

Theater Airlift Management and Control

Should We Turn Back the Clock to be Ready for Tomorrow?

by

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Abstract

This study analyzes current theater airlift organization and control principles for supporting a large contingency or conventional war. It segregates theater airlift management issues into three organizing categories: 1) organizational relationships and responsibilities, 2) theater command and control networks and supporting personnel, and 3) theater airlift management procedures. The study analyzes historical evidence from the Vietnam and Gulf Wars to derive theater airlift management lessons. By comparing this evidence to current policy trends it attempts to determine how well current doctrine reflects past lessons. In addition, the author evaluates how well-equipped current doctrine is to handle three future influences on the theater airlift system: divestiture of the C-130 fleet, growing uncertainty in the international security arena, and the fielding of the new C-17 transport aircraft.

Although the research discovered that many important management lessons had been “learned” and incorporated into current guidance, it concluded that several recent trends seem out of step with both past lessons and the future airlift environment. These include: elimination of the successful concept of wartime theater airlift divisions and the increasing transfer of C-130s from their home airlift command, the questionable elevation of theater airlift responsibility from the Commander of Airlift Forces (COMALF) to the Joint Force Air Component Commander (JFACC), a growing rift between strategic and theater C² networks, and inadequate mechanisms for employing strategic transports in an intratheater role. To address these concerns, the study recommends five policy changes: resurrecting provisional airlift divisions for large airlift contingencies, reassignment of C-130s to Air Mobility Command, resurrecting the COMALF as the theater airlift commander, establishment of a single theater airlift C² network that effectively integrates strategic and tactical airlift, and validation of a methodology for determining when and how to employ strategic transports in-theater.

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Chapter 1. Introduction

Mobility is a vital component of US military capability. A warfighting unit's "ability to move rapidly on short notice to or within an area of responsibility is a primary requirement in the effective accomplishment of a military mission."¹ The *1992 National Military Strategy of the United States* predicts mobility will gain in importance in the future: "Regional focus, flexible/adaptive planning, and reduced forward presence have all combined to increase our reliance on strategic mobility."² Airlift provides a special dimension to mobility. It brings the advantages of speed and range, relatively unhindered by geographic obstacles, to the mobility equation--whether projecting power strategically over intertheater distances, or operationally within a theater. This paper will focus on the latter--intratheater or "theater airlift," which provides not only tactical mobility but a means of aerial resupply for fighting units. "In the course of three wars, tactical airlift has emerged as the vital link between the strategic flow of supplies and the user in combat."³

The recognized significance of theater airlift has stimulated efforts to analyze and improve its capabilities. But most of these efforts have sought to assess theater airlift capability solely in terms of force structure (number and types of aircraft) without considering the effect of the organizational and control doctrine that influences airlift employment. Between 1974 and 1991 no less than 21 major mobility studies analyzed airlift capability by comparing the contribution of various fleet options to US strategic and theater airlift capability.⁴ These studies presumed the only way to correct theater airlift shortfalls was by buying more transports, and sought to determine the most cost-effective mix. These studies have not considered how organizational and management changes might similarly improve airlift capability. Given the disproportionate attention placed on force structure evaluations, what is needed is a comparable effort to determine how best to organize, manage, and control theater airlift operations. Optimizing

organizational and control relationships may bear as much fruit as fine tuning theater airlift force structure, at a much smaller price.

Theater airlift organization and control issues are important in today's Air Force. Chief of Staff, Gen Merrill McPeak dubbed 1992 as the "year of reorganization," instituting many changes that impacted airlift--namely the stand-down of Military Airlift Command (MAC) and the combining of airlift and refueling missions in the new Air Mobility Command (AMC)⁵. Evaluating the Air Force's performance in the Persian Gulf War, Gen McPeak suggested that "great leadership" was necessary to overcome an inherently flawed theater organizational structure that limited air power's potential.⁶ Part of this flawed organization included theater airlift. As a result, the AMC Strategy and Doctrine Division is reevaluating and revising the command's entire approach to the organization, management, and control of theater airlift operations.⁷ What's more, official doctrine governing these relationships is in a state of flux, badly in need of revision. AFM 2-4, Tactical Airlift, has not been updated in 27 years.⁸ MACR 55-50, which governs the role of a theater airlift commander, has been rescinded without replacement. AFM 2-50 and Joint Pub 4-01.1, sources of joint doctrine for theater airlift operations, have been in a near constant state of revision during the past two years.⁹ The time is ripe for a hard look at theater airlift control.

Research Description

This study proposes revisions to the top-level organizational and procedural framework for managing theater airlift operations that support a conventional war or large contingency operation. In establishing this framework, it addresses the following:

1. Organizational relationships and responsibilities: Theater airlift organization and command; basing and operational control issues; incorporation of sister service aircraft into theater airlift structure; the impact of airlift's "home command" on theater airlift operations.

2. Theater Command and Control (C²) Structure: The facilities and personnel supporting an in-theater airlift command post network and its relationship to other theater air control systems.

3. Theater airlift management procedures: Procedures for validating and prioritizing airlift requests, scheduling airlift operations, and utilizing strategic airlift to support intratheater requirements.

Methodology. To derive improvements to theater airlift management and control, the study employed three broad research categories. First, historical data from the Vietnam and Gulf Wars was examined to determine the most pertinent lessons of these most recent instances of large tactical airlift operations supporting a conventional war. The author chose to cover the Vietnam airlift experience more extensively, given its duration and greater body of historical data as compared to the Gulf War. End-of-tour reports, unit and oral histories, and official studies served as the primary sources. Second, current doctrine was analyzed to determine how well past lessons have been incorporated, and from what baseline to recommend future changes. Regulations, formal and informal policy documents, and interviews were used extensively. Third, the author addressed potential future influences to the theater airlift system, positing how these might affect current organization and control doctrine. Finally, the study concludes by synthesizing past lessons with current realities and future influences to recommend improvements to theater airlift organization and control.

Scope. The study concentrates on the high level of the conflict spectrum--theater conventional war and large-scale contingencies. Although airlift command and control issues in low intensity conflicts and humanitarian relief efforts are important, it was felt that addressing the organizational relationships of large, complex conventional operations was a “worst case” that may shed light on smaller, ad hoc efforts. Further, the latest national military strategy affirms that CINCs must continue to prepare for large regional conflicts, such as Desert Storm.¹⁰ For these large regional conflicts, this study focuses on the operational level of war. *Tactical* improvements to equipment, procedures, and doctrine are not considered, and *strategic* airlift issues are only discussed in terms of their

interface with the theater airlift system. Next, although the study analyzes command and control, it does not consider the technology issues associated with communication, intelligence, or data processing systems. Although an important aspect of C², one historian argues technology is “far from determining the essence of command” warning that C² discussions that concentrate on communication and information processing technology may cause one “to lose sight of what command is all about.”¹¹ In addition, the historical portions of this report do not attempt to provide a summary of tactical airlift operations in either Vietnam or the Gulf War, but seek to encapsulate the theater airlift organization and control lessons of these conflicts. Finally, the study does not address collateral theater mobility missions such as special operations, air refueling, and aeromedical evacuation.

Background

AFR 23-17, Military Airlift Command, defines intratheater airlift as:

The transport by air of units, personnel, and materiel within theaters or areas of operations in accordance with a tactical plan. Intratheater airlift provides the capability for the direct insertion of fighting forces into objective areas through airland, airdrop, or extraction; the logistic resupply of deployed forces; and evacuation of casualties from forward areas. Provides battlefield mobility for fighting forces.¹²

From this definition, one can derive three distinct theater airlift missions. First, maneuver support. Here tactical airlift is used to directly insert combat forces into the battlefield, or extract them from the same, through paratroop or air assault operations. Second, lifeline support uses airdrop or airland operations to sustain previously inserted or isolated troops. Finally, logistical resupply is tactical airlift used to distribute supplies within a theater of operations. These three theater airlift sub-missions¹³ were first practically employed during WWII.

WWII Theater Airlift. Theater airlift organization in WWII was marked by a continual tension between both strategic and tactical airlift organizations, and the

maneuver support and logistical resupply missions. Air Transport Command (ATC) was responsible for worldwide strategic lift while Troop Carrier Command (TCC) owned the tactical airlift units supporting airborne infantry assaults and glider operations. Although theater commanders were strictly prohibited from “requisitioning” ATC aircraft, as battle lines moved forward ATC would typically supplement theater logistical resupply to allow TCC to concentrate on its maneuver support mission.¹⁴ Despite this ATC support, “private theater airlift systems” composed of TCC aircraft proliferated. Air Force leadership outlawed this wasteful dual system with the release of AAFR 20-44 which “centralized the control of the scheduled airlift function [under ATC] except for the airborne function of the troop carrier forces.”¹⁵ On the troop carrier side, XII TCC used its C-47s to refine tactics for the first European paratroop operations--Torch (North Africa), Husky (Sicily), and Avalanche (Italy). After the IX TCC's support of the Normandy invasion, it was absorbed within the First Allied Airborne Army (FAAF) and placed under control of the Ninth Air Force. Despite its placement within a combatant arm, Gen Eisenhower directed that IX TCC give priority to the logistical resupply mission over maneuver support operations during the push east to the Rhine. The swift Allied advance was critically dependent on air resupply, albeit at the expense of degraded preparation for future airborne operations.¹⁶ In the Pacific, theater airlift was divided between 322d Troop Carrier Wing, responsible for rear logistics, and the 54th Troop Carrier Wing, which handled airborne operations. Pacific operations saw the inception of a deployed airlift C² network and a theater priority board for validating and prioritizing joint airlift requests.¹⁷ At the war's close, theater airlift doctrine emphasized the need for centralizing troop carrier operations (maneuver support) under “the operational control of the theater air forces”¹⁸ and centralized control of the theater airlift request, validation, and prioritization process.¹⁹

Korea. Airlift during the Korean conflict continued the trend towards centralized control of theater airlift assets under a single command structure. At the war's outset,

miscellaneous C-46s, C-47s, C-119s, and C-54s assigned to the Far East Air Force (FEAF) were placed under the theater's Fifth Air Force for operational control. But convoluted airlift request procedures and a prioritization system that left Fifth Air Force validating its own airlift led FEAF to request help from the newly created Military Air Transport Service (MATS) to manage its growing theater airlift system. MATS sent Gen William Tunner and a staff of airlifters to command the newly formed FEAF Combat Cargo Command (CCC), which consolidated all theater lift. Tunner quickly established a Theater Air Priorities Board and a Joint Airlift Control Office as mechanisms for allocating lift and setting priorities. As a result, theater airlift effectively supported MacArthur's Inchon invasion, delivering 700-900 tons/day to its Kimpo airhead. Later in the war, C-119s and C-47s from CCC, renamed the 315th Air Division, performed "lifeline support" by sustaining the 1st Marine Division and elements of the X Corps cut off at the Choshin reservoir. MATS C-54s, temporarily augmented by Tactical Air Command (TAC) troop carrier units, handled the strategic airlift flow from the US to Japan.²⁰ In retrospect, the Korean war solidified the concept of a centralized theater airlift organization--the Air Division--to control maneuver, lifeline, and logistical support airlift missions.

Notes

¹ AFM 2-4, *Tactical Airlift*, 10 August 1966, 1.

² US Joint Chiefs of Staff, *The National Military Strategy of the United States*, January 1992, 24.

³ Maj Ronald G. Boston, *Air University Review* 34, no. 4 (May-June 1983): 74.

⁴ Department of the Air Force, *US Air Force Airlift Master Plan* (Washington, D.C.: HQ USAF, 29 September 1983), III-1; Department of the Air Force, *Airlift and U.S. National Security: The Case for the C-17* (Washington, D.C.: Government Printing Office, 1991), 8. Typically, these and other studies have evaluated alternative "mixes" of transport aircraft types, seeking to optimize overall lift capability. Many, like the *Airlift Master Plan*, suggest that current theater lift capability falls far short of requirements.

⁵ Department of the Air Force, "Air Force Restructure," USAF White Paper, September 1991. The restructure was driven by the desire to maintain both "combat capability" and "peacetime effectiveness" in the smaller post-Cold War Air Force. The new Air Mobility Command was chartered to improve the Air Force's "Global Reach," vital to a US military strategy which relied less on forward basing and more on rapid deployment capability.

- ⁶ Gen Merrill McPeak, *Tomorrow's Air Force: Reshaping the Future*, USAF Video, 31 January 1992. Gen McPeak implied that airlift command lines were confusing because the commander of theater airlift forces reported to both the theater air component commander (CENTAF) and the commander, Military Airlift Command (CINCMAC).
- ⁷ Lt Col Jimmy C. Jackson, Jr., HQ AMC/XPDS, Scott AFB, Ill., interview with author, 4 February 1993.
- ⁸ AFM 2-4, 10 August 1966.
- ⁹ Maj Jay Reed, HQ AMC/XPDS, Scott AFB, Ill., interview with author, 4 February 1993.
- ¹⁰ *National Military Strategy*, 13.
- ¹¹ Martin Van Creveld, *Command in War* (Cambridge, Mass.: Harvard University Press, 1985), 275. Creveld claims that one must acknowledge the limitations of technology in command systems and then look to "improvements in training, doctrine, and organization" to work around them.
- ¹² AFR 23-17, *Military Airlift Command*, 1 April 1985, 20.
- ¹³ Author's definitions to be used throughout the paper.
- ¹⁴ Lt Col Charles E. Miller, *Airlift Doctrine* (Washington, D.C.: Government Printing Office, 1988), 43.
- ¹⁵ Ibid., 67.
- ¹⁶ Ibid., 93-104.
- ¹⁷ Ibid., 123-5.
- ¹⁸ Ibid., 151.
- ¹⁹ Ibid., 154.
- ²⁰ Ibid., 194-203.

Chapter 2. Vietnam: A Laboratory for Theater Airlift Development

The decade-long Vietnam War proved a veritable gold mine for the maturation of theater airlift organization and control doctrine. According to one historian, “the major tactical airlift developments of the Vietnam War were actually more in theater command structure, support arrangements and operational developments than in aircraft technology.”¹ This chapter will attempt to flush out these key doctrinal developments. It will explore theater airlift organizational relationships, specifically examining the level of centralization, basing concepts, and the use of sister service airlift. Next, it will examine the theater C² structure--how lift fit into the overall theater air control system, and the qualifications and roles of the personnel who operated it. Finally, the chapter analyzes theater airlift management, exploring the issues surrounding airlift requests, validation, apportionment, and scheduling. But before discussing these lessons, a brief overview of US tactical airlift in Vietnam is in order.

The incremental growth of US military involvement in Vietnam was paralleled by an ever-increasing commitment of tactical airlift, accompanied by a growing centralization of in-country control. Pre-war doctrine, as espoused in AFM 1-9 *Theater Airlift Operations*, held that “troop carrier forces” should be under the centralized control of a theater air commander with airlift priorities established by the theater CINC through a tri-service air transportation board.² Over the course of the war, theater airlift moved towards this doctrine.

Before 1962, no airlift aircraft were based in Vietnam. Instead, the Military Assistance Advisory Group Vietnam's (MAAGV) tactical airlift needs were provided by Pacific Air Force (PACAF) C-124s, C-54s, and C-130s under the control of its 315th Air Division at Tachikawa, Japan. Airlift priorities and allocations were set by Pacific Command's Western Transportation Office (WTO).³ January 1962 saw the first in-country deployment of tactical airlifters to Vietnam--Operation Mule Train. By

February, two squadrons of C-123s were in-country, based at Ton Son Nhut and Da Nang, to support the 2nd Advanced Echelon (2d ADVON), the Air Force component of Military Assistance Command Vietnam (MACV), which had replaced MAAGV. The crews and aircraft were operationally controlled by 2d ADVON's Airlift Branch during their 6-month rotational tours in-country.⁴ By 1965, America's response to the Gulf of Tonkin incident had increased theater airlift needs. PACAF airlifters were supplemented by additional stateside C-130 squadrons, placed under operational control of the 315th Air Division. As in-country transportation requirements grew, PACAF began deploying C-130s to Vietnam through a TDY arrangement, where crews and aircraft rotated to Vietnam for a two-week period. By May 1966, 44 C-130s rotated to bases at Ton Son Nhut, Nha Trang, and Cam Ranh Bay. While in-country, “operational direction” of these aircraft was transferred to the 315th Troop Carrier Group, which reported to Seventh Air Force (replaced 2d ADVON) but was manned by 315th Air Division personnel.⁵ The new Seventh Air Force Commander Gen William Momyer was unimpressed with this cumbersome arrangement. In October 1966, he formed the 834th Air Division, under Seventh Air Force, as MACV's theater airlift organization, responsible for all in-country tactical airlift.⁶ With a centralized organizational structure in-place, tactical airlift sortie rates peaked in 1968, as did American involvement in the war.⁷ Thereafter, “Vietnamization” resulted in a gradually decreasing but significant tactical airlift role. By 1970, five million tons of cargo had moved via intratheater airlift in Vietnam.⁸

Type Aircraft Employed. Although US involvement in Vietnam took place over twenty years ago, many of the aircraft types employed there will continue to fly well into the next century. In fact, Vietnam's strategic transports, the C-141 and C-5, along with the tactical workhorse, the Lockheed C-130 Hercules, remain the core of today's airlift fleet. This continuity of airlift aircraft reinforces the relevancy of Vietnam's airlift lessons to the future. A detailed description of each Vietnam-era aircraft is provided in the appendix.

Vietnam Organizational and Command Relationship Lessons

Centralized Control of In-Theater Airlift. One of Vietnam's key lessons was that for large operations, tactical airlift should be consolidated in a theater airlift organization subordinate to the theater air component commander. Decentralized arrangements proved inefficient from the war's outset. In 1962, a team led by Gens Travis Heatherton and Curtis LeMay found the existing setup, where PACAF's 315th Air Division managed Vietnam airlift from Tachikawa, was an "inadequate apparatus for communications and aircraft control."⁹ An interim solution, establishing the 315th Troop Carrier Group as a go-between 315th Air Division and MACV,¹⁰ was soon overwhelmed by growing tactical airlift requirements and friction with the 315th Air Division. In response, the JCS and Headquarters USAF "started a project to reorganize airlift in Vietnam and set up an air division to get the kind of power and organization needed to do the job."¹¹ On 15 October 1966 the 834th Air Division was activated at Ton Son Nhut. It absorbed all in-country C-7 Caribous (transferred from the Army) and C-123s, and operationally controlled TDY C-130 units.¹² Gen Momoyer, Seventh Air Force Commander, said the consolidation was "essential for effective management and control of the rapidly expanding in-country airlift mission."¹³ Until the 834th was formed, "airlift had a bad reputation on the part of just about everybody," according to its first commander Brig Gen William Moore. Gen Moore claimed the infusion of airlift expertise and the power of a general officer improved airlift's credibility.¹⁴ The post-war Corona Harvest study of Tactical Airlift agreed. The study concluded that the 834th's consolidation of theater airlift operations under an in-country division staff of qualified airlifters was a model for the future. It would result in "better planning, particularly of large airlift exercises, and closer coordination between the user and the airlift forces."¹⁵ But "the most important lesson learned was that the airlift resources must be controlled from one central point."¹⁶ This experience suggested that large theater airlift operations may work best when controlled by a central airlift organization, headed by a general officer.

Rotation versus Permanent Basing of In-Country Theater Airlift. One of the challenges of this centralized airlift organization was managing the rotating, TDY C-130 force. By 1968, three C-130 detachments were in Vietnam at Tan Son Nhut, Cam Ranh Bay, and Tuy Hoa, comprising aircraft, crews, and maintenance personnel TDY from various PACAF bases.¹⁷ While in Vietnam, the C-130s were under the operational control of the 834th Air Division Airlift Control Center (ALCC), which was permanently manned by a core cadre of C², maintenance, and aerial port personnel. PACAF provided administrative and logistic support for the deployed units, representing over 50 aircraft and 1000 personnel.¹⁸ A raging debate revolved around whether or not the C-130s should be *permanently* based in-country, with full transfer of command and logistics responsibility to the 834th. Although the debate's very intensity suggests no "right answer," an analysis of the arguments may expose relevant factors to consider when contemplating airlift basing schemes.

The TDY arrangement offered several advantages. First, fewer aircraft were required in-country. A 1966 Headquarters USAF study found that a TDY force would be expected to have a higher operationally ready rate than permanently assigned units (80% vs. 70%) because major maintenance work could be deferred out-of-country, allowing higher utilization rates.¹⁹ Consequently, a TDY force required 20-50% fewer aircraft than one permanently based.²⁰ Furthermore, a rotating TDY force improved efficiency, because force size could be fine-tuned to match fluctuating airlift requirements. Conversely, a permanent force would have to be sized for "peak" needs, resulting in idle assets.²¹ Finally, the study determined that permanent basing in Vietnam would be expensive. Construction costs for additional taxiways, POL, and maintenance facilities at Cam Ranh Bay to support two C-130 squadrons totaled over \$13 million. It would take over five years to recover these costs with offsetting savings from eliminated TDY expenses. Overall, the TDY arrangement permitted "a concentration of productivity

within a command's geographic area without a similar concentration of support requirements.”²²

But many criticized the arrangement. Gen Momoyer stated the TDY scheme was “a constant problem in maintenance, aircrew qualification, scheduling and coordination.”²³ The short two-week TDYs prevented aircrews from gaining the same level of familiarity and experience with the local environment as did their C-123 counterparts.²⁴ This inexperience may have contributed to a growing C-130 accident rate at forward fields, leading PACAF to initiate an in-country orientation and checkout program. While successful, the program frustrated 834th Air Division schedulers who were now restricted from sending “unqualified” pilots into “assault” fields.²⁵ Also, because PACAF retained control of C-130 logistics support, 834th was powerless to direct “surges” or defer maintenance even when necessary to support the mission. In his end of tour report, 834th commander Maj Gen Burl McLaughlin complained the system limited his ability to provide for the supervision, training, morale, and welfare of “his” C-130 units.²⁶

One of the system's most visible problems arose, not from TDY PACAF aircrews, but from stateside TAC units which augmented the 834th Air Division during the 1968 Tet Offensive. A CHECO study found that TAC aircrew and maintenance procedures often directly conflicted with PACAF guidelines, with extensive in-country training needed to bring these crews up to speed. Morale problems surfaced, especially when tour lengths were increased from 90 to 179 days.²⁷ By the end of the war, many agreed with the Corona Harvest assessment that the theater air component commander should have “command and control of all tactical airlift resources required to accomplish his combat mission.”²⁸

What lessons does this C-130 basing debate provide for theater airlift organization? Again, there is no right answer. A rotational TDY arrangement may provide important benefits in economies of scale, flexibility, and cost, but these benefits

come at a price--friction between the supporting and supported commands, and a lack of control of administrative, training, and logistics that may impact the mission and hurt morale. The best solution will depend on a myriad of factors. A short conflict in an “immature” theater close to a supporting command may recommend TDY basing, while a long conflict in a developed theater far from its augmenting forces may call for a more permanent arrangement. Also, the Tet offensive discussion should alert commanders to the danger of peacetime theater airlift forces that are so shaped by their “owning” commands that they are unable to flexibly augment other theaters in time of war. Finally, while the Vietnam experience suggests that optimum administrative command arrangements are debatable, operational control is not.²⁹ Clearly, operational control must always lie with the supported theater airlift commander.

