primarily a tool to move ongoing strategic airlift into theater. Three weeks were chosen because for Desert Storm, Secretary of the Air Force Rice estimated that by early October, "the Air Force had what it needed to carry out a strategic campaign."[4] A constant level of 30 tankers for airbridge operations is based on two airbridges—a Pacific airbridge requiring three tankers per airlifter, and an Atlantic airbridge requiring two tankers per airlifter. This allows a minimum of five airlifters per day per airbridge. More air refueled airlift is possible if the tankers can be maintenance-turned in the same day (i.e. triple-turning the jets allows 15 air refuelings for airlift per day per airbridge). Further, additional airlift sorties, not utilizing inflight air refueling, will be flown using intermediate refueling stops and "staged" crews. It is also assumed that advanced stages of the Civil Reserve Air Fleet (using aircraft that cannot be air refueled) have been activated to augment AMC strategic airlift, as happened in the Gulf War.[5]

(4) The number of tankers deploying for combat operations is based on:

(a) Approximately 15 active duty tankers are permanently stationed at Kadena Air Base, Japan, and are, therefore, considered in the first day numbers of those deployed to Asia. Likewise, it is assumed that eight tankers are supporting Operation Southern Watch in Saudi Arabia and five tankers are in Turkey supporting Northern Watch. These are included in the first day numbers of those deployed to the Middle East.

(b) Approximately 210 US fighters and 12 US bombers moved into SWA in the first three weeks of Desert

Shield.[6] It is assumed that the tankers that take the receivers into the theater will remain in theater themselves. Based on recent fighter and bomber overseas deployments from Allied Force, three KC-135s are used for two fighters, while two tankers are used for a deploying bomber.[7] This translates into 152 tankers in three weeks, or approximately eight tankers moving into theater per day.

(c) The total number of tankers in each theater is capped at 175 based on Allied Force, which both the secretary of the Air Force and the Air Force chief of staff have classified as a major theater war for the Air Force.[8]

Notes

1. The numbers into the Asia theater may actually be higher than those given here, taking into account longer distances to the deployment bases from the US and longer distances from expected beddown bases for both tankers and receivers. Additionally, "withhold" aircraft, deemed necessary for other missions, may not be available for deployment to either theater.

2. Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey Summary Report* (Washington, D.C.: Department of the Air Force, 1994), 190.

3. Michael R. Gordon and Gen Bernard E. Trainor, *The Generals' War* (Boston: Little, Brown & Co., 1995), 99.

4. Ibid.

5. Keaney and Cohen, 4.

6. Ibid.

7. Tanker Airlift Control Center, A/R Tasking, Operation Poenix Duke II, 7 December 1999. (Fighter Data); Office of Assistant Secretary of Defense (Public Affairs), DOD News Briefing, Brig Gen Leroy Barnidge Jr., commander, 509th Bomb Wing, 5 May 1999, n.p.; on-line, Internet, 22 February 2000, available from http://www.defenselink.mil/news/May1999/t05051999_t0505asd.html. (Bomber Data)

8. Gen Michael E. Ryan, chief of staff, US Air Force, "Serving Above and Beyond," address to the Air Force Association National Convention, Washington, D.C., 14 September 1999, 2; on-line, Internet, 9 January 2000, available from http://www.af.mil/news/speech/current/spch15.html; and "Whit Peters on the Issues," *Air Force Magazine* 82, no. 10 (October 1999): n.p.; on-line, Internet, 10 January 2000, available from http://www.afa.org/magazine/1099peters.html.

Appendix B

Excerpts from AFDD 2-6.2, *Air Refueling*

Air Mobility Command's primary command and control organization, the TACC is the central planning, scheduling, tasking, and execution agency for all operations involving AMC forces…

The AMOCC [Air Mobility Operations Control Center] is the theater air component commander's command and control layer for the planning, coordination, tasking, and execution of theater operations…

…The COMAFFOR/JFACC [Commander Air Force Forces/Joint Forces Air Component Commander] controls combat and combat support through the AOC [Aerospace Operations Center] Director and the Strategy, Combat Plans, and Combat Operation Divisions. The COMAFFOR/JFACC controls air mobility forces (air refueling and airlift) through the DIRMOBFOR and the Air Mobility Division…

The DIRMOBFOR provides direction to the Air Mobility Division (AMD) and is responsible for coordinating all air mobility functions and for integrating air mobility into the air and space assessment, planning, and execution process…

In order to achieve unity of effort, the DIRMOBFOR must coordinate with the AOC director to ensure all air mobility operations supporting the JFC are fully integrated with the ATO [Air Tasking Order] cycle and deconflicted with other air operations…

The Air Mobility Division plans, coordinates, tasks, and executes the JTF's [Joint Task Force's] air mobility mission which includes air refueling operations…

An ARCT [Air Refueling Control Team] within the AMD is responsible for planning, tasking, and executing all air refueling missions employing tankers attached to the JTF…

An intratheater air refueling plans section collocated with the combat plans division develops combat support air refuelings within the ATO production process…

When coordination with the JTF is required to conduct intertheater air refueling operations, the AME [Air Mobility Element] in the AMD acts as a forward extension of the TACC to affect all required coordination within the JTF.[1]

Notes

1. Air Force Doctrine Document 2-6.2, *Air Refueling*, 30–38.

Glossary

2-MTW	2-major theater war scenario
ACC	Air Combat Command
AFRC	Air Force Reserve Command
ALCT	Airlift Control Team
AMC	Air Mobility Command
AMCT	Air Mobility Control Team
AME	Air Mobility Element
AMOCC	Air Mobility Operations Control Center
ANG	Air National Guard
ARC	Air Reserve Component (ANG & AFRC)
ARCT	Air Refueling Control Team
CAF	Combat Air Forces
CAP	Combat Air Patrol
CFAC	Combined forces air component commander
CINC	commander in chief
CINCSAC	commander in chief, Strategic Air Command
CJCS	chairman, Joint Chiefs of Staff
CRAF	Civil Reserve Air Fleet
CTF	Combined Task Force
DIRMOBFOR	director of Mobility Forces
FEBA	forward edge of the battle area
GATM	Global Air Traffic Management System
GPS	Global Positioning System
JFACC	joint force air component commander
JFC	joint force commander
MTW	major theater war
NAF	numbered air force
NATO	North Atlantic Treaty Organization
NMS	national military strategy
NSS	national security strategy
PSRC	presidential selected reserve call-up
SAC	Strategic Air Command
SASC	Senate Armed Services Committee
SEA	Southeast Asia
SECDEF	secretary of defense
SIOP	single integrated operational plan

SWA	Southwest Asia
TACC	tanker airlift control center
TDY	temporary duty
UN	United Nations
USAF	United States Air Force
USAFE	United States Air Forces in Europe
USCENTCOM	United States Central Command
USCINCSTRAT	commander in chief, US Strategic Command
USCINCTRANS	commander in chief, US Transportation Command
USCNS/21	US Commission on National Security/21st Century
USEUCOM	United States European Command
USPACOM	United States Pacific Command
USSOUTHCOM	United States Southern Command
USSTRATCOM	United States Strategic Command
VISA	Voluntary Intermodal Sealift Agreement

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