Sister Service Airlift Aircraft Assignment. Besides wrestling with airlift basing arrangements, the Air Force also continued an ongoing debate with the Army over ownership of fixed and rotary-wing short-haul transports. During the 1950s both services had expanded their battlefield lift capability. In 1955, the Air Force had five helicopter squadrons for supporting airborne assault and short-haul logistics runs. Not to be outdone, by 1960 the Army had expanded its airlift fleet to over 5,500 rotary and fixed wing aircraft with plans to buy 250 additional CV-2 Caribous for assignment to its corps.³⁰ Many USAF airlifters felt the Army's Caribou operation represented a wasteful dispersal of airlift resources, especially after the Army deployed two CV-2 companies to Vietnam in 1962 that operated outside the USAF airlift system. Although the charges of inefficiency and waste may have been more perceived than real, the Army agreed to compromise.³¹ On 6 April 1966, it transferred its CV-2 Caribous and responsibility for all intratheater fixed wing transports to the Air Force.³² To soothe the Army's fears of degraded service, the Air Force agreed to “attach” the newly designated “C-7As” to field army echelons rather than integrate them into the USAF common user airlift system.³³ By 1968, the Air Force was operating six squadrons of C-7s in Vietnam at three different

locations.³⁴ As for helicopters, the services agreed that all rotary wing aircraft “designed and operated for intratheater movement, fire support, supply and resupply of Army forces” would be owned and operated by the US Army.³⁵ The agreement was a sound one that prevented duplication of effort and ameliorated friction between the services.

A Consolidated Airlift Command? While this organizational issue was being resolved with the Army, internally the USAF debated whether tactical airlift would be better served by consolidation within MAC. Airlift purists believed the Vietnam experience justified combining theater and strategic airlift within MAC. The war's Corona Harvest report concluded as much, opining that a single airlift command “would provide a more responsive, flexible, effective, and economical airlift force.” It blamed numerous instances of “duplication and/or overlap of responsibilities and functions” on the dual command system where TAC owned tactical lift, and MAC, strategic lift.³⁶ As a result, strategic and tactical aerial ports, command posts, and other airlift control facilities were often wastefully duplicated in Vietnam. Dissenters to a consolidated command were led by Gen Momyer, Seventh Air Force Commander. Momyer countered that the war dramatized the difference between strategic airlift operations into large bases like Cam Ranh Bay and tactical combat operations into forward strips like Khe Sanh. He feared tactical airlift would atrophy if removed from TAC, losing its connection to a “highly specialized form of warfare.”³⁷ He believed the duplication of airlift facilities in a theater could be eliminated simply by integrating MAC command post facilities into the theater airlift C² structure.³⁸ Despite his protests, DOD concurred with the Corona Harvest recommendation and combined tactical and strategic airlift responsibility into MAC in 1974.³⁹ Although the case for consolidation was never as clear cut as its proponents claimed, two general lessons emerged. First, tactical airlift needed a home command where it would be nurtured. Even Gen Moore, the 834 AD commander who later became CINCMAC, conceded that TAC filled this role in the early 1960s by fostering the tactics initiatives that proved extremely successful in Vietnam.⁴⁰ Second,

regardless of the home commands of tactical and strategic lift, commanders must reduce the wasteful duplication of airlift facilities in a theater of operations.

Theater Command and Control Structure

Vietnam's Airlift Control Network. Of equal import as airlift organizational issues were the lessons of the command and control network that orchestrated the theater airlift flow. Until theater lift was centralized under the 834th Air Division in 1966, C² was woefully inadequate. Aircraft ground times were often lengthy because load planners generally received no advance warning of inbound transports. With no central agency responsible for assuring a smooth airlift flow, bottlenecks were common.⁴¹

In response, Gen Moore and later 834 AD commanders developed a hierarchical C² network that tailored the sophistication of a command post facility with the maturity of its supported airfield. The heart of the system was the Airlift Control Center (ALCC) at Tan Son Nhut. This facility tasked all theater airlift units, issued schedules, provided flight following, and coordinated maintenance, aerial port, weather, and intelligence support.⁴² Subordinate to the ALCC was a network of Airlift Control Elements (ALCE) which served as local airlift command posts at 18 frequented airfields. ALCEs were linked to the ALCC via a redundant telephone, UHF, VHF, and HF network.⁴³ Later in the war, 834 AD developed a transportable ALCE (TALCE), deployed via C-130 to austere fields lacking a permanent ALCE. These self-contained modular facilities were immensely successful in supporting the expanded airlift response to the 1968 Tet offensive. 834 AD commanders unanimously praised the utility of these facilities in their end-of-tour-reports.⁴⁴ The final link in the control network was the mission commander, field grade airlift pilots assigned to manage unit moves or large-scale airlifts where no ALCE or TALCE existed. These on-scene controllers for the 834 AD “proved to be effective and vital in assuring successful mission accomplishment.”⁴⁵

ALCC and TACC Relationship. Vietnam's theater airlift control network was part of a broader USAF C² system, the Tactical Air Control System (TACS). The TACS focal point was the Tactical Air Control Center (TACC) which served as Seventh Air Force's command center for directing and coordinating the air war in South Vietnam. While nominally responsible for all air operations, the TACC focused primarily on combat operations and had little to do with the airlift effort.⁴⁶ Instead, the ALCC was considered “the source of command and direction for the tactical airlift forces.”⁴⁷ Doctrine viewed the ALCC as *separate, subordinate*, but “*operationally connected*” to the TACC to permit integration of tactical airlift operations with the overall air effort.⁴⁸

The Vietnam experience reinforced the notion that the theater ALCC should be separate but operationally connected to the TACC. In general, little coordination was required between “airlifters” and “shooters”. While occasionally airdrop missions needed fighter escort and sometimes strike missions required “flare ship” support from the airlift world, these were exceptions.⁴⁹ This support and air traffic control coordination were readily accomplished with “adjacent” facilities at Ton Son Nhut.⁵⁰ In fact, several studies found the unique control and communications requirements of each mission area mandated separate communications networks. For instance, a 1966 analysis revealed that the TACC's Direct Air Request Network (DARN) for requesting tactical air strikes was often saturated at precisely the same time emergency airlift requests peaked on the ALCC network.⁵¹ Further, the coordination mechanism for approving fighter versus airlift requests was totally different. A facility merger threatened to degrade responsiveness.⁵² The scope of the tactical airlift effort seemed to justify a separate control organization: 11 ALCEs, over 200 airlift operating locations, and over 34,000 sorties per month--more than all other Air Force aircraft combined.⁵³ After the war, even Gen Momyer agreed with a Corona Harvest report advocating doctrinal separation of the TACC and ALCC, each with distinct reporting channels to the theater air component commander. The report's authors recommended the facilities be combined only for

small-scale or short-duration operations.⁵⁴ In the words of one 834 AD commander, “the airlift control system now operating in Vietnam has validated the need for a separate tactical airlift command and control system.”⁵⁵

Need for Qualified Airlift Command and Control Personnel. An independent airlift command and control system is only as good as the personnel who operate it, and Vietnam demonstrated the need for a qualified cadre of C² personnel who could man the ALCC-ALCE-TALCE network. Unfortunately, the war saw a gradual decline in the quality of airlift C² personnel. One TAC study reported the initial “charter members” of the 834 AD staff were often replaced by “inexperienced and untrained people.” Positions first requiring “tactical airlift and ALCE expertise” later were relaxed to accept officers without airlift or management experience.⁵⁶ Further, there was no mechanism to train replacements or even “flag” those with past experience. No CONUS ALCC/ALCEs existed to provide needed experience. OJT was hindered by a lack of job overlap. For example, one newly appointed commander of the Nha Trang ALCE arrived in January 1967 only to find his predecessor had left three weeks earlier.⁵⁷ Although it is difficult to judge the effect of chronically inexperienced C² personnel, most saw it as a major problem.⁵⁸ In an end-of-tour report, 834 AD commander Maj Gen John Herring warned future airlift operations would “lose motion” if reliant on similar ad hoc arrangements to generate qualified airlift C² personnel. He recommended creation of a “Tactical Airlift Support Group” composed of trained ALCC-ALCE-TALCE-CCT personnel formed to support large-scale theater airlift contingencies. Such a cadre would allow a rapid “spin-up” and provide a mechanism for training and upgrade of replacement C² personnel.⁵⁹ Clearly, Vietnam showed that airlift C² personnel need to be as ready, trained, and experienced as their supported airlift crews.

The TALO: Key to Tactical Airlift Responsiveness. One valuable new airlift C² position emerged in Vietnam--the Tactical Airlift Liaison Officer (TALO). TALOs served as a human interface between airlift providers and their Army customers. The

need for TALOs sprang from Army fears of reduced airlift responsiveness following the transfer of its CV-2s to the Air Force.⁶⁰ Interviews with Army battalion commanders during 1966 found universal dissatisfaction with the responsiveness of the airlift system.⁶¹ Emergency airlift requests appeared especially troublesome. Army requesters faced a cumbersome and often saturated coordination channels to request short-notice lift.⁶² Airlift agencies, specifically the ALCC, needed a means to circumvent “the system” and improve the timeliness and efficiency of airlift in support of Army operations.

A 1966 test demonstrated that TALOs could help reduce Air Force-Army airlift coordination problems.⁶³ Qualified tactical airlift pilots were assigned to Army corps, divisions, and brigades where they maintained close contact with counterparts responsible for submitting airlift requests (G-3/S-3s for troop movements and G-4/S-4s for logistics resupply). These TALOs maintained direct contact with the ALCC to provide a “heads up” on impending emergency requests and to facilitate resolution of problems that invariably cropped up during unit moves or routine resupply efforts. Most importantly, the TALOs provided Army commanders “immediate access to knowledgeable airlift personnel,” improving the quality of airlift planning and the effectiveness of its execution.⁶⁴ According to one Army transportation officer, the TALO solved the “language barrier” problem between the Army and Air Force. TALOs decreased the number of inefficient “emergency” airlift requests by matching short-notice requests with previously scheduled missions, minimizing disruption and increasing aircraft utilization rates.⁶⁵ Gen Momoyer was so pleased with the program that he authorized permanent TALO manpower slots.⁶⁶

Besides confirming the “essentiality of the TALO,”⁶⁷ the Vietnam experience suggested two lessons for TALO employment. First, effective TALOs would need significant training and experience. One TAC study concluded that a rated airlift pilot needed nine months of TALO training to be “useful.”⁶⁸ Second, most airlift observers

believed the TALO, like its parent ALCC, should remain distinct from the TACS. But instead, Vietnam-era doctrine placed the TALO under the command of a senior Air Liaison Officer (ALO) who coordinated Close Air Support requirements with the TACC. Airlifters decried this arrangement. Maj Gen McLaughlin opined that “TALOs must . . . not be operationally responsible to two masters,” recommending they be operationally controlled by the theater airlift division.⁶⁹ Maj Gen Herring agreed, observing that control by the ALO denied the TALO “the freedom of action to interface directly between the airlift system and the Army unit.”⁷⁰ No operational evidence suggested otherwise.

Theater Airlift Management Procedural Lessons

This final section analyzes the procedural issues encountered by the C² staff while managing theater airlift in Vietnam.

Airlift Apportionment, Validation, Prioritization, and Allocation. For the most part, MACV procedures for approving and allocating airlift were in accordance with established doctrine. A 1967 version of AFM 2-50 gave the Joint Force Commander (JFC) responsibility for airlift apportionment and prioritization. If service component needs exceeded airlift capability, the JFC would apportion lift to the services, with each component free to establish its internal priorities. The Air Force Component Commander (AFCC) would then allocate airlift sorties, based on the JFC's apportionment decision, to each component.⁷¹ In Vietnam, MACV's Traffic Management Agency (TMA) was the JFC's joint agency for validating all airlift requests. It allocated lift to the individual components via the Common Service Airlift System (CSAS), Vietnam's centralized theater airlift system. The 834 AD continually adjusted its TDY C-130 force size to match TMA projected requirements.⁷² Overall, the process worked well, except for some abuses of the prioritization process.

Experience showed that the prioritization system broke down under periods of high demand. Table 1 shows the priority levels authorized by TMA. Commanders would submit emergency requests (top two categories) directly to the MACV Command Center for validation and forwarding to the ALCC for action.⁷³ Emergency requests often snowballed during high-tempo operations, disrupting the normal airlift schedule and decreasing its efficiency. For instance, during the Tet offensive the normal ratio of 90% routine and 10% emergency requests, reversed. Within days, the system became so saturated that not all “combat essential” requests could be filled. Users reacted by inflating their lower priority requests to “emergency” status to protect normal resupply requirements.⁷⁴ Consequently, “the emergency priority system lost much of its usefulness and priorities within priorities had to be established as an interim solution.”⁷⁵ The ALCC also responded by scheduling “partial frag orders,” missions incompletely scheduled to facilitate rapid in-flight diverts for emergency requests.⁷⁶ Despite its flaws, the system was judged “sufficiently responsive” by one historian, especially considering every emergency request was filled.⁷⁷ The lesson here is that preventive techniques like “priorities within priorities” and “flexible frags” should be established before high demands on an airlift system occur.

Table 1
MACV Airlift Priorities

| Priority Category | Request Lead Time | Approval Agency |
|-----------------------|-------------------|------------------|
| Tactical Emergency | 2 hours | MACV Command Ctr |
| Emergency Resupply | 2 hours | MACV Command Ctr |
| Combat Essential | 8 hours | MACV Command Ctr |
| I, II, III | 72+ hours | MACV TMA |
| IV (Routine Resupply) | 72+ hours | MACV TMA |

Source: Col Roy M. Chapman, “Tactical Airlift Management in Vietnam,” *Signal* 24, no. 8 (August 1970): 36.

Airlifters Inadequately Represented on TMA Staff. The prioritization problems may have been aggravated by a lack of qualified airlift officers on the TMA staff. One ALCC major claimed TMA was manned primarily by US Army personnel; not one

USAF officer worked in Da Nang's regional TMA office during his Vietnam tour.⁷⁸ A 1968 Corona Harvest study concluded this inadequate representation of experienced airlifters often led TMA to inadequately screen airlift requests, improperly assign priorities, and approve unrealistic requests without realizing their impact on airlift operations.⁷⁹ These assessments seem to ring true. Clearly, experienced airlift experts must be generously represented on any theater transportation validation staff.

Scheduling Lessons. After airlift requirements were allocated and validated by TMA, it was left to the ALCC to schedule missions. Scheduling reflected a continual attempt to balance the stability and responsiveness of a “regular schedule” against theoretically more efficient⁸⁰ “fragged” missions that met a particular user request.⁸¹ 834 AD preferred “fragged” missions because MACV’s dispersed cargo and fluctuating requirements were not amenable to regularly scheduled runs. But a frag system did not guarantee efficiency. Maintenance delays, weather changes, load plan errors, enemy action, and airfield closures often disrupted the published frag schedule, resulting in reduced tonnages hauled and dissatisfied users.⁸² In response, 834 AD instituted Project New Book in 1968 to help minimize the impact of last minute changes. “Preliminary” frags were distributed a day in advance to flush out problems and encourage early changes and cancellations. That way, when the final frag was released changes were few.⁸³ In addition, schedulers replaced daily frags with day-night “split frags” to improve the freshness of the data used to plan night missions.⁸⁴ As a result of their improved stability and efficiency, fragged missions grew from 40% to 70% of the total. Gen McLaughlin, 834 AD commander, believed the new scheduling method “maintained the stability of the user’s valid daily requirements . . . , released aircraft from a fixed schedule and gave us greater flexibility to respond to mission requirements when and where they occurred.”⁸⁵ New Book succeeded because it joined airlift users, operators, and schedulers to balance responsiveness against efficiency.

C-7 Caribou: Centralized versus Dedicated Airlift. Paralleling the “regularly scheduled missions” versus “frag” tension was a debate over the merits of centralized versus dedicated airlift. The centralized approach was epitomized by MACV’s Common Service Airlift System (CSAS), where users competed through TMA for a central pool of airlift capability (C-130s and C-123s) managed by 834 AD. Conversely, per the 1966 Army-Air Force agreement, C-7 Caribous were *dedicated* to specific Army users down to corps level, based on a MACV monthly apportionment.⁸⁶ In effect, individual Army users operationally controlled their own airlift fleet, with the ALCC providing limited “flight following.”⁸⁷ At 834th’s urging, an increasing number of “dedicated” C-7’s were released to CSAS over the course of the war, but the CSAS proportion never exceed 50%. While boasting the C-7 operation was much better off than when owned by the Army, Air Force partisans loathed dedicated lift.⁸⁸ But written doctrine was ambivalent. AFM 2-4 conceded that although tactical airlift is “not normally reassigned for specialized or individualized service use, . . . in cases of operational need, *short range* tactical airlift performing *supply, resupply, or troop lift* functions *in the field Army area*, may be attached to subordinate echelons of the field Army.”⁸⁹

There were sound arguments on both sides of the debate. Proponents of the dedicated system insisted that airlift responsiveness must overshadow efficiency concerns when supporting tactical needs of forward-deployed units. The 72-hour advance notice required for Priority 1 requests under CSAS seemed excessive. In short, “responsiveness was more important than efficiency where survival was a factor.”⁹⁰ In addition, the close working relationship between the Air Force C-7 crews and their “dedicated” customers created a quality of efficiency all its own.⁹¹ Several Air Force officers supported the arrangement for parochial reasons: namely that a purely CSAS system might drive the Army to procure its own organic airlift fleet.⁹²

Opponents of the C-7 dedicated system were quite vociferous. One C-7 wing commander argued that “dedicating airlift to a particular agency is comparable to

dedicating a tactical fighter squadron to an infantry regiment. Gross inefficiency is the only guaranteed result.”⁹³ This “gross inefficiency” was documented (dedicated C-7s averaged only 1.4 tons/sortie despite a 2.5 ton capacity), but often explainable by factors that had nothing to do with the dedicated arrangement.⁹⁴ Detractors rightly noted that C-7s often duplicated routes already serviced by CSAS, leading to inefficiency and duplication of effort.⁹⁵ Further, an 834 AD analysis of C-7 operations discovered that MACV’s monthly apportionments seldom decreased, even when a user’s lift requirements did.⁹⁶ Further, in emergency situations, MACV J-3s could only “request” that an Army unit voluntarily release a dedicated C-7 to support a CSAS emergency request.⁹⁷ Finally, probably the best argument against the system was that it left the fox guarding the hen house. In essence, dedicated users validated their own, often superfluous, requirements. As a result, supplies often went by air even when surface transportation made more sense. One commander observed loose Army control made for interesting passenger traffic that included “camp followers, bar girls and petty thieves.”⁹⁸

What lessons be deduced from this debate? Three seem appropriate. First, a dedicated system seems suited to a forward area consisting of many small camps that require frequent resupply with STOL aircraft. It provides field commanders with maximum flexibility and positive control, qualities which tend to outweigh efficiency for forward operations.⁹⁹ Second, to prevent abuse, dedicated systems require close monitoring and audit. TMA should have been more involved in evaluating the efficiency and quality of the C-7 traffic. A compromise might have allowed “allocating” but not “attaching” STOL aircraft to Army users to retain full operational control by the ALCC.¹⁰⁰ Finally, to blend the best of both worlds, STOL aircraft should probably be included in both CSAS and dedicated systems. But airlift commanders should ensure that no more than the minimum essential are allocated to individual users.¹⁰¹

Strategic-Tactical Interface. Apart from the CSAS and dedicated airlift systems, MAC strategic airlift occasionally augmented the theater airlift system. Under

operational control of PACAF's 315th Air Division, MAC C-124s based at Tachikawa provided an outsize cargo¹⁰² carrying capability for MACV. Aircrews from the 22nd Military Airlift Squadron performed yeoman's service, hauling over 600 tons/month¹⁰³ of "outsize" under combat conditions as "MAC's most decorated airlift squadron."¹⁰⁴ Additionally, beginning in 1965, MAC C-141s supplemented intratheater airlift by direct delivery of American combat units to Vietnam. Operation Blue Light was a 27-day airlift of a 3000-man infantry brigade from Hawaii to Pleiku, South Vietnam.¹⁰⁵ By delivering cargo to multiple offload bases in Vietnam, strategic airlifters reduced the theater "redistribution workload, speeded distribution to the users, and reduced congestion at the major redistribution ports."¹⁰⁶

But despite these contributions, strategic airlift was constrained by an ill-defined interface with theater forces. Before the 1970 revision to AFR 23-17, *Military Airlift Command*, the Air Force had no written guidance for using strategic airlift to augment the theater effort. The 1970 release made provisions for "changing operational control" (CHOP)¹⁰⁷ from MAC to the theater CINC for strategic "employment" missions (paratroop drop or assault landing) or "operations into and within a combat zone or forward area."¹⁰⁸ MAC refused to relinquish control of other theater augmenting missions. And no easy mechanism existed for requesting strategic support of intratheater airlift; thus, MAC seldom provided assistance to supplement MACV airlift.¹⁰⁹ To be fair, this infrequency of strategic augmentation missions may have been as much due to adequate levels of theater airlift capacity combined with the very real training costs and risks of introducing strategic assets into the theater environment. A further penalty of the dual strategic and tactical airlift systems was the redundant command post networks that lacked an interface to resolve parking space and servicing conflicts, or integrate schedules to avoid "bunching of arrivals and the saturation of airfield facilities."¹¹⁰ In sum, the war exposed a need to facilitate the use of strategic airlifters in-theater, when justified, and eliminate the wasteful and competing airlift command post networks.

Summary. This chapter has highlighted several important theater airlift organization and control lessons of the Vietnam War. Based on its review of primary sources that included both “official” and subjective assessments, the following represents the author's view of the most pertinent airlift lessons.

Vietnam's Theater Airlift Lessons;

1. Theater airlift should be centralized within a consolidated theater airlift organization, subordinate to the air component commander, and operationally controlled by a general officer.
2. The decision to “permanently base” versus “rotate” tactical airlift forces in a theater is largely situational. It will depend on the “maturity” of the theater, its distance from permanent basing infrastructure, the anticipated length of the conflict, and cost.
3. Tactical airlift must be nurtured by a single “home command.”
4. Steps must be taken to minimize the strategic-tactical duplication of theater C² facilities.
5. The theater airlift control center should be separate from, but connected to, the tactical fighter control center.
6. Theater airlift requires a deployable cadre of qualified C² personnel to support large contingency operations.
7. TALOs are vital to enhance support of Army theater lift requirements. They should be experienced airlift officers operationally controlled by the ALCC.
8. Experienced airlifters must be proportionally represented on the joint theater transportation management board.
9. Effective techniques must be established in advance for managing airlift requirements during high demand periods to prevent “priority inflation.”
10. “Dedicated” airlift arrangements are often appropriate to support forward operations with STOL aircraft, but operational control should remain with the theater airlift control center to prevent abuse, and facilitate eventual integration into the common user system.
11. Doctrine must provide for the judicious use of strategic airlift in-theater when needed to supplement the tactical effort.

Notes

¹ Robert C. Owen, “Creating Global Airlift in the United States Air Force 1945-1977: The Relationship of Power, Doctrine, and Policy” (PhD diss., Duke University, 1992), 349.

² Ray L. Bowers, *Tactical Airlift* (Washington, D.C.: Government Printing Office, 1983), 26-27.

- ³ Ibid., 35.
- ⁴ Ibid., 83-86, 92.
- ⁵ Ibid., 144-46, 175-76.
- ⁶ Robert F. Futrell, *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, vol. 2, 1961-1984*, (Washington, D.C.: Government Printing Office, 1989), 313.
- ⁷ Bowers, 350.
- ⁸ Col Roy M. Chapman, “Tactical Airlift Management in Vietnam,” *Signal* 24, no. 8 (August 1970): 35.
- ⁹ Bowers, 105.
- ¹⁰ Ibid., 106-07.
- ¹¹ Gen William G. Moore, Jr., interview with Dr. Roy Cross, Hq MAC History office, *Airlift* 12, no. 4 (Winter 1990-91): 17.
- ¹² Bowers, 190.
- ¹³ Ibid., 191.
- ¹⁴ Moore, *Airlift*, 17-18.
- ¹⁵ “Tactical Airlift,” Corona Harvest Air University Designated Study Number 7, vol. 6, Maxwell AFB, Ala., 15 June 1968, 35. Air University Library document no.: M-U 35582-12 1968 v.6.
- ¹⁶ Ibid., 37.
- ¹⁷ Bowers, 248.
- ¹⁸ Brig Gen William G. Moore Jr., 834th Air Division Commander, October 1966-November 1967, End of Tour Report (undated), 26-27. USAF Historical Research Agency call no.: K740.131.
- ¹⁹ Utilization rate equals the average number of flying hours per aircraft per day
- ²⁰ Headquarters USAF, “C-130 Shuttle vs. C-130 PCS Operations in Southeast Asia,” AFGOA operations analysis , December 1966, 19-27. USAF Historical Research Agency call no.: K143.504-6 Dec 1966.
- ²¹ Ibid., 40-41.
- ²² Ibid., 8. Besides the practical arguments for TDY basing, political considerations may also have been at work. President Johnson's 1967 decision to limit MACV's force size to 525,000 men may have motivated USAF to favor a basing arrangement in which C-130 forces would “not be counted” against the 500,000 man cap.
- ²³ Memorandum, Gen William W. Momoyer, USAF (Ret), to Gen Ellis, subject: Corona Harvest (USAFAirlift Activities in Support of Operations in SEA 1 January 1965-31 March 1968), 29 May 1974, 1. USAF Historical Research Agency call no.: K239.031-102.
- ²⁴ This point is certainly debatable. Although the C-123 crews' one-year remote tour in Vietnam provided “continuous familiarity with the peculiar and changing conditions which affect airlift missions,” aircrews were not immediately productive. Typically, the first several months was spent training and gaining familiarity with the combat flying environment. In addition, continuation training, illnesses, and R&R “overhead” served to decrease the actual combat utilization of these permanently assigned crews. Conversely, the TDY C-130s were nearly 100% utilized while in-country because training and maintenance overhead was conducted at their home PACAF bases. And, although typical in-country tours lasted just two weeks, accumulated time in-theater gradually grew to exceed 24 months, meaning the typical C-130 pilot flew more combat sorties over the course of a “tour” than his C-123 counterpart. For instance, one interviewed C-130 pilot flew 939 combat sorties during 289 in-country flying days over a 30-month tour, a greater productivity than what a C-123 pilot could generate in one year. See “C-130 Shuttle vs. C-130 PCS Operations,” 42; David R. Mets, School of Advanced Airpower Studies, Maxwell AFB, Ala., interview with author, 30 April 1993.
- ²⁵ Maj David R. Mets, “Tactical Airlift Operations,” Project CHECO Report, Headquarters PACAF, Directorate of Tactical Evaluation, 30 June 1969, 77. Air University Library document no.: M-U 38245-128 30 Jun 69; USAF Tactical Airlift Center, “A Tactical Air Command Activity Input to Project Corona Harvest on Tactical Airlift in SEA, 1 January 1965-31 March 1968,” 1:25. USAF Historical Research Agency call no.: K417.0734-1.
- ²⁶ Maj Gen Burl W. McLaughlin, 834th Air Division Commander, November 1967-June 1969, End of Tour Report, 15 June 1969, 3-16. USAF Historical Research Agency call no.: K740.131.
- ²⁷ Mets, “Tactical Airlift Operations,” 68-69.
- ²⁸ “USAF Airlift Activities in Support of Operations in Southeast Asia, 1 January 1965-31 March 1968,” Project Corona Harvest Study, Air University, Maxwell AFB, Ala., January 1973, 23. USAF Historical

Research Agency call no.: K239.034-2. Gen Momoyer recommends this study as a balanced treatment of SEA airlift operations.

²⁹ It is important to distinguish between operational control (OPCON) and administrative command. OPCON, normally delegated to a service component commander by the unified or specified command CINC, is mission or task oriented. It includes those functions of command involving “the assignment of tasks, the designation of objectives, and the authoritative direction necessary to accomplish the mission.” OPCON also includes “directive authority for joint training.” Conversely, administrative command involves “administration, discipline, internal organization, and unit training.” It usually includes logistics support, O&M funding, and personnel management. See AFSC Pub1, *The Joint Staff Officer’s Guide 1991*, 2:22.

³⁰ Bowers, 30-31.

³¹ Ibid., 122.

³² Futrell, 313.

³³ This decision spurred another debate concerning the efficiency of a “common user” system versus “dedicated” airlift where aircraft are attached to using units. The merits of each are discussed in a later section.

³⁴ Col Wilbert Turk, 483d Tactical Airlift Wing Commander, 11 September 1968-4 September 1969, End of Tour Report, 18 August 1969, 5. USAF Historical Research Agency call no.: K740.131

³⁵ AFM 2-50, *U.S. Air Force Doctrine for Tactical Airlift Operations*, 1 January 1967, 2-3.

³⁶ “Airlift Activities in Southeast Asia, 1 January 1965-31 March 1968,” 4a.

³⁷ Gen William W. Momoyer, “Observations of the Vietnam War, July 1966-July 1968,” End of Tour Report (Maxwell AFB, Ala.: USAF Historical Research Agency), 12-13.

³⁸ Momoyer, Corona Harvest memorandum, 2.

³⁹ Futrell, 315, 321.

⁴⁰ Moore says Gen Sweeny, TAC commander, pushed tactical airlift beyond a “stepchild” status. He praises Sweeney’s support of Project Close Look, a TAC program which developed tactics for in-trail formations, the Ground Proximity Extraction System (GPES), and Low Altitude Parachute Extraction System (LAPES), all used in Vietnam. See Moore, *Airlift*, 16-17.

⁴¹ Ibid., 18-19.

⁴² AFM 2-4, *Tactical Airlift*, 10 August 1966, 10. This version still current.

⁴³ Bowers, 350, 468-69.

⁴⁴ McLaughlin, 6:4-5; Maj Gen John H. Herring Jr., 834th Air Division Commander, June 1969-June 1971, End of Tour Report (undated), 53. USAF Historical Research Agency call no.: K740.131.

⁴⁵ Herring, 34.

⁴⁶ Bowers, 243-44.

⁴⁷ AFM 2-4, 10.

⁴⁸ AFM 2-50, 1 January 1967, 3:10.

⁴⁹ Although operations requiring close coordination between “fighter” and airlift communities were rare, they cannot be dismissed. The highly integrated airlift operations at Khe Sanh and the A Shau Valley required centralized control by the TACC of fighters, bombers, helicopters, FACs, and airlifters. This control was locally exercised by on scene Airborne Battlefield Command and Control Centers (ABCCC).

⁵⁰ Bowers, 243-44.

⁵¹ “Airlift Activities in Southeast Asia, 1 January 1965-31 March 1968,” 3.

⁵² McLaughlin, 6:24.

⁵³ “Theater Airlift Study, FY-1968,” Headquarters PACAF Directorate of Plans and Headquarters MAC Directorate of Operations, 30 June 1967, 165. USAF Historical Research Agency call no.: K300.04-30.

⁵⁴ Momoyer, Corona Harvest memorandum, 1; “USAF Airlift Activities in Southeast Asia, 1 April 1968-31 December 1969,” Project Corona Harvest Study, Air University, Maxwell AFB, Ala., May 1972, 4:21.

⁵⁵ McLaughlin, 6:23.

⁵⁶ This relaxation of standards may have been due to a shortage of qualified airlift pilots who had not yet served SEA tours and were not needed as active crew members. To fill the slots, the Air Force used surplus rated crew members from other weapons systems. For instance, General Bernard Randolph (then Major), later commander of Air Force Systems Command, was assigned as commander of the Chu Lai ALCE despite the fact that his previous operational experience was limited to B-47 navigator duties. See

“Biography--General Bernard P. Randolph,” Secretary of the Air Force Office of Public Affairs, Washington, D.C., June 1988.

⁵⁷ “Tactical Air Command Activity Input 1965-1968,” I:75-77.

⁵⁸ “USAF Airlift Activities in Southeast Asia, 1 January 1965-31 March 1968,” 21.

⁵⁹ Herring, 164-66.

⁶⁰ “USAF Airlift Activities in Southeast Asia, 1 January 1965-31 March 1968,” 19.

⁶¹ J. S. Butz Jr., “Intratheater Airlift in Vietnam--A Question of Quantity and Control,” *Air Force and Space Digest* 49, no. 7 (July 1966): 36-38.

⁶² Moore, End of Tour Report, 33.

⁶³ Bowers, 246.

⁶⁴ 834th Air Division Regulation 55-13, *Tactical Airlift Liaison Officers/Airmen (TALO/TALA)*, 8 September 1968, 1-4. USAF Historical Research Agency call no.: K-DIV-834-HI Jul 68-Jun 70 v2.

⁶⁵ Capt Robert P. Everett, “Tactical Air Control Party,” *Airman* 12, no. 11 (November 1968): 60.

⁶⁶ Bowers, 246.

⁶⁷ Headquarters USAF, “USAF Airlift Management Study Final Report” (U), Deputy Chief of Staff Plans and Operations, 1 April 1970, 26. (Confidential) Information extracted is unclassified. USAF Historical Research Agency call no.: K168.04-36 1 Apr 70.

⁶⁸ The report went on to cite numerous incidents that were the direct result of inexperienced TALOs: diverting the “wrong” aircraft, sending an aircraft to a location without appropriate cargo handling equipment, and exceeding the maximum allowable aircraft on the ground (MOG) at an airfield. See “Tactical Air Command Activity Input 1965-1968,” I:47.

⁶⁹ McLaughlin, 6:8

⁷⁰ Herring, 38.

⁷¹ AFM 2-50, 1 January 1967, 2:1,20.

⁷² McLaughlin, 2:1-6.

⁷³ Ibid., 2:1-6.

⁷⁴ “Air Operations During the VC Tet Offensive, “Project CHECO Southeast Asia Digest, prepared by 7 AF/DOAC, February 1968, 17-19. USAF Historical Research Agency call no.: K717.0415 Feb 68.

⁷⁵ Ibid., 19.

⁷⁶ Ibid., 19.

⁷⁷ Mets, “Tactical Airlift Operations,” 32.

⁷⁸ Maj Arne Ellernets, “The Influence of Vietnam on Tactical Airlift Doctrine” (Air Command and Staff College Thesis no. 0350-68, Air University, Maxwell AFB, Ala., June 1968), 50. This inadequate airlifter representation may have been due to a scarcity of airlift pilots that had not yet completed a previous SEA tour and could be spared from cockpit duties. See note 56 above.

⁷⁹ “USAF Airlift Activities in Southeast Asia, 1 January 1965-31 March 1968,” 18.

⁸⁰ “Responsiveness” and “efficiency” require careful definition. In this context, responsiveness refers to the *timeliness* of the airlift system’s reaction to a valid lift requirement, while efficiency seeks to *economize* airlift operations by ensuring that payload per sortie is kept at a high level. When airlift capacity greatly exceeds lift requirements, the system can afford to maximize responsiveness because plenty of pad exists for “inefficient” sorties. On the other hand, when airlift system capacity falls below requirements, schedulers will tend to emphasize “efficiency” to keep as much cargo flowing to users as possible, albeit at a less responsive rate. If responsiveness remained the priority, some users would receive on-time deliveries while most would not, hence overall responsiveness *and* efficiency would suffer.

⁸¹ “Regularly scheduled missions” or “channel missions” or “milk runs” flew the same routes each day. They were *responsive* because the customers knew exactly when and where to expect them, but *inefficient* because cargo and passenger requirements fluctuated from day to day, resulting in periods of underutilization. Conversely, “fragged missions” responded to specific submitted airlift requests. They were perceived as *less responsive* due to the requirement to coordinate requests well in advance but were *more efficient* because flights could be tailored to assure maximum utilization.

⁸² McLaughlin, 2:7.

⁸³ Ibid., 2:7-9.

⁸⁴ In essence, two frags were created, one for day and one for night ops. The night frag lagged the day frag by 12 hours. “Split frags” improved night mission efficiency from 33.4 to 35.8 tons/mission. See Bowers, 469.

⁸⁵ McLaughlin, 2:12.

⁸⁶ Turk, 11.

⁸⁷ Col Richard T. Drury, “Dedication of Tactical Airlift to the Army” (Air War College Research Report no. 3903, Air University, Maxwell AFB, Ala., April 1970), 47.

⁸⁸ Gen J. P. McConnell, USAF Chief of Staff, to US Army Chief of Staff, letter, 24 February 1968, 1, USAF Historical Research Agency call no.: K170.3-4 9 Mar 68; Moore, End of Tour Report, 17-18; “USAF Airlift Management Study Final Report,” 28.

⁸⁹ AFM 2-4, 5.

⁹⁰ Maj Ronald D. Merrell, “Tactical Airlift in SEA,” Project CHECO Southeast Asia Report, Headquarters PACAF, Operations Analysis Directorate, 15 February 1972, 12. Report period: 1969-71. Air University Library document no.: M-U 38245-199.

⁹¹ Drury, 38.

⁹² Moore, End of Tour Report, 20; “USAF Airlift Management Study Final Report,” 28.

⁹³ Col Rodney H. Newbold, 483d Tactical Airlift Wing Commander, 28 March 1971-25 February 1972, End of Tour Report (undated), 4-5. USAF Historical Research Agency call no.: K740.131

⁹⁴ See Mets, “Tactical Airlift Operations,” 56-57. Dedicated C-7s delivered many expendables (ammo and food) to small outposts that provided no return cargo loads. Also, C-7s were not “463L compatible,” hence aerial ports were reluctant to build special pallets for them to carry “opportune cargo.”

⁹⁵ Turk, 2.

⁹⁶ For example, the 1st Air Cavalry Division's monthly C-7 allocation did not change even after moving to a new location with significantly less airfields. See Headquarters 834th Air Division, “An Analysis of C-7A Dedicated User Operations--RVN. January-August 1969,” 8 September 1969, 34-35. USAF Historical Research Agency call no.: K-DIV-834-SU-OP 1 Jan-31 Aug 69.

⁹⁷ Drury, 53.

⁹⁸ Newbold, 3-4.

⁹⁹ McLaughlin, End of Tour Report, 3:7.

¹⁰⁰ Ibid., 3:7-8; Drury, 60-61.

¹⁰¹ Drury, 64.

¹⁰² Outsize cargo is defined as cargo that could only be carried aboard the C-124 or giant C-5A Galaxy.

¹⁰³ Bowers, 384.

¹⁰⁴ Briefing by Commander, 22d Military Airlift Squadron, to MAC Wing Commanders' Conference, 25-27 January 1968, 7. USAF Historical Research Agency call no.: K300.03-1.

¹⁰⁵ Futrell, 314, 633, 636. MAC touted Operation Blue Light as the operational validation of its new C-141 Starlifter. Eighty-eight C-141s flew 240 sorties into the austere 6,000-foot airstrip at Pleiku. See Lt Col Charles E. Miller, *Airlift Doctrine* (Washington, D.C.: Government Printing Office, 1988), 333-34.

¹⁰⁶ Briefing by Commander, 22d Military Airlift Squadron, I:V:23.

¹⁰⁷ Forces “CHOP” when operational control (OPCON) is transferred from CINC to another. Usually the arrangement is temporary and the “losing” command generally retains responsibility for administrative command, including logistics support.

¹⁰⁸ AFR 23-17, *Military Airlift Command*, 9 December 1970, 4. Although provisions were made for chopping strategic “employment” missions, the author discovered no instance where this occurred in the Vietnam context.

¹⁰⁹ Maj Daryl Bottjer et al., “An Improved Airlift Control System for MAC” (Air Command and Staff College Research Study, Air University, Maxwell AFB, Ala., May 1975), 42.

¹¹⁰ For instance, the Da Nang ALCE, under control of the 834 AD, was located over one mile from its counterpart MAC Airlift Command Post (ACP). The two facilities aggressively competed for ramp space, fuel, loading crews, and maintenance. “There was no motivation for cooperation.” Ellernets, 76.

Chapter 3. The Persian Gulf War: Lessons Reinforced

Twenty years after the waning days of the Vietnam War, Saddam Hussein's invasion of Kuwait provided US tactical airlift with an opportunity to demonstrate the lessons learned in Vietnam. This chapter will assess the key organizational and control lessons of the war, initially focusing on the role of the theater Commander of Airlift Forces (COMALF)¹ and his airlift division. Next, it will assess the effectiveness of the in-country command post system. The chapter concludes with a discussion of important procedural lessons, focusing on scheduling techniques and interfaces with the strategic airlift flow. The discussion will attempt, where applicable, to determine how effectively Vietnam's lessons were applied to the Gulf War. But first, a brief overview of the war's airlift operations:

Five days after Iraqi tanks rolled into Kuwait on 2 August 1990, US forces began their historic deployment to the Gulf. Initially, 90% of the strategic fleet of C-5s and C-141s was committed, successfully moving five fighter squadrons, an AWACS contingent, and a brigade of the 82nd Airborne Division in five days.² On 11 August, tactical airlift forces led by 317th Tactical Airlift Wing C-130s from Pope AFB, deployed to Saudi Arabia. They quickly established an intra-theater airlift network initially geared towards distributing prepositioned stocks of equipment to various Army beddown locations.³ By 9 September there were 96 C-130s in the Gulf region⁴ based at seven different airfields.⁵ During Desert Shield, the C-130s flew logistical resupply missions, connecting strategic air and sea ports to deployed Air Force, Army, and Marine Corps forces. But later, theater airlift shifted to support the 18th Airborne Corps' movement west from King Fahd to Rafha in preparation for its "left hook" maneuver. 48 additional C-130s were "chopped" to US Central Command (USCENTCOM) to support this 2,000-sortie effort. Remarkably, C-130s landed every seven minutes at Rafha during the operation's first 13 days.⁶ Once the ground war began, C-130s provided limited "lifeline support,"

airdropping tons of ammo and supplies to elements of the Army's 7th Corps and 101st Airborne Division who had outrun their supply lines.⁷ MAC's commander, Gen H.T. Johnson, claimed that without the C-130s "there would have been no 100-hour victory."⁸

Organizational and Command Relationship Lessons

Centralized Control Under a Provisional Airlift Organization. As in Vietnam, the Gulf War experience demonstrated the importance of consolidating airlift operations under a single theater airlift organization. Initially, C-130s deployed to the Gulf were "chopped" to CENTCOM who in turn delegated operational control to his CENTAF commander, Lt Gen Charles Horner. Although operations went well, administrative problems emerged for the tactical airlift force. Most of the temporary "wings" consisted of a hodge-podge collection of active duty and reserve squadrons from various CONUS bases loosely controlled by a theater COMALF.⁹ As a result, local airlift commanders often "did not have administrative or disciplinary control over the personnel who were deployed from other MAC units in the US."¹⁰ Gen Horner wanted a mechanism to resolve disciplinary actions in-theater. In response, the 1610th Airlift Division (Provisional) was established on 31 October 1990, which encompassed five provisional airlift wings.¹¹ Most after-action reports claimed the provisional organization improved morale by clearly defining command lines and providing UCMJ authority to handle disciplinary problems.¹² According to one source, Gen Horner applauded the arrangement that consolidated all "airlift forces" and "other tangential operations" within the airlift division.¹³ Horner believed the intermediate airlift division structure "was instrumental in resolution of span-of-control problems and provided the wing commanders someone with whom to discuss their concerns."¹⁴ One MAC commander characterized the provisional airlift structure as "a very workable, very common sense command relationship."¹⁵ Like Vietnam, the experience illustrated the value of a

centralized theater airlift organization, with the additional lesson that a provisional airlift structure should be conceptualized before a contingency begins.

Basing and Sizing the Theater Airlift Force. Besides developing a workable organization, airlifters struggled to overcome a shortage of airlift “ramp space” in the CENTCOM area of responsibility. One post-war analysis found that a dearth of offload bases limited MAC's inter and intra-theater airlift flow. Further, the lack of an in-theater strategic airlift recovery base,¹⁶ along with slow refueling and limited ramp space, initially restricted offloads to just 55 per day. Reviewers faulted airlifters for not demanding more bases in-theater, urging that “airlifters must more adequately, more promptly, and more forcefully articulate unique airlift requirements” to the theater CINC.¹⁷ Brig Gen Tenoso, the 1610 ALD(P) commander, claimed that as COMALF he constantly lobbied for more in-theater basing and support.¹⁸

Besides “fighting” for bases, the COMALF also worked to justify the number of C-130s needed in-theater to support CENTCOM requirements. After the initial C-130 deployment, on 2 November 1990 Gen Horner asked his COMALF to consider reducing the C-130 force size because “he didn't think there was a requirement (for that many).”¹⁹ But Tenoso's analysis showed that 32 *additional* C-130s were needed to support the upcoming “Left Hook” deployment and ground war.²⁰ Gen Tenoso feared the Army had underestimated its projected tactical airlift needs, and that once the war started “airlift would be like free candy”—everyone would want it.²¹ Tenoso believed one of his primary COMALF responsibilities was to actively engage users before combat operations to flush out airlift needs.²² In sum, the Gulf War experience confirmed the value of a strong in-theater advocate of airlift basing requirements as well as a defender of sufficient airlift force size to meet user needs.

Dual-Hatted COMALF Reinforced. This “strong advocate” resembled, and further expanded the role of a theater airlift commander pioneered in Vietnam. Pre-war doctrine viewed the COMALF as a dual-hatted commander linking the strategic and

tactical airlift systems. As the first Operation Desert Shield COMALF, Brig Gen Frederick Buckingham viewed his primary allegiance to the CENTAF commander. In this role he commanded the 1610 ALD(P), served as Gen Horner's Deputy Chief of Staff for airlift, and was the CENTCOM liaison for airlift management. Conversely, while wearing his "strategic" hat, Gen Buckingham acted in behalf of CINCMAC to "monitor and manage" strategic airlift forces transiting the theater. Practically, Gen Buckingham was the theater's single point of contact for airlift: "Anything that 'smells,' or kinda 'looks like' airlift, they come directly to you. They don't think about the chain of command . . . which is good, in some respects."²³

Besides managing day-to-day operations, the COMALF was responsible for the proficiency and readiness of his theater airlift fleet. In October 1990, Gen Tenoso suspected his deployed airlift crews were losing proficiency in airdrop and night formation. As a result he converted some logistical resupply sorties into "trainers" to keep his crews tactically sharp for the coming ground war. In addition, Tenoso initiated "integration training" with AWACS and the "fighter community" to improve coordination during combat operations. On the logistics side, Tenoso found that C-130 maintenance personnel had been abusively "canning"²⁴ parts to keep in-commission rates high, instead of using the supply system.²⁵ He ordered a halt to canning, reassuring his wings he "was willing to take a reduction in the in-commission rate to make sure the supply system worked."²⁶ These Gulf War COMALF experiences reinforced the need for an in-theater airlift commander to justify basing and resources, interface with the strategic airlift system, and ensure the readiness of the airlift force.

Airlift Consolidation Supported. Besides validating the COMALF position, the Gulf War experience seemed to support the decision to consolidate tactical airlift within MAC in 1974. Significantly, C-130s "chopped" to CENTAF represented 32% of the entire MAC fleet, emphasizing the general scarcity of tactical lift and reinforcing its logical placement in a centralized command.²⁷ Intuitively, the "chopping" problem might

have been much more difficult if CENTAF had been required to deal with C-130s separately owned by MAC, TAC, USAFE, PACAF, etc. Gen Johnson, CINCMAC, agreed that airlift performance in the Gulf vindicated a consolidated airlift force:

Our C-130s operating in Southwest Asia today may be deployed to support other theater commanders in the future, but no matter where they are, they should always remain an integral player on the airlift team . . . By maximizing this fully integrated common user airlift fleet under MAC and USTRANSCOM, we will be able to maximize America's airlift capability.²⁸

Theater Command and Control Structural Lessons

Theater Command and Control Network. The tactical airlift C² network in the Gulf resembled its Vietnam-era predecessor, suffering from familiar charges of poor interface with the strategic system. The heart of the network was the 1610th Airlift Control Center (ALCC), responsible for controlling theater airlift in the entire Mideast region.²⁹ The ALCC utilized Wing Operations Centers (WOC) at C-130 bases to direct requirements and assist with theater flight following.³⁰ Likewise, MAC operated ALCEs at several entry ports as its eyes and ears for managing the strategic flow.³¹ But despite Gen Johnson's vision of an "integrated team," the two systems did not always coordinate. ALCE commanders frequently complained they were seldom aware of incoming strategic missions, and thus, were hard pressed to coordinate these with the theater airlift schedule that was routinely distributed in advance.³² Furthermore, at King Kahd, where an ALCE and WOC operated independently, "there were constant territorial disputes involving command and control authority, ramp space, MAPS [Mobile Aerial Support Squadron] support, and decision-making authority,"³³ a situation reminiscent of Da Nang, 20 years earlier. As such, similar calls were made to consolidate the two C² networks.

ALCC-TACC Relationship. One Vietnam lesson that *was* learned was the benefit of separate but adjacent facilities for controlling theater airlift and fighter operations. Doctrinally, the post-Vietnam AFM 2-7, *Tactical Air Control System*, was

ambivalent. While depicting the ALCC as a separate “air operations element” for controlling airlift, it contended that the need for a stand-alone ALCC would depend on “the structure of the supported force, the scope of the tactical air support operation, and the level of control required.”³⁴

However, when setting up the CENTAF ALCC, Gen Buckingham was anything but ambivalent. He ordered his staff to “stake out” territory “very close” but apart from the TACC. The two facilities maintained “a daily interface all the time, 24 hours a day”³⁵ through staff counterparts and a MAC liaison officer who was the primary airlift representative in the TACC.³⁶ The separateness of the facilities proved fortunate, as TACC communications were initially unable to support theater airlift demands. Ironically, the ALCC assisted the TACC with secure voice SATCOM support to help get the Air Tasking Order (ATO) out.³⁷ All told, the arrangement worked well and generated few post-war demands to consolidate facilities.

Airspace Allocation: What About Airlift? Despite the merits of the distinct ALCC-TACC relationship, one area which exemplified poor cooperation between the “fighter” and “airlift” communities was airspace control. After the air campaign began, SCATANA³⁸ was implemented, shutting down all navigation aids and ending radar separation for airlift missions. Gen Tenoso complained that theater airlifters were unfairly allocated a single altitude along a single air traffic route. What's more, AWACS controllers had no time to provide separation for airlift sorties.³⁹ In response, the ALCC devised an airway routing system for deconflicting airlifters in a SCATANA environment.⁴⁰ Despite this workaround, Gen Tenoso described airspace management as “one of our biggest problems,” observing that “our airlifters, our tactics people, and our airspace people, have to be able to articulate what airspace airlift will need” *before* hostilities begin.⁴¹ This problem highlighted the tension between the responsibility of an air component commander to manage his *air* war and the COMALF's obligation to

provide airlift for *all* theater users. It confirmed the advantage of a distinct theater airlift organization to articulate these needs.

Competent Command and Control Personnel. One clear lesson from Vietnam was the need to “grow” a cadre of trained, experienced C² personnel who could deploy and manage a large tactical airlift contingency. After MAC's consolidation in 1974, its corresponding worldwide command post network “significantly increased the number of facilities for training compared to the Vietnam era,” training personnel in both strategic and tactical airlift management.⁴² During the Gulf War, the 1610th ALCC was manned by experienced personnel from the 1701st and 1702nd Mobility Support Squadrons, MAC crucibles for C² expertise.⁴³ No post-war data indicated any problems with the competency of theater airlift C² personnel.

TALO: Institutionalized but Frustrated by Reporting Lines. One of the most highly trained C² personnel within the airlift control network was the TALO. After its demonstrated success in Vietnam, the TALO concept was institutionalized in MACR 55-55 in 1979.⁴⁴ However, TALOs continued to be frustrated by their subordination to TAC's Air Liaison Officer (ALO) and Tactical Air Control Party system.⁴⁵ The problem became especially acute during the Gulf War. One Division TALO complained his Division ALO “boss” felt an obligation to coordinate through his Corps TALO “boss” before issuing taskings, diminishing TALO responsiveness.⁴⁶ Another Corps TALO reported that operational control under the ALO was often confusing and counterproductive, noting that his ALO failed to provide required “vehicle, radio, and enlisted personnel.”⁴⁷ Post-war “lessons learned” criticized the arrangement, especially the ALO's failure to provide the communication and transportation resources vital to the TALO mission.⁴⁸ Like Vietnam, the experience begged for an organization that placed TALOs under the operational control of the theater ALCC.

Gulf War Airlift Management Procedural Lessons

Airlift Validation and Prioritization. Procedures for validating and prioritizing airlift requirements by the CENTCOM staff worked well, although the job was simplified because movement requirements rarely exceeded airlift capacity.⁴⁹ The first COMALF, Gen Buckingham, played a key role in initiating the system, literally dictating to CENTCOM J-4 personnel how he wanted the process to work while enroute to Saudi Arabia on 7 August 1990.⁵⁰ Since airlift capacity generally exceeded requirements, a formal Joint Transportation Board was never established at CENTCOM to allocate lift between the services.⁵¹ Instead, individual service components validated their own requirements and passed them along to the CENTCOM's Joint Movement Control Center (JMCC) for prioritization. Prioritized requirements were then forwarded to the ALCC through CENTAF for mission tasking.⁵² In all, the system worked well, aided by early COMALF initiative in establishing the process.

Unlike Vietnam, the smooth validation and prioritization process could in part be traced to the presence of experienced airlifters on the JMCC staff. According to one ALCC officer, CENTCOM J-4 and the JMCC were staffed with many Air Force officers with theater airlift experience, injecting a “sanity check” into the airlift process.⁵³ In this respect, CENTCOM had “learned” the Vietnam lesson that airlifters must be represented within the joint airlift validation community.

Scheduling Innovation: Stars and Camels. The previous chapter discussed the inherent tension between the efficiency of a “common user” system and the responsiveness of “dedicated” airlift. CENTAF's “STAR and CAMEL” scheduling system helped blend the best of both approaches. During the initial days of the coalition buildup in the Gulf, the intratheater airlift distribution system was overwhelmed by the incoming strategic airlift flow. Theater users were required to submit “Form 19s” to request transshipment of incoming supplies stacking up at entry ports, but long lead times slowed the scheduling cycle.⁵⁴ In response, the ALCC developed an alternative to this

“request driven” process: a series of intratheater “frequency channels” called STARS and CAMELS. STARS moved primarily passengers and mail, while CAMELS were cargo haulers. 1610 ALD allocated approximately one-third of its C-130 force to the two systems. STARS and CAMELS were based on a “hub and spoke” theater distribution system, with each regularly scheduled mission “dedicated” to a specific using service.⁵⁵ The system significantly improved responsiveness, because each user determined what cargo to ship, avoiding the lengthy request process. The CENTAF logistics staff monitored the systems’ efficiency by tracking daily cargo summaries of each STAR/CAMEL to ensure utilization remained high. If loads dropped off, CENTAF would challenge the user to “revalidate” its requirement for the STAR or CAMEL. In this way, theater airlift provided maximum responsiveness without sacrificing the overall efficiency of the system.⁵⁶ Future contingency planners requiring large-scale tactical lift could preplan a STAR/CAMEL system directly into their operations plans. Such a system would be particularly advantageous at the beginning of an operation to redistribute prepositioned stock before a formal airlift request system is established.

Integration of the Airlift Schedule with the Air Tasking Order. One of the major scheduling problems airlifters faced was integrating their airlift schedule into CENTAF’s overall schedule: the Air Tasking Order (ATO). All parties agreed that “anything that flies must be in the ATO” to ensure airspace deconfliction and coordination.⁵⁷ But unfortunately the ALCC’s automated Airlift Movement Schedule (ALMS) system was incompatible with the Computer-Aided Force Management System (CAFMS) used by the TACC to generate and distribute its ATO. Converting the ALMS into the CAFMS format was extremely time consuming, and even then, *both* systems had to be used because the ATO format did not contain needed airlift mission data (stopover points, cargo loads, etc.).⁵⁸ One after-action report claimed the incompatible systems degraded “C-130 unit mission effectiveness, timeliness, and safety.”⁵⁹ Gen Tenoso cited the need for ATO-airlift interoperability as a key lesson of the war.⁶⁰

Strategic Lift Augmentation In-Theater. Equally frustrating for theater airlift planners was an unsatisfactory mechanism for using “strategic” C-141s and C-5s to move outsize/oversize cargo in-theater. Vietnam's lesson in this area had been ignored. CENTAF's transportation officer decried the convoluted request process for accessing strategic lift, claiming “existing policy and procedures did little to move outsize cargo, and forced the line-haul of assets nearly 1500 miles across five international borders.”⁶¹ Furthermore, other post-war observers sensed a “strict demarcation line” between strategic and theater lift with only “back of the mind” plans for using airlift in an augmentation role.⁶² To be fair, there were instances when strategic transports *were* used “to support intra-theater airlift shortfalls.” Gen Buckingham worked out an arrangement with MAC for “diverting” westbound C-141's for a single in-theater sortie.⁶³ Additionally, in preparation for the ground war, some C-141s were “chopped” to help shuttle army units and equipment from Dhahran to King Khalid.⁶⁴ In the final analysis, the successful use of strategic assets in-theater was the product of ad hoc arrangements and expedients. No established mechanism existed for determining when or how to subordinate strategic lift requirements to near-term theater needs.

. The Gulf War's primary airlift organization and control lessons are summarized below. Table 2 compares Gulf War lessons with those previously identified in Vietnam, evaluating those issues which seemed to have been put to rest and those that remained troublesome.

Gulf War Theater Airlift Lessons

1. War plans should prearrange consolidated provisional theater airlift organizations when large-scale intra-theater airlift operations are anticipated.
2. An organizationally potent theater airlift commander is required to justify airlift force size and basing requirements, be a single point-of-contact for all airlift issues, manage unique needs of the airlift force, and articulate airspace requirements.
3. Overlapping in-theater strategic and theater airlift command and control networks should be consolidated to improve coordination.

4. As learned in Vietnam, the ALCC and TACC should be separate but connected facilities. Both must utilize a single ATO which should meet the needs of both “shooter” and airlift communities. TALOs should report to the ALCC rather than the ALO.
5. Both the in-theater command and control network and the joint transportation staff greatly benefited from trained and experienced airlifters.
6. A regularly-scheduled “hub and spoke” distribution system like the STARS and CAMELS may blend the best of “common user” and “dedicated” airlift systems and should be considered for large contingency operations.
7. Like Vietnam, theater airlift requires a mechanism for requesting strategic airlift augmentation of theater outsize or surge requirements.

Table 2
Theater Airlift Lesson Assessment

| LESSONS | WHERE OBSERVED | |
|--|----------------|----------|
| | VIET NAM | GULF WAR |
| Organization and Control | | |
| Consolidated theater airlift organization | ID | C,L |
| Theater airlift operationally controlled by theater airlift commander | ID | C,L |
| Tactical airlift nurtured by a single home command | ID | C,L |
| Command and Control Networks | | |
| Minimize duplication in tactical and strategic theater C ² facilities | ID | C,NL |
| Theater airlift control center separate but connected to fighter C ² | ID | C,L |
| Cadre of qualified theater airlift C ² personnel | ID | C,L |
| TALOs enhance airlift support of Army ops--OPCON under airlift | ID | C,NL |
| Management Procedures | | |
| Airlifters represented on theater joint transportation board | ID | C,L |
| Preestablish procedures for preventing priority inflation | ID | NA |
| “Dedicated” airlift systems may be appropriate for STOL aircraft | ID | NA |
| Airlift missions should be scheduled via an integrated ATO | NA | ID |
| “Hub and spoke” distribution systems may work well for large ops | NA | ID |
| Doctrine must better define use of strategic airlift in-theater | ID | C,NL |

KEY

- ID: lesson identified
- C: lesson confirmed or reinforced by subsequent experience
- L: lesson learned, adopted in practice or doctrine
- NL: lesson not learned, problem still exists
- NA: lesson not applicable or observed

As Table 2 indicates, many previous airlift lessons were reinforced during the Gulf War and taken to heart. The war confirmed the need for a strong airlift organization and a

COMALF who could bridge the strategic-tactical airlift interface and be a strong in-theater advocate for airlift needs. Like Vietnam, it also seemed to validate the concept of a distinct theater airlift control center, separate from but adjacent to the fighter control center, and manned by experienced airlift C² personnel. But unfortunately, some of Vietnam's problems remained unresolved. Theater airlift continued to suffer from duplicative tactical and strategic command post systems, frustrated TALOs under operational control of the fighter community, and inadequate mechanisms for using strategic airlifters in-theater. It remained to be seen whether post-war doctrine and policies would correct these shortcomings.

Notes

¹ The term Commander of Airlift Forces (COMALF) came into use after Vietnam. Typically the COMALF controlled all airlift forces in a theater or contingency operation. For large-scale operations, the COMALF also commanded an established provisional airlift division.

² Richard P. Hallion, *Storm Over Iraq--Air Power and the Gulf War* (Washington, D.C.: Smithsonian Institution Press, 1992), 133, 136, 138.

³ Department of Defense, *Conduct of the Persian Gulf War: Final Report to Congress*, Title V Report, (Washington, D.C.: April 1992), 41.

⁴ *Gulf War Air Power Survey (GWAPS)*, "The Logistics of Air Power in the Gulf War--Chapter 4: Intratheater Lift," 23 November 1992, 4:4.

⁵ C-130s were based at : King Fahd, Al Ayn, Al Kharj, Batee, Masirah, Sharjah, and Thumrait. See United States Central Command, "CENTAF Transportation After Action Report," Persian Gulf War, March 1991.

⁶ *GWAPS*, "Logistics--Chapter 4," 4:6; *Conduct of the Persian Gulf War*, 342.

⁷ *GWAPS*, "Logistics--Chapter 4," 4:24.

⁸ Quoted in Stan Morse, *Gulf Air War Debrief* (Westport, Conn.: Airtime Publishing Inc., 1991), 166.

⁹ 1610th Airlift Division, "Desert Storm Aircrew Brochure," 15 February 1991, 1, USAF Historical Research Agency microfilm no. 23974; SMSgt James R. Ciborski, "History of Airlift in the Desert: Circumventing the Iraqis," 1630th Tactical Airlift Wing (Provisional) History, Al Ain Air Base, United Arab Emirates, 23 May 1991, iv. USAF Historical Research Agency call no.: K300.04-58 23 May 91.

¹⁰ *GWAPS*, "Logistics--Chapter 4," 4:8.

¹¹ *Ibid.*, 4:8-10.

¹² Maj Jimmy C. Jackson, Jr., Joint Uniform Lessons Learned System (JULLS) input no. 15828-85200 (00002), Headquarters MAC/XPPBS, subject: Organizational Structure, 9 May 1991.

¹³ Maj Gen Richard J. Trzaskoma, 22d Air Force Commander, oral history interview with Dr. Gary Leiser, 22d Air Force Historian, Travis AFB, Cal., 31 October 1990, 2.

¹⁴ Lt Gen Charles A. Horner, "The Air Campaign," *Military Review* 71 no. 9 (September 1991): 21.

¹⁵ Maj Gen James C. McCombs, Headquarters MAC Deputy Chief of Staff/Plans, oral history interview with Dr. John W. Leland, Headquarters MAC Historian, Scott AFB, Ill., 20 November 1990, 6.

¹⁶ Typically, after off-loading cargo at an aerial port of debarkation (APOD), an aircraft will fly to a “recovery base” for servicing. This allows quicker turnaround and thus more “throughput” at congested APODs. The lack of a theater recovery base limited off-loads at the main APODs, Dhahran and Riyadh.

¹⁷ Headquarters Military Airlift Command, “Desert Shield Lessons Learned Working Group Issues,” HQ MAC/XPY, Scott AFB, Ill., October 1990, 10.

¹⁸ Maj Gen Edwin Tenoso, US Transportation Command J-3/4, Scott AFB, Ill., interview with author, 4 February 1993. Tenoso was CENTCOM's second COMALF, serving from October 1990 to March 1991.

¹⁹ Maj Gen Vernon J. Kondra, “The Vernon J. Kondra Notes,” oral history interview with Clayton H. Snedeker, 21st Air Force Historian, McGuire AFB, N.J., 10 October 1991, 55. Kondra was MAC Deputy Chief of Staff for Operations during the war, 24 August 1990-31 May 1991.

²⁰ Ibid., 56.

²¹ For instance Tenoso's staff determined that the Army had grossly underestimated its requirements for airlifted “fuel” to support the “Left Hook.” Additional sorties were added and turned out to be *required*. See Brig Gen Edwin Tenoso, “COMALF in Saudi Arabia,” oral history interview with Dr. Gary Leiser, 22nd Air Force Historian, 28 May 1991, 24.

²² Ibid., 12.

²³ Brig Gen Frederick N. Buckingham, 21st Air Force Vice-Commander, oral history interview with Clayton H. Snedeker, 21st Air Force Historian, McGuire AFB, N.J., 20 November 1990, 7. Buckingham was CENTCOM's first COMALF from August to October 1990.

²⁴ “Canning” is the practice of removing a good part from a grounded aircraft to replace a bad part on another. This expedient works in the short-term, but often leads to lower readiness by failing to exercise the supply system and promulgating “can birds” that rarely fly.

²⁵ Tenoso, oral history, 4-6.

²⁶ Ibid., 4.

²⁷ Colleen A. Nash, “Desert Storm Logistics,” *Air Force Magazine* 74, no. 5 (May 1991), 17.

²⁸ Gen Hansford T. Johnson, “The Defense Transportation System,” *Defense Transportation Journal* 47, no. 5 (October 1991), 56.

²⁹ A temporary change to MACR 55-3 gave the 1610th ALCC responsibility for “Iran, Iraq, Kuwait, Saudi Arabia, Bahrain, Qatar, Oman, United Arab Emirates, Yemen, and Egypt.” The ALCC controlled all theater airlift and “monitored and managed” transiting strategic transports. Change 2, MACR 55-3, vol. 2, *MAC Command and Control Responsibilities and Procedures*. USAF Historical Research Agency microfilm roll no. 23974.

³⁰ Maj John Bloom, Headquarters AMC/XPDS, Scott AFB, Ill., interview with author, 4 February 1993.

³¹ Riyadh, Dhahran, Jubail, and King Khalid. See Tenoso, oral history.

³² Maj Joseph M. Reheiser, Headquarters MAC/DOXT, to Headquarters MAC/DO, letter, subject: Desert Shield Trip Report (28 August-7 September 1990) (undated), 3.; History, Military Airlift Command, 1 January-31 December 1990, supporting document no. 3-103, “Report of the Desert Shield Lessons Learned Working Group” (undated), 7. Both documents located at USAF Historical Research Agency, call no.: K300.01 1 Jan-31 Dec 90 v7.

³³ Lt Col Edward J. McClure, 1676th Tactical Airlift Squadron (Provisional) Commander, End of Tour Report to 1610 Airlift Division (Provisional), June 1991. USAF Historical Research Agency call no.: K-WG-374-HI 1 Jan-30 Jun 91 v2. The 1676 TAS was part of the 1660th Tactical Airlift Wing (Provisional) at Kumrait AB, Oman.

³⁴ AFM 2-7, *Tactical Air Control System*, 2 February 1979, 2:2.

³⁵ Buckingham, 8.

³⁶ Bloom, interview.

³⁷ Buckingham, 10.

³⁸ SCATANA is a wartime procedure whereby all friendly navigation aids and air traffic control radars are turned off to prevent “homing in” by the enemy.

³⁹ Maj Stuchell, Joint Uniform Lessons Learned System (JULLS) input no. 171268-84000 (00050), 328th Tactical Airlift Squadron, subject: Airspace Sectorization and Control, 3 December 1991, 66.

⁴⁰ Bloom, interview.

⁴¹ Tenoso, oral history, 20-21.

- ⁴² Maj David C. Underwood, "The Airlift Lessons of Vietnam--Did We Really Learn Them?" (Air Command and Staff College student research report no. 2470-81, Air University, Maxwell AFB, Ala., May 1981), 35.
- ⁴³ Bloom, interview.
- ⁴⁴ MACR 55-55, *Tactical Airlift Liaison Officers*, 26 February 1979.
- ⁴⁵ Underwood, 18.
- ⁴⁶ Capt David M. Yost, 82d Airborne Division TALO, to 18th Airborne Corps TALO, letter, subject: Desert Shield/Storm After Action Report (undated), 1.
- ⁴⁷ Lt Col John A. Hoffman, 18th Airborne Corps TALO, to 21st Air Force/DOXM, letter, subject: Quarterly Report (1 Jan-31 Mar 91), 1 April 1991, 4.
- ⁴⁸ Joint Uniform Lessons Learned System (JULLS) input, subject: Tactical Airlift Liaison Officer Support Concept of Operations, 9 July 1991.
- ⁴⁹ Lt Col Blaine W. Hyten and Lt Col Barry W. Miller, Airlift Concepts and Requirements Agency (ACRA), to Military Airlift Command Commander, letter, subject: Trip Report--ACRA Visit to Saudi Arabia--13 March 1991 to 9 April 1991, 23 May 1991.
- ⁵⁰ Buckingham, 4-5.
- ⁵¹ Lt Col Robert E. Edmisten, Patrick AFB, Fla., telephone interview with author, 1 February 1993. Lt Col Edmisten was CENTAF's director of transportation during the Gulf War.
- ⁵² Brig Gen Edwin E. Tenoso, "Address--Desert Shield COMALF--to Air Force Association Briefing Session 7," St. Louis, Mo., 2 August 1991, 3. USAF Historical Research Agency call no.: K300.01 1 Jan-31 Dec 90 v7, supp. doc. no. 3-47.
- ⁵³ Maj Joseph Mets, telephone interview with author, 2 February 1993. Maj Mets was a member of the 1701st Mobility Support Squadron which deployed to Saudi Arabia to man the 1610 ALD Airlift Control Center during the Gulf War.
- ⁵⁴ Edmisten, interview.
- ⁵⁵ *Conduct of the Persian Gulf War*, F-42.
- ⁵⁶ Bloom, interview.
- ⁵⁷ Tenoso, author interview.
- ⁵⁸ Mets, interview.
- ⁵⁹ Hyten and Miller.
- ⁶⁰ Tenoso, author interview.
- ⁶¹ Lt Col Robert E. Edmisten, "USCENTAF Desert Shield/Storm Transportation: Milestones in the Sand," *Defense Transportation Journal* 43, no. 3 (June 1991), 78.
- ⁶² Hyten and Miller.
- ⁶³ Lt Col Robert Donovan, Air Mobility School Director of Curriculum, Scott AFB, Ill., interview with author, 5 February 1993. Lt Col Donovan was executive officer for Brig Gen Buckingham, first Desert Shield COMALF.
- ⁶⁴ Kondra, 123.

Chapter 4. Current Doctrine: At Odds With Past Lessons?

The previous chapters attempted to elucidate the important theater airlift organization, management, and control lessons of the Vietnam and Persian Gulf Wars. The task here is to determine whether these lessons have in fact been *learned* by today's airlift community. The research analyzed trends in current policy and doctrine to assess its consistency with past lessons.

. But before surveying these trends, one must grasp the wider organizational context in which the changes are occurring.

In light of post-Cold War downsizing and a new service strategy emphasizing rapid power projection,¹ the Air Force is in the midst of a massive reorganization. On 1 June 1992, Military Airlift Command was deactivated and in its place Air Mobility Command (AMC) stood up, combining most of the Air Force's airlift and air refueling units. The new command's charter predicted that "integration of airlift with tankers will better enable the Air Force to provide global mobility and reach while enhancing rapid response and the ability to operate with other services and nations."² Simultaneously, the strategic airlift community moved to centralize its worldwide command and control network. AMC formed a Tanker-Airlift Control Center (TACC) at Scott AFB, Illinois to "streamline and reduce redundant layers of command/filters and provide a single authority for airlift/tanker taskings and execution."³ The new TACC was developed to be AMC's single, strategic C² agency, employing technology to replace a formerly distributed control network.

Part of this control network had resided in two offshore theater airlift divisions providing regional airlift control centers (ALCC) as well as a home for deployed MAC C-130 wings that temporarily rotated and "chopped" to the regional CINCs. The reorganization altered this arrangement. The 834th Airlift Division at Hickam AFB, Hawaii and the 322nd Airlift Division at Ramstein Air Base, Germany were deactivated,

with their respective C-130 fleets and ALCCs permanently transferred to USAFE and PACAF. AMC retained ownership of small theater “Air Mobility Groups” that provided maintenance and aerial port support for transiting strategic aircraft.⁴

AMC's creation seemed to unravel the concept of consolidated airlift. Although it owned all strategic airlift aircraft and “most” of the refuelers, one-third of the C-130 fleet was transferred to Air Combat Command (ACC), USAFE, and PACAF. The concept of “seamless airlift” may be taking a back seat to theater “unity of command.”

Trends in Theater Airlift Organization and Command Relationships

Menu Approach to Theater Lift Organization. Despite the demonstrated advantages of centralized theater airlift organizations like the 834 AD in Vietnam and the 1610 ALD(P) in the Gulf War, the Air Force is moving away from centralized theater airlift structures. In fact, Air Force Chief of Staff Gen Merrill McPeak said the Gulf War showed that the theater airlift division, with conflicting loyalties to strategic and theater commanders, represented an organizational headache overcome only by “outstanding leadership.”⁵ As a result, AMC no longer embraces the provisional airlift division concept. Instead, it offers a “menu” of airlift management, operations, and mission support services for a theater air component commander to pick and choose from to support his theater airlift needs. In AMC parlance, “the customer shops ala carte or from the complete menu” to select airlift/tanker experts, planners, aerial port personnel, C² personnel, and logisticians.⁶ From this, the trend appears away from centralized theater airlift towards absorption of air mobility into the air component commander's staff.

DIRMOBFOR: A Diluted COMALF. Nowhere is this absorption more evident than the evolution from COMALF to the new theater airlift “director,” the Director of Mobility Forces (DIRMOBFOR).

Until recently, airlift doctrine had institutionalized the concept of a theater airlift commander. When a contingency erupted, MAC (now AMC) played a key role in

selecting the COMALF. According to AFM 2-50, “the COMALF is *nominated* by the appropriate AMC NAF, *designated* by Commander, AMC, and *approved* by the theater Combatant Commander to exercise *OPCON* of the airlift forces assigned to a theater or area of responsibility (AOR).”⁷ The dual-hatted COMALF was responsible primarily to the theater Joint Force Air Component Commander (JFACC)⁸ for controlling theater-assigned airlift forces. In addition, the COMALF assisted the AMC commander by “monitoring and managing” strategic airlift forces that transited his area.⁹ The COMALF concept seemed to work; the author found no evidence of problems with the doctrine.

Despite this, AMC has diluted the COMALF with its new DIRMOBFOR position. Mature airlift theaters like USAFE would name their own DIRMOBFOR while other theater JFACCs could request AMC to nominate one.¹⁰ The DIRMOBFOR would typically be a colonel or lieutenant colonel and would report to the theater Air Operations Center (AOC)¹¹ director.¹² He would “direct” but not command theater mobility C² personnel chopped to the theater as part of an Air Mobility Element (AME). Although responsible for “managing theater-assigned/attached forces and overseeing the theater air mobility mission,”¹³ the DIRMOBFOR would neither command nor operationally control any forces. OPCON would be retained by the JFACC.¹⁴

The diluted DIRMOBFOR position represents an elevation of airlift responsibility from a centralized theater *airlift* commander to the theater *air component* commander. But is the JFACC and his staff equipped for this role? Maj Gen James McCombs, COMALF for the Grenada operation, noted that air component commanders don't generally know much about airlift, requiring the COMALF to be *the* ACC's expert and advisor on airlift.¹⁵ Maj Gen Willis, COMALF for various Bright Star and Team Spirit exercises, expressed a similar concern: “They [ACCs] don't understand how airlift plays. They probably don't have a good feel for the extent of Army support that tactical, theater airlift supplies.”¹⁶ What's more, new doctrine describing the JFACC's role hardly mentions airlift. The recent USCINCPAC JFACC Concept of Operations does not even

hint at a theater airlift role for the JFACC. None of the 54 “JFACC Nucleus” staff positions are airlift related.¹⁷ The same is true of the 13-page LANTCOM-ACC Concept of Operations--not a single reference to airlift.¹⁸ In short, past testimony and current doctrinal shortcomings suggest that the JFACC may be ill-prepared to take on his new airlift role.

Furthermore, theater airlift force beddown decisions will become the sole purview of the air component commander, outside the realm of the DIRMOBFOR.¹⁹ This runs counter to lessons of Vietnam and the Gulf War suggesting that a theater airlift commander is needed to influence airlift beddown and allocation decisions whose impact will extend well beyond the air component commander's air campaign. According to Maj Gen William Sistrunk, former MAC Chief of Staff, this influence was missing in European basing decisions that gave fighters protective shelters far from the front, while C-130s were precariously based in Frankfurt where “you could almost hit them with a rocket from the FEBA.”²⁰ DIRMOBFORS are not likely to fill the void as they will now be layers beneath the JFACC. This could also degrade strategic airlift operations, because the DIRMOBFOR will not be the “dual-hatted” advocate for supporting strategic Aerial Point of Debarkation (APOD)²¹ locations, staging bases, and recovery bases. One past 22nd Air Force commander observed that even dual-hatted COMALFs often neglected to give the strategic airlift flow sufficient attention.²² The neglect may become profound under the DIRMOBFOR concept.

Theater Airlift Command and Control Network

Air Operations Center(AOC): Combining the ALCC and TACC. Since the Gulf War, the Air Force has developed new doctrine for controlling theater air forces. The new Theater Air Control System (TACS) is “the AFCC's system for planning, directing, and controlling theater air operations.”²³ The “focal point of the TACS” is the Air Operations Center (AOC), combining the old TACC and ALCC into a single facility.

Specifically, the AOC conducts “centralized planning, direction and control, and coordination of missions assigned by the AFCC,” including theater airlift.²⁴

Air Mobility Element (AME): A Diluted ALCC. Consistent with the absorption of the COMALF into the JFACC, new doctrine has integrated the ALCC function into the AOC. If a JFACC feels his AOC needs airlift expertise to manage theater mobility operations, he may request AMC provide a tailored Air Mobility Element (AME) “to support the full spectrum of air mobility operations.”²⁵ The composition of the AME is up to the JFACC, but might include operations, scheduling, airspace control, logistics, and aerial port experts.²⁶ The AME may exist as a separate cell within the AOC or may be totally integrated into the AOC structure.²⁷ The AME director would typically be the DIRMObFOR. He would “administratively” control AME cadre, chopped to the theater from CONUS Air Mobility Operations Squadrons. The AOC would exercise control of airlift operations through a theater network of Wing Operations Centers.²⁸ Importantly, there is no typical or prescribed AME arrangement. Its implementation is left totally up to the particular AOC director and JFACC.

Strategic Airlift Management: Under past doctrine, the ALCC “monitored and managed” strategic airlift missions transiting the theater. According to ACCR 2-1, *Air Operations*, the AOC has now assumed this role:

The AOC is the focal point for strategic airlift operating within a theater. The AOC monitors and manages strategic airlift forces operating in the AFCC's area of responsibility and thus facilitates the ability of CINCTRANS to support the JFC/AFCC.²⁹

In addition, the Tanker-Airlift Control Center (TACC) at Scott AFB, establishes Tanker-Airlift Control Elements (TALCEs) at theater air bases with significant strategic airlift operations. These TALCEs largely replace the old ALCE concept, providing local C², communication, maintenance, and aerial port support for transiting AMC missions.³⁰

AME: Lesson Not Learned: The AME concept seems at odds with airlift lessons from Vietnam and the Gulf. First, it dismisses the advantage of “separate but connected”

airlift and “shooter” control facilities. Although technological advances may make integration more feasible, it is not clear that the AOC is doctrinally or technically prepared for the task. The 50-page doctrinal regulation governing AOC operations contains only one sentence on theater airlift.³¹ Similarly, Air Combat Command's *Concept of Operations for Theater Battle C⁴I*, has only one reference to theater airlift: “successful sustainment is dependent upon a C⁴I supported theater logistic system.”³² The C² network supporting this “theater logistic system” is not described. Second, an AME fully integrated into an AOC may lack the organizational “separateness” to forcefully articulate and advocate unique airlift requirements. Third, the concept dangerously presumes that the JFACC and AOC staff will sufficiently understand the airlift needs of joint users to properly shape an AME that can manage the theater airlift effort. Finally, the new arrangement may further segregate theater and strategic airlift missions by requiring duplicative command post facilities (WOCs and TALCEs) and eliminating the airlift integration function performed by the ALCC and COMALF.

TALO: Still Wed to the Fighter Control Community: Consistent with the merger of the theater airlift C² function into the AOC, current doctrine continues to tie the TALO to the Tactical Air Control Party. Now known as the *Theater* Airlift Liaison Officer, the TALO remains under the operational control of the senior Air Liaison Officer (ALO), who is responsible for all air support of fielded army units.³³ Unfortunately, the arrangement rejects Vietnam and Gulf War experience suggesting the two liaisons warrant independent control lines. The TALO is still dependent on the Tactical Air Control Party for communication, vehicle, and enlisted support³⁴--a constant source of turmoil according to one senior TALO.³⁵ Despite this negative, TALO training and experience³⁶ make them a valuable asset to supported army commanders.

Theater Airlift Management Procedures

Airlift Request, Validation, and Prioritization Process. The Vietnam and Gulf War airlift systems employed relatively sound procedures for requesting, validating, and prioritizing theater airlift; however, Vietnam revealed a tendency towards “inflated priorities” under periods of peak demand. But according to one observer, today's theater airlift request system may suffer more from underutilization than abuse by the Army. In his article, Maj Charles Anderson claims that a “lack of familiarity with it [USAF airlift] and not knowing how to request or use it” inclines the Army to “use airlift as a last resort.”³⁷ He presents a hypothetical scenario where land commanders fail to consider airlift as a solution to their maneuver and resupply requirements. In “his solution,” an aggressive COMALF helps the land commanders see how they can exploit airlift. He infers that airlift commanders can overcome Army reticence and inexperience with the airlift process by helping them visualize airlift solutions to their problems.³⁸ Of course, without a COMALF, it's not clear who might *proactively* flush out a ground commander's airlift needs. The JFACC and AOC may be preoccupied with their *air* campaign.

Scheduling Lessons Learned. To its credit, current guidance seems to incorporate the significant scheduling lessons of the Persian Gulf War. The DIRMObFOR handbook urges airlifters to “at the earliest opportunity” to consider implementing “standard airlift routes (STARS) to provide an infrastructure to move necessary cargo and passengers throughout the area of operation.”³⁹ In addition, the guide outlines procedures for integrating an airlift schedule into the ATO, but still requires the preparation of a separate, detailed “airlift mission schedule” for use by airlift units and users.⁴⁰ The desire “to have one ATO”⁴¹ is yet to be fully realized.

Undefined Mechanism for Using Strategic Lift In-Theater. Unfortunately, airlift doctrine has yet to develop a straightforward mechanism for using strategic transports to augment theater needs. The only scenario clearly covered is the “short duration

employment mission,” typically involving paratroop drops or an intertheater assault. For these missions, predesignated by the National Command Authority, “USCINCTRANS will transfer OPCON to the appropriate theater CINC when the forces enter the CINC's AOR; . . . OPCON reverts to USCINCTRANS at the end of the employment mission or departure from the AOR.”⁴² But no document provides guidance for determining when or how to request strategic airlift forces for short-duration “shuttles,” “depositioning legs,” or surge needs. As a result, theater commanders still lack a process for using airlift to move oversize or outsize cargo intra-theater.

Table 3 below diagrams how well past lessons are reflected in current policy. Unfortunately, our review of current theater airlift organization, C², and management procedures, suggests that current policy may be diverging from the lessons of the past. The effective centralized airlift divisions of the Vietnam and Gulf War conflicts have been eliminated, with theater airlift wings now directly subordinate to the JFACC. Further, the dual-hatted COMALF, a critical advocate for airlift allocation, basing, and airspace requirements, has been replaced with a DIRMObFOR, in essence, a supervisor of AME personnel who work within the theater Air Operations Center. Likewise, the lesson of separate but coordinating airlift and “fighter” control centers has been swept away by the consolidated AOC, even though it seems questionable whether AOC doctrine and technology is equipped for this role. Finally, work still remains on effectively integrating “fighter” and airlift schedules into a single ATO, and there is as yet no defined mechanism for diverting strategic transports to support theater oversize/outsize lift requirements. Unfortunately, current airlift C² doctrine may have diverged from history's lessons. The next chapter asks if this same doctrine is equipped for the future.

Table 3
Past Lessons Compared to Current Policy

| LESSONS | WHERE OBSERVED | | Match policy ? |
|--|----------------|----------|----------------|
| | VIET NAM | GULF WAR | |
| Organization and Control | | | |
| Consolidated theater airlift organization | ID | C,L | NO |
| Theater airlift operationally controlled by theater airlift commander | ID | C,L | NO |
| Tactical airlift nurtured by a single home command | ID | C,L | YES |
| Command and Control Networks | | | |
| Minimize duplication in tactical and strategic theater C ² facilities | ID | C,NL | NO |
| Theater airlift control center separate but connected to fighter C ² | ID | C,L | NO |
| Cadre of qualified theater airlift C ² personnel | ID | C,L | YES |
| TALOs enhance airlift support of Army ops--OPCON under airlift | ID | C,NL | NO |
| Management Procedures | | | |
| Airlifters represented on joint transportation board | ID | C,L | YES |
| Preestablish procedures for preventing priority inflation | ID | NA | YES |
| “Dedicated” airlift systems may be appropriate for STOL aircraft | ID | NA | NA |
| Airlift missions should be scheduled via an integrated ATO | NA | ID | NO |
| “Hub and spoke” distribution systems may work well for large ops | NA | ID | YES |
| Doctrine must better define use of strategic airlift in-theater | ID | C,NL | NO |

KEY

- ID: lesson identified
- C: lesson confirmed or reinforced by subsequent experience
- L: lesson learned, adopted in practice or doctrine
- NL: lesson not learned, problem still exists
- NA: lesson not applicable or observed

Notes

¹ See Department of the Air Force, “The Air Force and U.S. National Security: Global Reach--Global Power,” white paper, June 1990.

² “Air Mobility Command Concept of Operations,” Scott AFB, Ill., 1 June 1992.

³ Not to be confused with the previously described Tactical Air Control Center (TACC) now known as the Air Operations Center (AOC). See Department of the Air Force, “Establishment of the Tanker Airlift Control Center (TACC)” (MAC Programming Plan 91-43, Headquarters MAC, Scott AFB, Ill, 15 December 1991), 1.

⁴ Department of the Air Force, “Inactivation of the 322 ALD and 834 ALD” (MAC Programming Plan 91-42, Headquarters MAC, Scott AFB, Ill., 15 December 1991), . Air University Library document no.: M-U 38937-493.

⁵ Briefing, Headquarters Air Mobility Command/XPDS, subject: Global Air Mobility Operations, Scott AFB, Ill., 5 November 1992.

⁶ Ibid.

⁷ AFM 2-50, *Multi-Service Doctrine for Air Movement Operations* (Draft), April 1992, 2:6. This draft version was in coordination as of April 1993, superseding the previous January 1985 version.

⁸ The JFACC is the theater CINC's air commander. For our purposes, the term is synonymous to Air Component Commander (ACC) or Air Force Component Commander (AFCC).

⁹ Ibid., 4:6.

¹⁰ Maj Jay Reed, HQ AMC/XPDS, Scott AFB, Ill., interview with author, 4 February 1993.

¹¹ The AOC is the successor to the former Tactical Air Control Center (TACC). It combines the ALCC and TACC functions in one facility.

¹² Lt Col Donovan, Air Mobility School Director of Curriculum, Scott AFB, Ill., interview with author, 5 February 1993. Lt Col Donovan teaches a course for prospective DIRMOBFORs.

¹³ USAF Air Mobility School, *Director of Mobility Forces (DIRMOBFOR) Handbook* (Scott AFB, Ill.: Air Mobility Command, November 1992), 14.

¹⁴ Ibid., 14-15.

¹⁵ Maj Gen James C. McCombs, Headquarters MAC Deputy Chief of Staff/Plans, oral history interview with Dr. John W. Leland, Headquarters MAC Historian, Scott AFB, Ill., 20 November 1990, 4.

¹⁶ Maj Gen Frank E. Willis, Headquarters MAC Deputy Chief of Staff for Requirements, oral history interview with Dr. John W. Leland, Headquarters MAC Historian, Scott AFB, Ill., 1 November 1990, 5.

¹⁷ Headquarters US Pacific Command, "USCINCPAC Joint Force Air Component Commander (JFACC) Concept of Operations," Camp H. M. Smith, Haw., 16 October 1992, 17.

¹⁸ Headquarters US Atlantic Command and Headquarters USAF Air Combat Command, "Joint Force Air Component Commander (JFACC) Concept of Operations for the U.S. Atlantic Command and Air Combat Command," 18 September 1992.

¹⁹ *DIRMOBFOR Handbook*, 50.

²⁰ This example concedes that even with the pull of a COMALF, airlift basing needs may be outweighed by other considerations. But presumably, without a COMALF, it may become more difficult for airlifters to ensure their case is heard. See Maj Gen William H. Sistrunk, Headquarters Military Airlift Command Chief of Staff, oral history interview with Dr. John W. Leland, Headquarters MAC Historian, Scott AFB, Ill., 19 November 1990, 8.

²¹ APODs are the main theater offload points for strategic airlift missions. Also known as Main Operating Bases (MOBs).

²² Maj Gen Richard J. Trzaskoma, 22d Air Force Commander, oral history interview with Dr. Gary Leiser, 22d Air Force Historian, Travis AFB, Cal., 31 October 1990, 2.

²³ ACCR 2-1, *Air Operations*, 31 August 1992, 5:4.

²⁴ Ibid., 5:7.

²⁵ *DIRMOBFOR Handbook*, 29.

²⁶ Ibid., 30-37.

²⁷ Briefing, "Global Air Mobility Operations."

²⁸ *DIRMOBFOR Handbook*, 15, 16, 29.

²⁹ ACCR 2-1, 5:13.

³⁰ *DIRMOBFOR Handbook*, 15-16. As strategic C² assets, TALCEs and their deployed personnel do not "chop" to the theater. They remain under operational control of AMC's TACC at Scott.

³¹ ACCR 2-1, 6:17.

³² Headquarters Air Combat Command, "Air Combat Command Concept of Operations for Theater Battle C⁴I (Draft)," HQ ACC/XPJC, Langley AFB, Vir., 11 December 1992, 8.

³³ "AMC/USAFCOM Command to Command Agreement (Draft)," Headquarters AMC/XPD and Headquarters USAFE/XPX, 1 December 1992, B:6.

³⁴ AMCR 55-55, *Theater Airlift Liaison Officers*, 1 June 1992, 3.

³⁵ Lt Col Robert V. Hale, 18th Airborne Corps Senior TALO, Ft. Bragg, N.C., telephone interview with author, 10 February 1993.

³⁶ Consistent with one of the lessons of the Vietnam War, the Air Force has set strict experience and training requirements for the TALO. They must be rated airlift officers with tactical airdrop experience. In addition, TALOs must complete the Army's Joint Firepower Control Course and the TALO contingency Training Course. See AMCR 55-55, 1 June 1992.

³⁷ Maj Charles M. Anderson, "The Employment of Airlift Forces," *Airlift* 12, no. 3 (Fall 1990): 13.

³⁸ Ibid., 13-15.

³⁹ USAF Air Mobility School, *DIRMOBFOR Handbook*, 59.

⁴⁰ Ibid., 53.

⁴¹ Brig Gen James F. Hinkel, 834th Airlift Division Commander, oral history interview with Anne M. Bizzell, 834 ALD Historian, Hickam AFB, Haw., 8 November 1990, 6.

⁴² "Air Mobility Command Concept of Operations," 12.

Chapter 5. Is Current Doctrine Equipped for Future Challenges?

The previous chapter offered some tentative conclusions regarding the consistency of current airlift command and control doctrine with past lessons. But in the words of one recent statesman, “we must be guided not by precedents alone, however wise they may be, but by the needs of the future and by the shape and content that we wish to give it.”¹ So before reaching any final conclusions or recommending change, we must seek to determine what factors may influence the future airlift environment. Although any predictions are always tenuous, this chapter will posit three near-term trends likely to influence future theater airlift organization and control: 1) the increasing dispersal of C-130 aircraft to geographic and functional commands, 2) the uncertainty of the US national security environment, and 3) the fielding of the C-17 and its “direct delivery” doctrine.

Dispersal of the C-130 Fleet

The Air Force reorganization that created AMC began an organizational trend of reassigning C-130s from a consolidated airlift/mobility command to various geographic and functional commands. Beginning on 1 April 1992, 30 C-130s from Elmendorf AFB, Alaska and Yokota AB, Japan were permanently reassigned to PACAF, along with aircrews, supporting infrastructure, and O&M funding responsibility.² Likewise, 16 Rhein-Main C-130s were transferred to USAFE.³ Sixteen Pope AFB C-130s went to the new Air Combat Command to join a composite wing, with more transfers scheduled for late 1993.⁴ Once these are complete, AMC will be left with only 49% of the active C-130 force (not including trainers), PACAF will have 21%, ACC 18%, and USAFE 12%.⁵ For the time being, AMC retains responsibility as the “single C-130 weapons system manager,” responsible for “standardization of C-130 regulation, tactics, training, and operating procedures.”⁶ But this may change if the divestiture of C-130s continues.⁷

Complicates CINC to CINC “Chopping”. Although permanently assigning C-130s to their host commands may simplify peacetime organization and command, it could degrade wartime support. As the above figures suggest, no single command will contain a majority of the C-130 fleet. Any large regional conflict will likely require augmenting forces from other commands.⁸ But owning CINCs may be reluctant to give up their C-130s. During the 1972 Israeli airlift (Operation Nickel Grass), MAC requested 12 USAFE C-130s to help position enroute support equipment at Lajes AB. USAFE reluctance and a convoluted request process delayed “chopping” of forces by nine days. Even then, USAFE took back control before the operation was completed.⁹ This incident gave further impetus to the movement to consolidate all C-130s under MAC in 1974, an organizational change designed to facilitate the rapid transfer of C-130s between CINCs when contingencies erupt. Supporting the seamless airlift concept, a 1991 White Paper concluded there has been “no evidence of the current airlift system ever ignoring a CINC's priorities or constraining his ability to act.”¹⁰

Even if operational control of C-130s could be quickly transferred between CINCs in the future, different training and procedures may limit the flexibility of theater airlift units. Over time, a permanently assigned C-130 wing under the administrative command of a geographic CINC would likely tailor procedures, doctrine, and training to its unique regional requirements.¹¹ For example, if one command saw no local need for low-level airdrop proficiency, it would likely abandon this training, limiting its ability to support another CINC's requirement to do the same. Further, differing procedures and aircraft configurations might reduce the capability to “interfly” crews and aircraft in support of a large contingency.¹² Admittedly, a local CINC must ensure his forces are trained and configured to conduct their regional wartime mission, but the force must not be so “regionalized” that it loses the flexibility necessary to supplement contingencies in other parts of the globe. A future lack of standardization may lead to a repeat of history--

the problems experienced integrating TAC C-130s into the 834 AD during Vietnam's Tet offensive.

Inefficient Use of a Scarce Resource. A continued parcelling out of the C-130 force may also lead to inefficient use of scarce airlift resources. Since 1986, C-130 retirements and transfers to the Air Reserve Component have reduced active duty *crew size* by 43%, while airlift requirements over the same period have only dropped by 4%. Most of the contingency requirements fall disproportionately upon AMC, because of its obligation to support the airlift requirements of theaters without assigned C-130 forces. The excessive TDY experienced by AMC crews (165 days average in 1992) has “negatively impacted AMC C-130 aircrew quality of life and consequently, aircrew morale.”¹³ If present trends continue, AMC C-130s will increasingly bear the brunt of many regional contingencies, while other commands stand by. Over time, a disproportionate utilization of crews and airframes may limit the overall readiness of the theater airlift force.¹⁴

The Future National Security Environment: Uncertainty Rules

With the end of the certainties of the Cold War era, it is difficult to predict the shape of the future international security environment. However, three trends may influence airlift organization and control: 1) uncertainty of the threat, 2) the potential for extraregional threats, and 3) complex theater relationships.

Threat Uncertainty. The *1992 National Military Strategy* emphasizes the inherent uncertainty of threats to US national security. Except for “North Korea, a weakened Iraq, and perhaps even a hostile Iran,” the document stresses that future threats will remain unknown or uncertain. “Predicting the time, place, and circumstances will be difficult.”¹⁵ Former Secretary of Defense Dick Cheney agrees that “we cannot be sure when or where the next conflict will arise.”¹⁶ This ambiguous security environment will place a premium on theater airlift organization and control mechanisms that facilitate

rapid deployment to an undeveloped or unfamiliar region. Permanent forward basing of tactical airlifters may prove counterproductive. It may be more important for airlifters to effectively respond anywhere, than efficiently perform in one region.

In fact, the inherent uncertainty of the future security environment may give rise to situations where a CINC must deploy his forces to another region. Cheney cautions that although “forward presence” is one element of America’s “regional defense strategy,”¹⁷ forces cannot be too tightly tied to a particular region:

Our forward forces should be increasingly prepared to fulfill multiple regional roles, and in some cases extra-regional roles, rather than being prepared only for operations in the locale where they are based . . .
Moreover, our forward presence forces must be ready to provide support for military operations in other theaters.¹⁸

Cheney argues that US mobility posture must support this end, with a capability to rapidly shift forces between theaters.¹⁹ One might logically question whether *permanently* transferring C-130s to USAFE helps these forces “remain capable of responding to crises throughout *and outside of* the region.”²⁰ Here again, the future may favor a deployable theater airlift force and C² organization that can pack up on short notice.

The administrative transfer of C-130s to geographic commands seems at odds with current US national security strategy for dealing with an uncertain world. With the end of the Cold War, the US has shifted its strategy away from “forward basing” to “forward presence,” the idea being that forces based overseas should give way to “show the flag” activities like rotational deployments, exercises, and humanitarian and security assistance efforts.²¹ But ironically, the permanent transfer of C-130s to USAFE and PACAF seems more in line with the dated Cold War strategy that faced the real prospect of war with the Soviets in central Europe or East Asia. Changes that make C-130 overseas basing more permanent in these two regions seem outdated and contradict a new

strategy that emphasizes quick response to a regional crisis. By bucking the trend, regionally-owned airlift may be less able to respond to diverse, complex crises elsewhere.

In fact, the future suggests a rise in complex scenarios involving simultaneous missions (humanitarian, peacekeeping, warfighting) with multiple actors. Such scenarios may well reinforce the need for a visible airlift commander to make airlift work in an environment where users, regions, and relationships are unfamiliar. According to Col John Sams, the Operation Provide Hope Kurdish security and relief effort in Northern Iraq offered a template for such future scenarios. Given his status as the designated on-scene airlift commander²² for the operation, Sams maintains he was able to circumvent complex command and functional arrangements. He worked directly with the user (a State Department official) to ensure airlift requirements were accurately passed to the supporting CINC (European Command) in time for TRANSCOM to react with strategic airlift.²³ In the future, Sams predicts “the concept of the commander of mobility forces will be critical to the success of an ‘out of the ordinary’ airlift effort.” To ensure his influence, he recommended the airlift commander be a general officer.²⁴ Unfortunately, a DIRMObFOR, buried within an AOC staff, may have neither the position nor influence to unravel complex airlift relationships in such future scenarios.

C-17: Bridging the Gap Between Strategic and Theater Airlift

Possibly the most certain future influence on theater airlift organization and control doctrine will be the C-17, AMC's new multirole airlifter. The fleet of 120 C-17 Globemaster IIIs will be operational near the turn of the century, becoming the backbone of AMC's transport fleet. Although its range, speed, and payload give it a strategic capability comparable to the C-5, technological innovations will allow the C-17 to perform in austere, tactical environments. Externally-blown flaps and head-up displays will help pilots fly steep approaches to short fields. Its small external size coupled with specially designed thrust reversers will give the C-17 excellent ground maneuverability,

enabling it to operate from austere fields with small parking ramps.²⁵ According to Gen Ron Fogleman, AMC Commander, “the C-17 merges into one airframe what the Air Mobility Command now has to with two or three different airframes.”²⁶ It blurs the distinction between tactical and strategic airlift.

The C-17's versatility enables a new airlift doctrine: direct delivery. Current doctrine employs strategic airlift to move units and supplies to theater Aerial Ports of Debarkation (APODs). From there, cargo is distributed intratheater via surface transportation or tactical airlift. Direct delivery bypasses the APOD, and delivers combat and support forces directly to final destination airfields. It saves time and reduces support and cargo storage requirements at APODs, which easily become saturated.²⁷ An Army War College study concluded that, depending on the scenario, direct delivery could increase the daily tonnage into a theater by 300%.²⁸ But realizing the advantages of direct delivery will require a doctrine that can, according to another author, break out of “the two-step” mindset, towards integrated airlift operations.²⁹ Further, it will require organizations, personnel, and procedures that can operationalize the doctrine. By definition, direct delivery will be “a task shared by the intertheater airlift operator and the theater commander.”³⁰ As such, it anticipates the need for a theater airlift focal point familiar with both the strategic environment of the direct delivery operators and the theater needs of the supported CINC.

Direct delivery will not be the only role for which a C² system must be able to employ the C-17. The “Multi-Service C-17 Employment Concept” envisions several in-theater roles. Some C-17s may “chop” to a theater CINC “to self deploy and conduct theater missions.”³¹ After which, they could conduct large scale employment missions, paratroop drops, or air assaults, supporting up to brigade-size movements. Other C-17s might be used in a “shuttle” role, conducting a few in-theater sorties before returning to the strategic flow. These shuttles would be especially useful “where large outsize loads are required” or to supplement C-130s in emergency redistribution and resupply.³² One

MAC study concluded that, had the C-17 been available during the Gulf War, one out of every five C-17s flying a single in-theater shuttle would have replaced 16 C-130s in the AOR.³³

Any of these C-17 employment concepts will require a considerable shift in the way airlift is organized and controlled. According to Maj Gen Tenoso, the C-17's direct delivery doctrine will amplify the need for integrating strategic airlift into theater command and control. C-17 crews flying into forward areas will need to be linked to theater C² to obtain advance notice of airspace and field restrictions, radio frequencies, and operating procedures. Likewise, these missions will have to be included in the theater ATO to ensure deconfliction and coordination.³⁴ Moreover, the C-17's very flexibility will complicate decisions on how best to employ it. Understanding the tradeoffs between strategic lift, direct delivery, intratheater shuttles, etc. will require an airlift staff knowledgeable of both the strategic deployment and intratheater airlift needs. It will also demand an airlift C² network as versatile as the C-17 mission, with procedures for determining when and how to employ this flexible airlifter. Unfortunately, current doctrine seems to have retreated from integrated airlift, resulting in a widening gap between strategic and theater lift. The “dual-hatted” theater airlift staff has been replaced with two entities: a “strategic hat” at Scott and a “fighter pilot scarf” in the theater AOC. It remains to be seen whether the two can team up to exploit the C-17.

: Table 4 adds “future influences” to the lesson-policy matrix. Our look ahead questions the adequacy of current doctrine and policies to meet future theater airlift challenges. The post-Cold War era's climate of uncertainty will place a premium on airlift forces and a C² infrastructure that can flexibly redeploy and operate in unfamiliar regions. But ironically, the permanent divestiture of the C-130 fleet to geographic and functional commands may produce a force less easily diverted to other regions. Even the new multirole C-17 appears out-of-step with an airlift doctrine that seems to highlight

strategic-tactical distinctions. Without the integrating role of a COMALF and a “dual-hatted” theater C² staff, it will be difficult to employ the multirole C-17, whose direct delivery capability demands a C² organization that can exploit it.

Table 4
Past Lessons/Future Influences Compared to Current Policy

| PAST LESSONS--FUTURE INFLUENCES | WHERE OBSERVED? | | | Match policy ? |
|--|-----------------|----------|-----------|----------------|
| | VIET-NAM | GULF-WAR | FU-TURE | |
| Organization and Control | | | | |
| Consolidated theater airlift organization | ID | C,L | | NO |
| Theater airlift operationally controlled by theater airlift commander | ID | C,L | C | NO |
| Tactical airlift nurtured by a single home command | ID | C,L | NL | NO |
| Uncertain threat argues against C-130 transfer to geographic CINCs | | | ID | NO |
| Command and Control Networks | | | | |
| Minimize duplication in tactical and strategic theater C ² facilities | ID | C,NL | | NO |
| Theater airlift control center separate but connected to fighter C ² | ID | C,L | | NO |
| Cadre of qualified theater airlift C ² personnel | ID | C,L | NL | YES |
| TALOs enhance airlift support of Army ops--OPCON under airlift | ID | C,NL | | NO |
| C-17 will require C ² which integrates theater-strategic airlift | | | ID | NO |
| Management Procedures | | | | |
| Airlifters represented on theater joint transportation board | ID | C,L | | YES |
| Preestablish procedures for preventing priority inflation | ID | NA | | YES |
| “Dedicated” airlift systems may be appropriate for STOL aircraft | ID | NA | | NA |
| Airlift missions should be scheduled via an integrated ATO | NA | ID | C | NO |
| “Hub and spoke” distribution systems may work well for large ops | NA | ID | | YES |
| Doctrine must better define use of strategic airlift in-theater | ID | C,NL | C | NO |

KEY

ID: lesson identified

C: lesson confirmed or reinforced by subsequent experience

L: lesson learned, adopted in practice or doctrine

NL: lesson not learned, problem still exists

NA: lesson not applicable or observed

Using this matrix as a guide, the next chapter highlights those areas where current airlift policy and doctrine appear inconsistent with past lessons and future influences. These policy “holes” will form the basis for recommended change.

¹ Boutros-Boutros Gali, "An Agenda for Peace," Report of the UN Secretary General Pursuant to the Statement Adopted by the Summit Meeting of the Security Council on 31 January 1992, United Nations, 17 June 1992, 24.

² Department of the Air Force, "Transfer of 374 TAW and 17 TAS C-130 Assets to PACAF" (MAC Programming Plan 91-41, Headquarters MAC, Scott AFB, Ill., 15 December 1991), 1-2. Air University Library document no.: M-U 38937-492.

³ Department of the Air Force, "Transfer of 435 TAW C-130 Assets and Rhein-Main AB to USAFE" (MAC Programming Plan 91-40, Headquarters MAC, Scott AFB, Ill., 15 December 1991), 1. Air University Library document no.: M-U 38937-491.

⁴ Maj Ken Menzie, Headquarters AMC/XPP, Scott AFB, Ill., interview with author, 5 February 1993.

⁵ Maj Ken Menzie, "Active Duty C-130 Force Structure (FY 92/3)," Headquarters AMC/XPPF point paper, 12 February 1993; Maj Ken Menzie, "ARC C-130 Force Structure," Headquarters AMC/XPPF point paper, 20 January 1993.

⁶ "Transfer of 374 TAW and 17 TAS," 2.

⁷ Apparently, it will. While this paper was in its final stages of editing, AMC announced plans to transfer all its remaining C-130s to Air Combat Command (ACC). Although the specific implications of this action are not addressed here, subsequent observations concerning the problems associated with moving C-130s out of an airlift home command certainly apply.

⁸ Maj Jay Reed, HQ AMC/XPDS, Scott AFB, Ill., interview with author, 4 February 1993.

⁹ See Gen Paul K. Carlton, interview with Lt Col Robert L. Trimpl, *Airlift* 6, no. 4 (Winter 1984), 1.

¹⁰ Lt Col Jimmy C. Jackson, Jr., informal white paper, Headquarters MAC/XPDS, Scott AFB, Ill., 1 August 1991, 3.

¹¹ Maj Mark Fry, "Transfer of Overseas C-130s to Theater Component Commanders," Headquarters MAC/XPPB point paper, 26 July 1991, 2.

¹² Lt Col Van Wagner, "C-130 Transfer to Theater CINCs," Headquarters MAC/XOT point paper, 26 July 1991.

¹³ "C-130 Crew Ratio," staff summary sheet, HQ AMC/XPDI, Scott AFB, Ill., 6 January 1993.

¹⁴ Airlift advocate Lt Gen William Tunner articulated the wastefulness of a dispersed airlift fleet: "In commands other than MATS, transport planes are usually administered by combat-trained officers who do not understand airlift and aren't particularly interested in learning this difficult and different specialty. Result: planes with tremendous capacity standing idle, all over the world." Lt Gen William H. Tunner, *Over the Hump* (Washington, D.C.: Government Printing Office, 1983), 321.

¹⁵ US Joint Chiefs of Staff, *The National Military Strategy of the United States*, January 1992, 3-4.

¹⁶ Richard Cheney, "Defense Strategy for the 1990s: The Regional Defense Strategy" (Washington, D.C.: Department of Defense, January 1993), 27.

¹⁷ Ibid., 11.

¹⁸ Ibid., 14.

¹⁹ Ibid., 16.

²⁰ Ibid., 20.

²¹ *National Military Strategy*, 7.

²² Sams' actual title was COMMOBFOR or Commander, Mobility Forces, an interim term used to add "tanker" management responsibilities to the COMALF. By late 1992, the concept had been replaced by the DIRMObFOR, discussed in Chapter 4.

²³ Col John B. Sams, Jr., Operation Provide Hope Commander of Mobility Forces, After Action Report, 3 March 1992, 84.

²⁴ Ibid., 85.

²⁵ Department of the Air Force, *Airlift and U.S. National Security: The Case for the C-17* (Washington, D.C.: Government Printing Office, 1991), 14-19.

²⁶ Quoted in "New Airlifter is Christened Globemaster III," *Air Force Times*, 15 February 1993.

²⁷ Maj James N. Soligan, "Direct Delivery" (Air Command and Staff College research report no. 85-2555, Air University, Maxwell AFB, Ala., April 1985), 10-18.

²⁸ Lt Col Robert F. Ewart, "Wartime Airlift for 2000 and Beyond--Today" (US Army War College individual study project, Carlisle Barracks, Penn., 23 May 1983), 68.

²⁹ Soligan, 59.

³⁰ Col Don Streater, "Direct Delivery: Power Projection Doctrine for the Nineties," *Airlift* 10, no. 3 (Fall 1988), 17.

³¹ Airlift Concepts Requirements Agency (ACRA), "Multi-Service C-17 Employment Concept," 12 December 1990, 3. This document describes the initial concept of operations for the C-17 coordinated by the Air Force, Army, and Marine Corps.

³² *Ibid.*, 5.

³³ Headquarters Military Airlift Command, "The C-17 In Desert Shield/Desert Storm--Impact," HQ MAC/XR, Scott AFB, Ill., 13 April 1991.

³⁴ Maj Gen Edwin Tenoso, US Transportation Command J-3/4, Scott AFB, Ill., interview with author, 4 February 1993.

Chapter 6. Conclusion

This paper began by suggesting that theater airlift organization and control doctrine was ripe for review--that careful scrutiny of past lessons combined with reasoned inferences about the future airlift environment might suggest improvements to current doctrine. Before recommending such changes, we must synthesize our characterization of current doctrinal shortcomings. This evaluation will summarize four areas where doctrine seems out-of-step with past lessons or future trends. The paper will conclude with recommendations for addressing these problem areas.

Theater Airlift Organization, Control, and Procedural Shortcomings

Deactivating Theater Airlift Organizations and Dispersing the Theater Airlift Fleet. Current theater airlift organizational policy has reversed the trend towards a centralized, provisional theater airlift organization responsible for managing a large wartime airlift effort. Instead deployed tactical lift forces will be absorbed within a theater numbered air force, without an intervening airlift division that proved so effective in both Vietnam and the Gulf War. Interestingly, both the Korean and Vietnam conflicts began without theater airlift organizations--but not for long. Unfortunately, airlift efficiency suffered during the ensuing transition to a theater airlift division.

Not only has wartime theater airlift organization decentralized, but peacetime tactical airlift has moved from consolidation to dispersal. AFM 1-1 clearly states how to organize: “Air Force elements should be organized for wartime effectiveness rather than peacetime efficiency . . . Peacetime efficiencies can be self-defeating if they hinder rapid and effective transition from peace to war.”¹ The dispersal of the C-130 fleet to ACC, USAFE, and PACAF may reflect an emphasis on peacetime efficiency at the expense of wartime effectiveness. While “one theater--one boss” may provide one CINC with peacetime unity-of-command, it may make other CINCs less ready for war. Airlift

“dedicated” to specific theaters may complicate the “transition from peace to war” if a conflict arises in an unexpected region. Tactical airlift aircraft, crews, and C² structure might become too tied to their home theaters, and lack the flexibility required to deploy to a trouble spot anywhere on the globe. With AMC retaining only 49% of its active duty C-130 force, it will be hard pressed to meet all future small-scale airlift contingencies. Its declining ownership of the C-130 fleet and overriding focus on strategic mobility, may make AMC less interested in developing and nurturing tactical airlift. These changes may insidiously erode our universally deployable theater airlift force.

This is not to say that peacetime *forward deployment* of C-130s and operational control by theater air component commanders is a bad idea. Undeniably, Pacific and European CINCs require C-130s to meet peacetime logistical distribution needs as well as train for their wartime missions. What is debatable is whether CINCs require both operational control and administrative command of these assets. Operational control is essential to ensure that deployed C-130s are properly tasked and trained to meet theater needs. However, the additional transfer of administrative command and permanent basing of these aircraft may go too far by removing AMC's influence in funding, training, and logistics support. Over time, “owning” CINCs would likely fine-tune their force to unique theater needs with little incentive to ensure these forces were kept trained and ready to deploy to another region.

JFACC: The Wrong Theater Airlift Manager. This trend away from centralized wartime theater airlift organizations has been accompanied by a transfer of authority from the COMALF to the JFACC. But the JFACC may be wrong for this role. Primarily concerned with his air campaign, the JFACC may simply lack time and resources to plan and control an airlift effort principally supporting surface forces. Consequently, he might unwittingly shortchange airlift basing, airspace allocation, and resources without considering the overall impact on the CINC's objectives. On the contrary, COMALFs typically embraced the joint perspective characteristic of the airlift business. As one

former COMALF put it, “as theater airlift, you’re there to support all of them . . . not just the Air Force, and not just the Army.”² Finally, the JFACC and his staff may not be well-versed in the airlift business. They may not grasp the unique training, logistics, and C² requirements of the airlift force. And it is doubtful that these responsibilities could be effectively assumed by the DIRMOBFOR.

The DIRMOBFOR is a weak substitute for a COMALF. As a lieutenant colonel or colonel, he will lack the “pull” of a general officer airlift commander. Reporting to the theater Air Operations Center Director, the DIRMOBFOR may not have the ear of the JFACC, and hence will have limited influence in promoting airlift system needs. Further, his mid-level rank and organizational placement make him less able to affect resource allocation decisions or cut through complex organizational webs in the joint/combined arena. He will neither own nor control forces, yet, as the senior mobility officer in theater, he may be held “responsible” for airlift operations. It is hard to imagine successful theater airlift operations in the Vietnam and Gulf Wars managed by full colonel airlift “directors.”

Increasing Rift Between Strategic and Theater Airlift C² Networks. A third problem area for theater airlift control is a growing divergence between strategic and theater C² networks. With the institution of the Tanker-Airlift Control Center at Scott AFB and deactivation of its subordinate C² structure, AMC has centralized strategic airlift operations. Oppositely, theater airlift C² has become less centralized with the disbanding of theater ALCCs and divisions. These opposing trends may create a gap in C², and threaten a “seamless” airlift system. At one time the ALCC and COMALF helped bridge this gap, with their “dual hatted” functions to control theater airlift and “monitor and manage” the strategic airlift flow. But the exclusive theater focus of the AOC and DIRMOBFOR successors may sever the bridge. As a result, the wasteful duplicative command post systems of the past could intensify. Further, as AMC’s ownership of tactical airlift is dispersed to other commands, its corporate knowledge and

cadre of theater airlift C² personnel may begin to evaporate, marking a return to the Vietnam era's dearth of experienced tactical airlift controllers. Finally, as theater airlift C² personnel are absorbed within a combined AOC staff, they could lose the organizational independence necessary to support unique airlift needs in airspace allocation, scheduling formats, communications channels, TALO C², etc. In effect, by combining theater "airlift" and "shooter" control centers, the Air Force may have further separated strategic and theater airlift.

Inadequate Mechanism for Using Strategic Airlift Tactically. This gap is clearly evident in the lack of guidance for using strategic airlift in a tactical role. Some might counter that *any* tactical use of strategic airlifters in-theater is wasteful and should be avoided, but history suggests otherwise. Legitimate requirements existed for moving outsize/oversize cargo in-theater during both Vietnam and the Gulf Wars. In many cases, urgent need or lack of surface transportation demanded its movement by air. Resourceful theater airlift commanders with links to MAC were often able to devise expedients to access strategic airlift, despite a lack of procedural guidance. However, both wars revealed a lack of guidance concerning 1) how to determine the tradeoff between theater and strategic airlift, i.e. is it worth the cost to divert a strategic asset to support a theater effort?, and 2) mechanisms for accessing strategic airlift to support theater needs. A solution may be particularly difficult absent a COMALF or ALCC to bridge the gap to the strategic airlift system. The C-17 accentuates the dilemma with its inherent strategic and tactical capabilities. Its flexibility will be limited by the doctrine and procedures available for exploiting it.

Recommended Changes to Theater Airlift Organization and Control Doctrine

To correct the shortcomings addressed above, significant organizational and doctrinal changes are necessary. Unsurprisingly, some involve "turning back the clock." This is easier said than done, especially considering the inherent resistance to change,

even when returning to old ways of doing business. Other recommendations involve marginal changes to the existing airlift system, but their “marginal” benefits may make them just as difficult to implement. With these caveats in mind, the USAF should adopt the following changes:

1. Utilize provisional theater airlift organizations below the numbered air force level. This change would reverse the trend towards a decentralized theater airlift structure. Admittedly, in today's smaller Air Force, peacetime air divisions may represent a needless bureaucratic layer. However, in wartime, a provisional airlift division could prove very attractive to an air component commander. It would improve his span of control, by providing a focused command layer for administering and controlling theater airlift. The theater airlift division should be directly subordinate to the JFACC without a secondary reporting line to AMC Headquarters. Some might counter that a theater airlift division is anachronistic, recommending instead an “air mobility division.” But the natural blend of strategic airlift and air refueling offers little in a theater environment. Tactical airlifters don't require air refueling³, hence it may be illogical to combine tankers and airlifters in a theater air organization. Just because tankers and strategic airlifters are combined in AMC, does not prevent their separation in a provisional theater air organization. These provisional theater airlift divisions should be predesignated in theater war plans.

2. Replace the DIRMObFOR with a COMALF. As in the past, the provisional theater airlift division will need a commander. A COMALF should *control* all permanently assigned theater airlift assets and other resources temporarily attached to the theater's airlift effort. Besides overseeing theater airlift for the JFACC, the COMALF will also “monitor and manage” strategic airlift operations transiting the theater. In this role, he will support the theater CINC, by ensuring strategic deployment and sustainment operations mesh with the theater redistribution effort. This responsibility will give the COMALF a joint perspective unlike any other on the JFACC staff. Although his dual

allegiance (to the JFACC for theater airlift and USCINCTRANS for strategic airlift flow management) may produce conflicting interests, these conflicts are real and won't disappear by removing the COMALF's dual hat status. The COMALF's unique perspective can help resolve strategic-tactical conflicts in a way that best meets his theater CINC's objectives. Further, the COMALF should normally be a general officer for large operations to ensure airlift issues and needs are articulated forcefully. For reasons already described, the COMALF need not command air refueling forces.

The title "commander" is not meant to undermine the overall command responsibility of the JFACC for the theater air effort. Admittedly, there can be only one overall air commander, but it does not necessarily follow that the existence of a subordinate airlift division "commander" will somehow erode the JFACC's authority. Certainly, the existence of lower-level wing commanders does not produce this effect.

3. Assign all C-130s to Air Mobility Command. AMC should gain ownership of the entire theater airlift force. Theater COMALFs with "forward based" peacetime airlift squadrons, wings, or divisions would exercise operational control, as delegated by the regional air component commander, while AMC would retain administrative command to facilitate reassignment elsewhere when the need arose. This should more equitably distribute a scarce airlift resource, and standardize training and procedures to ensure crews and aircraft could interfly and deploy worldwide. The arrangement would give AMC the freedom to deploy any portion of its airlift fleet to meet a valid theater requirement and not artificially tie a particular aircraft to "strategic" or "tactical" missions.⁴ Finally, consolidation of theater airlift in AMC would encourage the command to maintain a cadre of experienced C² personnel who could deploy worldwide to meet any airlift contingency. Admittedly, developing a truly "universally deployable" theater airlift force is no easy task for any command; however, AMC would appear to be best equipped to cultivate a deployable theater airlift force that effectively integrates with the strategic airlift system.

To be sure, operational control without total administrative command may be frustrating for theater air component commanders. But when organizing scarce tactical airlift resources that will frequently be tasked to respond to extraregional crises, peacetime administrative efficiency should give way to warfighting effectiveness.

4. Establish a single theater airlift control network that interfaces with both the theater Air Operations Center and the Tanker Airlift Control Center at Scott AFB. As in the past, the heart of this theater C² network should be the Airlift Control Center (ALCC), manned by AMC personnel familiar with both the strategic and tactical airlift environments. To maintain its organizational focus, the ALCC should be separate from the theater Air Operations Center but cooperate closely to develop an integrated ATO, allocate airspace, coordinate air traffic control procedures, and plan airlift missions requiring combat support. To extend its reach, a system of ALCEs and WOCs would link the ALCC hub with airlift operating locations. Importantly, the ALCC, ALCEs, and WOCs would control both theater and strategic airlift sorties. The ALCC would work closely with the TACC at Scott to integrate and deconflict strategic sorties with the theater ATO. Duplicate C² facilities would be combined--a C-130 base with a WOC would *not* face a competing “strategic” ALCE managing strategic operations. Finally, TALOs should continue their Army liaison function but be under the operational control of the ALCC. Deployable C² elements (personnel, comm gear, etc.) should be maintained within AMC's airlift support squadrons, augmented by C² cells within the air reserve component.

5. Develop the means for determining when and how to use strategic airlift aircraft in-theater. Theater J-4 planners, in coordination with the COMALF, should use airlift simulations and computer modeling to determine the tradeoffs involved in using strategic transports to meet theater airlift needs. The results of this analysis would be used to prearrange “chopping” of strategic assets to the theater CINC for various phases of a deployment plan. Short-duration shuttles may be most productive as they

would minimize the extra logistics support required by strategic augmenters. The COMALF would make diversion recommendations to the theater CINC, which if approved, would be incorporated into theater deployment plans. Unplanned augmentation requirements could be recommended to the CINC and implemented “real-time” as the deployment progressed. Operations plans should also make provisions for “contingency diverts” that would preauthorize the COMALF to divert “X” number of deposition sorties per day for a single theater shuttle mission. Coordination with the TACC at Scott would be necessary to prevent aircrew or airfield restrictions from being violated. Such a mechanism would help fully utilize the C-17's multirole capabilities.

Turning Back the Clock?

Some might contend that these recommendations represent a return to the old way of doing business. They would say that airlift must move beyond old thinking and embrace a broader air mobility perspective. While this may be true, one cannot deny past lessons suggesting that theater airlift organizations and control procedures had matured quite successfully. In many respects, theater airlift C² had come of age during the Gulf War, only to be shaken by new organizations, relationships, and doctrine in the post-war environment. Future conflicts in unexpected regions will determine whether the new theater airlift doctrine will prove better than its gradually evolving predecessor. If it fails, we may find ourselves turning back the clock once again.

Notes

¹ AFM 1-1, *Basic Aerospace Doctrine of the USAF*, March 1992, 17.

² Brig Gen Frederick N. Buckingham, 21st Air Force Vice-Commander, oral history interview with Clayton H. Snedeker, 21st Air Force Historian, McGuire AFB, N.J., 20 November 1990, 3.

³ Even the air refueling capable C-17 will not require air refueling over intratheater ranges. The author found no instance of a theater airlift mission that involved air refueling, which is not surprising, given the large fuel capacities of transport aircraft.

⁴ This is consistent with USAF doctrine which stresses that “roles and missions are, in turn, defined by objectives, not by the platform or weapon used. Most aerospace forces can perform multiple roles and missions.” AFM 1-1, 6.

Appendix

AIRLIFT AIRCRAFT DESCRIPTIONS¹

Dehavilland C-7 Caribou: USAF designation for the Army CV-2, first produced in 1958. This STOL light transport could deliver 32 troops or 9,000 ponds of cargo into a 1,000 foot landing strip. Powered by two radial engines, it cruised at 182 mph at its maximum 28,000 pound gross weight. Range was limited to 240 miles with a 9000 pound load.

Fairchild C-123 Provider: This short takeoff/landing (STOL) aircraft was first produced in 1955. Powered by two radial engines, it cruised at 186 knots at its 65,000 pound maximum gross weight. Range was 1200 miles with a 16,000 pound load. Landings with a standard payload required about 2000 feet of runway.

Lockheed C-130 Hercules: This ubiquitous airlifter was first produced in 1956, and is still in production. It can carry 46,000 pounds of cargo or 92 troops into 2,500 foot landing strips. It routinely airdrops 25 tons of cargo. Powered by four turboprops, it cruises at 300 knots for a range of 2500 miles with a 25,000 pound load.

Douglas C-124 Globemaster II: Derived from the limited-production C-74 (Globemaster I), the C-124 was the first “outsize” cargo transport workhorse. Fondly known as “Old Shaky,” it easily loaded 200 troops or 74,000 ponds of cargo through its clamshell doors. First built in 1950, its four radial engines generated a cruise speed of 272 mph. Range was 1200 miles with a 74,000 pound load.

Lockheed C-141 Starlifter: This jet-powered transport was operational in 1965 and became the workhorse of the strategic fleet. A 1982 modification program added 23 feet to the fuselage and provided an air refueling capability. Its load carrying capability is close to the C-124, but cruises at twice the speed. Range is 3500 miles with 40,000 pounds of cargo. Landings with maximum payload require about 4000 feet of runway.

Lockheed C-5 Galaxy: The second largest aircraft in the world, this 769,000 pound jet transport first flew in 1968. Its cruises slightly faster than the C-141 and carries twice the payload. An upper deck carries 73 troops even when fully loaded. Its range is 3,500 miles (unrefueled) with a 170,000 pound load. Max payload landings require 5000 feet of runway.

Douglas C-17 Globemaster III: Still in development, the first USAF delivery is planned for June 1993 with initial operational capability projected for late 1994. The C-17 blends strategic range, payload, and outsize cargo carrying capability with tactical maneuverability for operating at austere locations. It will carry a maximum 172,000 pound payload 2,400 NM and will need less than 3,000 feet of runway for landings.

¹ Sources: Lt Col Thomas E. Eichorst, *Military Airlift: Turbulence, Evolution, and Promise for the Future* (Maxwell AFB, Ala.: Air University Press, May 1991), 92-96; Ray L. Bowers, *Tactical Airlift* (Washington, D.C.: Government Printing Office, 1983); Congress of the United States, *Improving Strategic Mobility: The C-17 Program and Alternatives* (Washington, D.C.: Congressional Budget Office, 1986), 43-50.

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|------------------|---|
| AB | Air Base |
| ACC | Air Component Commander or Air Combat Command |
| ACCR | Air Combat Command Regulation |
| AD | Air Division |
| ADVON | Advanced Echelon |
| AF | Air Force |
| AFB | Air Force Base |
| AFCC | Air Force Component Commander |
| AFM | Air Force Manual |
| AFR | Air Force Regulation |
| ALCC | Airlift Control Center |
| ALCE | Airlift Control Element |
| ALD | Airlift Division |
| ALD(P) | Airlift Division (Provisional) |
| ALMS | Airlift Movement Schedule |
| ALO | Air Liaison Officer |
| AMC | Air Mobility Command |
| AME | Air Mobility Element |
| AOC | Air Operations Center |
| AOR | Area of Responsibility |
| APOD | Aerial Point of Debarkation |
| ATC | Air Transport Command |
| ATO | Air Tasking Order |
| AWACS | Airborne Warning and Control System |
| C ² | Command and Control |
| C ⁴ I | Command, Control, Communications, and Intelligence |
| CAFMS | Computer-Aided Flight Management System |
| CCC | Combat Cargo Command |
| CENTAF | Central Command Air Forces |
| CENTCOM | US Central Command |
| CHECO | Contemporary Historical Evaluation of Combat/Current Operations |
| CHOP | Change of Operational Control |
| CINC | Commander-in-Chief |
| CINCMAC | Commander-in-Chief Military Airlift Command |
| COMALF | Commander of Airlift Forces |
| CONUS | Continental United States |
| CSAS | Common Service Airlift System |
| DARN | Direct Air Request Network |
| DIRMOBFOR | Director of Mobility Forces |
| DOD | Department of Defense |
| EUCOM | United States European Command |
| FEAF | Far East Air Forces |
| FEBA | Forward Edge of the Battle Area |

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|-------------|--|
| JCS | Joint Chiefs of Staff |
| JFACC | Joint Force Air Component Commander |
| JFC | Joint Force Commander |
| JMCC | Joint Movement Control Center |
| LANTCOM | United States Atlantic Command |
| MAAGV | Military Assistance Advisory Group, Vietnam |
| MAC | Military Airlift Command |
| MACR | Military Airlift Command Regulation |
| MACV | Military Assistance Command, Vietnam |
| MAJCOM | Major Command |
| MATS | Military Air Transport Service |
| NAF | Numbered Air Force |
| O&M | Operations and Maintenance |
| OPCON | Operational Control |
| PACAF | Pacific Air Forces |
| POL | Petroleum, Oil, Lubricants |
| SATCOM | Satellite Communications |
| SECDEF | Secretary of Defense |
| STOL | Short Takeoff-Landing |
| TAC | Tactical Air Command |
| TACC | Tactical Air Control Center or Tanker-Airlift Control Center |
| TACS | Tactical/Theater Air Control System |
| TALCE | Transportable Airlift Control Element |
| TALO | Tactical/Theater Airlift Liaison Officer |
| TCC | Troop Carrier Command |
| TDY | Temporary Duty |
| TMA | Traffic Management Agency |
| TRANSCOM | United States Transportation Command |
| UCMJ | Uniform Code of Military Justice |
| USAF | United States Air Force |
| USAFFE | United States Air Forces Europe |
| USCINCPAC | United States Commander-in-Chief Pacific |
| USCINCTRANS | United States Commander-in-Chief Transportation Command |
| USTRANSCOM | United States Transportation Command |
| WOC | Wing Operations Center |
| WTO | Western Transportation Office |

Bibliography

Primary Sources - Published

- 834th Air Division Regulation 55-13. *Tactical Airlift Liaison Officers/Airmen (TALO/TALA)*, 8 September 1968.
- Air Combat Command Regulation 2-1. *Air Operations*, 31 August 1992.
- Air Force Manual 2-4. *Tactical Airlift*, 10 August 1966.
- Air Force Manual 2-50. *Multi-Service Doctrine for Air Movement Operations* (Draft), April 1992.
- Air Force Manual 2-50. *U.S. Air Force Doctrine for Tactical Airlift Operations*, 1 January 1967.
- Air Force Manual 2-7. *Tactical Air Control System*, 2 February 1979.
- Air Force Manual 1-1. *Basic Aerospace Doctrine of the USAF*, March 1992.
- Air Force Regulation 23-17. *Military Airlift Command*, 1 April 1985.
- Air Force Regulation 23-17. *Military Airlift Command*, 9 December 1970.
- Air Mobility Command Regulation 55-55. *Theater Airlift Liaison Officers*, 1 June 1992.
- Armed Forces Staff College Publication 1, *The Joint Staff Officer's Guide 1991*.
- Carlton, Gen Paul K. Interview with Lt Col Robert L. Trimpl. *Airlift* 6, no. 4 (Winter 1984): 16-20.
- Cheney, Richard. "Defense Strategy for the 1990s: The Regional Defense Strategy." Washington, D.C.: Department of Defense, January 1993.
- Department of Defense. *Conduct of the Persian Gulf War: Final Report to Congress*. Title V Report. Washington, D.C.: April 1992.
- Department of the Air Force. *Airlift and U.S. National Security: The Case for the C-17*. Washington, D.C.: Government Printing Office, 1991.
- Department of the Air Force. *US Air Force Airlift Master Plan*. Washington, D.C.: HQ USAF, 29 September 1983.
- Edmisten, Lt Col Robert E. "USCENTAF Desert Shield/Storm Transportation: Milestones in the Sand." *Defense Transportation Journal* 43, no. 3 (June 1991): 78.

Gali, Boutros-Boutros. "An Agenda for Peace." Report of the UN Secretary General Pursuant to the Statement Adopted by the Summit Meeting of the Security Council on 31 January 1992. United Nations, 17 June 1992.

Horner, Lt Gen Charles A. "The Air Campaign." *Military Review* 71, no. 9 (September 1991): 17-27.

Johnson, Gen Hansford T. "The Defense Transportation System." *Defense Transportation Journal* 47, no. 5 (October 1991): 21-32+.

Military Airlift Command Regulation 55-3. Vol. 2, Change 2. *MAC Command and Control Responsibilities and Procedures*, (undated).

Military Airlift Command Regulation 55-55. *Tactical Airlift Liaison Officers*, 26 February 1979.

Moore, Gen William G. Jr. Interview with Dr. Roy Cross, Hq MAC History office. *Airlift* 12, no. 4 (Winter 1990-91): 16-20.

Tunner, Lt Gen William H. *Over the Hump*. Washington, D.C.: Government Printing Office, 1983.

United States Air Force Air Mobility School. *Director of Mobility Forces (DIRMOBFOR) Handbook*. Scott AFB, Ill.: Air Mobility Command, November 1992.

United States Congress. *Improving Strategic Mobility: The C-17 Program and Alternatives*. Washington, D.C.: Congressional Budget Office, 1986.

United States Joint Chiefs of Staff. *The National Military Strategy of the United States*, January 1992.

Primary Sources - Unpublished

22d Military Airlift Squadron. Briefing by Commander to MAC Wing Commanders' Conference, 25-27 January 1968.

1610th Airlift Division. "Desert Storm Aircrew Brochure," 15 February 1991.

"Air Mobility Command Concept of Operations." Scott AFB, Ill., 1 June 1992.

"Air Operations During the VC Tet Offensive." *Project CHECO Southeast Asia Digest*. Prepared by 7 AF/DOAC, February 1968.

Airlift Concepts Requirements Agency (ACRA). "Multi-Service C-17 Employment Concept." 12 December 1990.

“AMC/USAFE Command to Command Agreement (Draft).” Headquarters AMC/XPD and Headquarters USAFE/XPX, 1 December 1992.

“Biography--General Bernard P. Randolph.” Secretary of the Air Force Office of Public Affairs. Washington, D.C., June 1988.

Bloom, Maj John. Headquarters AMC/XPDS, Scott AFB, Ill. Interview with author, 4 February 1993.

Buckingham, Brig Gen Frederick N. 21st Air Force Vice-Commander. Oral history interview with Clayton H. Snedeker, 21st Air Force Historian. McGuire AFB, N.J., 20 November 1990.

“C-130 Crew Ratio.” Staff summary sheet. HQ AMC/XPDI, Scott AFB, Ill., 6 January 1993.

Ciborski, SMSgt James R. “History of Airlift in the Desert: Circumventing the Iraqis.” 1630th Tactical Airlift Wing (Provisional) History. Al Ain Air Base, United Arab Emirates, 23 May 1991.

Department of the Air Force. “Air Force Restructure.” White Paper, September 1991.

Department of the Air Force. “Establishment of the Tanker Airlift Control Center (TACC).” MAC Programming Plan 91-43. Headquarters MAC, Scott AFB, Ill., 15 December 1991.

Department of the Air Force. “Inactivation of the 322 ALD and 834 ALD.” MAC Programming Plan 91-42. Headquarters MAC, Scott AFB, Ill., 15 December 1991.

Department of the Air Force. “The Air Force and U.S. National Security: Global Reach-Global Power.” White paper, June 1990.

Department of the Air Force. “Transfer of 374 TAW and 17 TAS C-130 Assets to PACAF.” MAC Programming Plan 91-41. Headquarters MAC, Scott AFB, Ill., 15 December 1991.

Department of the Air Force. “Transfer of 435 TAW C-130 Assets and Rhein-Main AB to USAFE.” MAC Programming Plan 91-40. Headquarters MAC, Scott AFB, Ill., 15 December 1991.

Donovan, Lt Col Robert. Air Mobility School Director of Curriculum, Scott AFB, Ill. Interview with author, 5 February 1993.

Edmisten, Lt Col Robert E. Patrick AFB, Fla. Telephone interview with author, 1 February 1993.

Fry, Maj Mark. “Transfer of Overseas C-130s to Theater Component Commanders.” Headquarters MAC/XPPB point paper, 26 July 1991.

Gulf War Air Power Survey (GWAPS). "The Logistics of Air Power in the Gulf War-- Chapter 4: Intratheater Lift," 23 November 1992.

Hale, Lt Col Robert V. 18th Airborne Corps Senior TALO, Ft. Bragg, N.C. Telephone interview with author, 10 February 1993.

Headquarters 834th Air Division. "An Analysis of C-7A Dedicated User Operations-- RVN. January-August 1969," 8 September 1969.

Headquarters Air Combat Command. "Air Combat Command Concept of Operations for Theater Battle C⁴I (Draft)." HQ ACC/XPJC, Langley AFB, Vir., 11 December 1992.

Headquarters Air Mobility Command. XPDS briefing, subject: Global Air Mobility Operations. Scott AFB, Ill., 5 November 1992.

Headquarters Military Airlift Command. "Desert Shield Lessons Learned Working Group Issues." HQ MAC/XPY, Scott AFB, Ill., October 1990.

Headquarters Military Airlift Command. "The C-17 In Desert Shield/Desert Storm-- Impact." HQ MAC/XR, Scott AFB, Ill., 13 April 1991.

Headquarters United States Air Force. "C-130 Shuttle vs. C-130 PCS Operations in Southeast Asia." AFGOA operations analysis, December 1966.

Headquarters United States Air Force. "USAF Airlift Management Study Final Report" (U). Deputy Chief of Staff Plans and Operations, 1 April 1970.

Headquarters United States Atlantic Command and Headquarters United States Air Force Air Combat Command. "Joint Force Air Component Commander (JFACC) Concept of Operations for the U.S. Atlantic Command and Air Combat Command," 18 September 1992.

Headquarters United States Pacific Command. "USCINCPAC Joint Force Air Component Commander (JFACC) Concept of Operations." Camp H. M. Smith, Haw., 16 October 1992.

Herring, Maj Gen John H. Jr. 834th Air Division Commander, June 1969-June 1971. End of Tour Report, (undated).

Hinkel, Brig Gen James F. 834th Airlift Division Commander. Oral history interview with Anne M. Bizzell, 834 ALD Historian. Hickam AFB, Haw., 8 November 1990.

Hoffman, Lt Col John A. 18th Airborne Corps TALO. Letter to 21st Air Force/DOXM, subject: Quarterly Report (1 Jan-31 Mar 91), 1 April 1991.

Hyten, Lt Col Blaine W. and Lt Col Barry W. Miller. Airlift Concepts and Requirements Agency (ACRA). Letter to Military Airlift Command Commander, subject: Trip Report--ACRA Visit to Saudi Arabia--13 March 1991 to 9 April 1991, 23 May 1991.

Jackson, Lt Col Jimmy C. Jr. HQ AMC/XPDS, Scott AFB, Ill.. Interview with author, 4 February 1993.

Jackson, Lt Col Jimmy C. Jr. Informal white paper. Headquarters MAC/XPDS, Scott AFB, Ill., 1 August 1991.

Jackson, Lt Col Jimmy C. Jr. Joint Uniform Lessons Learned System (JULLS) input no. 15828-85200 (00002). Headquarters MAC/XPPBS. Subject: Organizational Structure, 9 May 1991.

Joint Uniform Lessons Learned System (JULLS) input. Subject: Tactical Airlift Liaison Officer Support Concept of Operations, 9 July 1991.

Kondra, Maj Gen Vernon J. "The Vernon J. Kondra Notes." Oral history interview with Clayton H. Snedeker, 21st Air Force Historian. McGuire AFB, N.J., 10 October 1991.

McClure, Lt Col Edward J. 1676th Tactical Airlift Squadron (Provisional) Commander. End of Tour Report to 1610 Airlift Division (Provisional), June 1991.

McCombs, Maj Gen James C. Headquarters MAC Deputy Chief of Staff/Plans. Oral history interview with Dr. John W. Leland, Headquarters MAC Historian. Scott AFB, Ill., 20 November 1990.

McConnell, Gen J. P. USAF Chief of Staff. Letter to US Army Chief of Staff, 24 February 1968.

McLaughlin, Maj Gen Burl W. 834th Air Division Commander, November 1967-June 1969. End of Tour Report, 15 June 1969.

McPeak, Gen Merrill. *Tomorrow's Air Force: Reshaping the Future*. USAF Video, 31 January 1992.

Menzie, Maj Ken. "Active Duty C-130 Force Structure (FY 92/3)." Headquarters AMC/XPPF point paper, 12 February 1993.

Menzie, Maj Ken. "ARC C-130 Force Structure." Headquarters AMC/XPPF point paper, 20 January 1993.

Menzie, Maj Ken. Headquarters AMC/XPP, Scott AFB, Ill. Interview with author, 5 February 1993.

Merrell, Maj Ronald D. "Tactical Airlift in SEA." Project CHECO Southeast Asia Report. Headquarters PACAF, Operations Analysis Directorate, 15 February 1972.

Mets, David R. School of Advanced Airpower Studies, Maxwell AFB, Ala. Interview with author, 30 April 1993.

Mets, Maj David R. "Tactical Airlift Operations." Project CHECO Report. Headquarters PACAF, Directorate of Tactical Evaluation, 30 June 1969.

Mets, Maj Joseph. Telephone interview with author, 2 February 1993.

Military Airlift Command. "Report of the Desert Shield Lessons Learned Working Group." Command History, 1 January-31 December 1990. Supporting document no. 3-103, (undated).

Momyer, Gen William W. "Observations of the Vietnam War, July 1966-July 1968." End of Tour Report. Maxwell AFB, Ala.: USAF Historical Research Agency, (undated).

Momyer, Gen William W. USAF (Ret). Memorandum to Gen Ellis, subject: Corona Harvest (USAF Airlift Activities in Support of Operations in SEA 1 January 1965-31 March 1968), 29 May 1974.

Moore, Brig Gen William G. Jr. 834th Air Division Commander, October 1966-November 1967. End of Tour Report, (undated).

Newbold, Col Rodney H. 483d Tactical Airlift Wing Commander, 28 March 1971-25 February 1972. End of Tour Report, (undated).

Reed, Maj Jay. HQ AMC/XPDS, Scott AFB, Ill.. Interview with author, 4 February 1993.

Reheiser, Maj Joseph M. Headquarters MAC/DOXT. Letter to Headquarters MAC/DO, subject: Desert Shield Trip Report (28 August-7 September 1990), (undated).

Sams, Col John B. Jr. Operation Provide Hope Commander of Mobility Forces. After Action Report, 3 March 1992.

Sistrunk, Maj Gen William H. Headquarters Military Airlift Command Chief of Staff. Oral history interview with Dr. John W. Leland, Headquarters MAC Historian. Scott AFB, Ill., 19 November 1990.

Stuchell, Maj. Joint Uniform Lessons Learned System (JULLS) input no. 171268-84000 (00050). 328th Tactical Airlift Squadron. Subject: Airspace Sectorization and Control, 3 December 1991.

"Tactical Airlift." Corona Harvest Air University Designated Study Number 7, vol. 6. Maxwell AFB, Ala., 15 June 1968.

Tenoso, Brig Gen Edwin E. "Address--Desert Shield COMALF--to Air Force Association Briefing Session 7." St. Louis, Mo., 2 August 1991.

Tenoso, Brig Gen Edwin. "COMALF in Saudi Arabia." Oral history interview with Dr. Gary Leiser, 22nd Air Force Historian, 28 May 1991.

Tenoso, Maj Gen Edwin. US Transportation Command J-3/4, Scott AFB, Ill. Interview with author, 4 February 1993.

“Theater Airlift Study, FY-1968.” Headquarters PACAF Directorate of Plans and Headquarters MAC Directorate of Operations, 30 June 1967.

Trzaskoma, Maj Gen Richard J. 22d Air Force Commander. Oral history interview with Dr. Gary Leiser, 22d Air Force Historian. Travis AFB, Cal., 31 October 1990.

Turk, Col Wilbert. 483d Tactical Airlift Wing Commander, 11 September 1968-4 September 1969. End of Tour Report, 18 August 1969.

United States Air Force Tactical Airlift Center. “A Tactical Air Command Activity Input to Project Corona Harvest on Tactical Airlift in SEA, 1 January 1965-31 March 1968.” (undated).

United States Central Command. “CENTAF Transportation After Action Report.” Persian Gulf War, March 1991.

“USAF Airlift Activities in Southeast Asia, 1 April 1968-31 December 1969,” Project Corona Harvest Study. Air University, Maxwell AFB, Ala., May 1972.

“USAF Airlift Activities in Support of Operations in Southeast Asia, 1 January 1965-31 March 1968.” Project Corona Harvest Study. Air University, Maxwell AFB, Ala., January 1973.

Wagner, Lt Col Van. “C-130 Transfer to Theater CINCs.” Headquarters MAC/XOT point paper, 26 July 1991.

Willis, Maj Gen Frank E. Headquarters MAC Deputy Chief of Staff for Requirements. Oral history interview with Dr. John W. Leland, Headquarters MAC Historian. Scott AFB, Ill., 1 November 1990.

Yost, Capt David M. 82d Airborne Division TALO. Letter to 18th Airborne Corps TALO, subject: Desert Shield/Storm After Action Report, (undated).

Secondary Sources - Books

Bowers, Ray L. *Tactical Airlift*. Washington, D.C.: Government Printing Office, 1983.

Creveld, Martin Van. *Command in War*. Cambridge, Mass.: Harvard University Press, 1985.

Eichorst, Lt Col Thomas E. *Military Airlift: Turbulence, Evolution, and Promise for the Future*. Maxwell AFB, Ala.: Air University Press, May 1991.

Futrell, Robert F. *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, vol. 2, 1961-1984.* Washington, D.C.: Government Printing Office, 1989.

Hallion, Richard P. *Storm Over Iraq--Air Power and the Gulf War.* Washington, D.C.: Smithsonian Institution Press, 1992.

Miller, Lt Col Charles E. *Airlift Doctrine.* Washington, D.C.: Government Printing Office, 1988.

Morse, Stan. *Gulf Air War Debrief.* Westport, Conn.: Airtime Publishing Inc., 1991.

Secondary Sources - Articles

Anderson, Maj Charles M. "The Employment of Airlift Forces." *Airlift* 12, no. 3 (Fall 1990): 12-15.

Boston, Maj Ronald G. "Doctrine by Default: The Historical Origins of Tactical Airlift." *Air University Review* 34, no. 4 (May-June 1983): 64-75.

Butz, J. S. Jr. "Intratheater Airlift in Vietnam--A Question of Quantity and Control." *Air Force and Space Digest* 49, no. 7 (July 1966): 36-40.

Chapman, Col Roy M. "Tactical Airlift Management in Vietnam," *Signal* 24, no. 8 (August 1970): 35-37.

Everett, Capt Robert P. "Tactical Air Control Party," *Airman* 12, no. 11 (November 1968): 56-60.

Nash, Colleen A. "Desert Storm Logistics." *Air Force Magazine* 74, no. 5 (May 1991): 16-17.

"New Airlifter is Christened Globemaster III." *Air Force Times*, 15 February 1993.

Streater, Col Don. "Direct Delivery: Power Projection Doctrine for the Nineties." *Airlift* 10, no. 3 (Fall 1988): 14-17.

Secondary Sources - Dissertations and Theses

Bottjer, Maj Daryl et al. "An Improved Airlift Control System for MAC." Air Command and Staff College Research Study, Air University, Maxwell AFB, Ala., May 1975.

Drury, Col Richard T. "Dedication of Tactical Airlift to the Army." Air War College Research Report no. 3903, Air University, Maxwell AFB, Ala., April 1970.

Ellernets, Maj Arne. "The Influence of Vietnam on Tactical Airlift Doctrine." Air Command and Staff College Thesis no. 0350-68, Air University, Maxwell AFB, Ala., June 1968.

Ewart, Lt Col Robert F. "Wartime Airlift for 2000 and Beyond--Today." US Army War College individual study project, Carlisle Barracks, Penn., 23 May 1983.

Owen, Robert C. "Creating Global Airlift in the United States Air Force 1945-1977: The Relationship of Power, Doctrine, and Policy." PhD diss., Duke University, 1992.

Soligan, Maj James N. "Direct Delivery." Air Command and Staff College Research Report no. 85-2555, Air University, Maxwell AFB, Ala., April 1985.

Underwood, Maj David C. "The Airlift Lessons of Vietnam--Did We Really Learn Them?" Air Command and Staff College student research report no. 2470-81, Air University, Maxwell AFB, Ala., May 1981.