STRATEGY RESEARCH PROJECT

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STRATEGIC AIRLIFT: CAN THE C-17 FILL THE REQUIRMENTS

BY

LIEUTENANT COLONEL DONALD W. WARNER
United States Army

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USAWC STRATEGY RESEARCH PROJECT

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CAN THE C-17 FILL THE REQUIREMENT?

by

LTC Donald W. Warner
Seminar #17
Box 287

COL Joseph C. Bowen
Project Advisor

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U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

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ABSTRACT

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Based on forecasts of a shrinking manpower pool and the operational ambiguities caused by deploying in several locations in the changing battlefield -- airlift has become a matter of sustained military readiness and national security. This paper provides a brief historical overview of military airlift, elaborates on the current capabilities given the changing scenarios of airlift requirements for various combat locations, and provides the main concerns confronting increased airlift requirements in the military with some basic recommendations for effecting change.

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INTRODUCTION

At no time in the history of the United States Air Force has there been more proof than today that Strategic Airlift is a capability that our Joint force must have to project United States influence where needed in the world. While nearly everyone is willing to acknowledge this fact, little is being done to ensure this vital ability is preserved, much less strengthened. The problems and shortcomings exposed during Operation Desert Shield/Storm with both organic airlift and the Civil Reserve Air Fleet (CRAF), coupled with the current efforts to reduce Defense spending will degrade our airlift capability by the year 2003 and beyond rather than fortify it. This paper will discuss these issues and recommend what must be done to address the problems of strategic airlift.

The importance of strategic lift assets, including airlift, has been the subject of studies and discussion for many years. The Congressionally Mandated Mobility Study (CMMS) of 1981 addressed deficiencies in total strategic lift assets (airlift, sealift and prepositioning) by examining four contingencies the United States might face in the 1980s; two in Southwest Asia, one in NATO, and one in Southwest Asia with a concurrent precautionary reinforcement in Europe.[1] The CMMS provided for a fiscally restrained target of 66 Million Ton-Miles per day (MTM/D) by 1998. The Airlift Master Plan of 1983 provided a plan to meet this goal through the use of C-141s, C-5As, and CRAF

assets, as well as the procurement of the C-17. There have been numerous changes to the plan to provide the 66 MTM/D mandated by the CMMS, including the purchase of C-5Bs and KC10s in the late 1980s. Despite all this turmoil in deciding the best way to provide the needed strategic airlift -- the need has never been clearer.

The 1996 theater airlift study also found that the C-17 could serve a very important role within a theater - as it did in Bosnia in late 1995 and early 1996 - and not just as a strategic airlifter. It suggested that, for this purpose, the United States Air Force should buy two additional squadrons - a total of 32 airplanes.[2] There are currently 27 C-17 Globemaster III aircraft in the active forces. None are assigned to the Army National Guard or Army Reserve Component forces.

The Mobility Requirements Study Bottom-Up Review Update and analysis of preposition cargo set the airlift requirement for a two major regional contingencies (MRC) scenario at 49.7 million ton-miles per day (MTM/D). Fully mobilized, the Air Reserve Component and Air Force active duty contributes approximately 61 percent, while the Civil Reserve Air Fleet (CRAF) provides 39 percent. However, Air Mobility Command's (AMC) force structure is not only based on the requirements for a two-MRC scenario, but also on unique military requirements such as strategic brigade airdrop, lesser regional contingencies, and peace keeping/peace enforcement.

The final report of the Quadrennial Defense Review (QDR), released in May 1997, reaffirmed the Department of Defense's baseline requirements for intertheater mobility, as outlined in the 1995 Mobility Requirements Study Bottom-Up Review Update. To meet our force deployment objectives, the mobility update recommended an airlift capability of approximately 50 Million Ton-Miles per day. The QDR effectively laid to rest the idea that the United States can meet its military obligations with fewer than 120 C-17s, blessing the multiyear buy of the airplane and endorsing the idea of direct-to-the-front strategic lift. Plans call for the 120-aircraft C-17 fleet to replace 256 Air Force C-141 long-range airlifters as the backbone of the air mobility force.[3]

ORGANIC AIRLIFT

The unique ability to rapidly and flexibly respond to the full spectrum of contingencies--from combat operations, to humanitarian relief, to peacekeeping, with the right force, at a decisive time and place, is a capability no other nation in the world has. Air mobility forces enable warfighting commanders to influence operations throughout the theater. C-17 airlift combined with tanker fleets can build an air bridge to move joint and allied forces for combat or peacekeeping operations or to airdrop or insert troops and equipment. C-17 airlifters sustain operations by providing a steady flow of equipment and supplies,

as well as ensuring short-notice, critical needs are met and life saving emergency aeromedical evacuation is available. C-17 airlift give the national command authorities the ability to reach out and influence events around the world. This trend will continue as far into the future as we can imagine. Organic strategic airlift assets, those the Air Force owns and operates, are the core airlift assets needed when a contingency such as Operation Desert Shield or Restore Hope arises. The C-141s, KC-10s and C-5s of Air Mobility Command (AMC) are often the only practical way to provide the force enhancement tasks of moving and sustaining the surface forces and other Joint forces needed to meet a crisis, especially if time is critical.[4] These organic forces have some issues that must be addressed if our strategic airlift capability is to remain viable.

STATUS OF THE CURRENT FORCE

C-17: The C-17, our follow-on core airlifter, is the key to meeting the nation's strategic mobility requirements for the twenty-first century. Possessing the full range of combat capabilities, the C-17 ushers in a new era in strategic and theater airlift. The C-17 is capable of operating in austere environments under a variety of threat conditions, with roll-on, roll-off capability. It can deliver troops, equipment, and supplies via airdrop or airland operations. The Defense Acquisition Board in November 1995 directed the Air Force to

plan, program, and budget to procure a total of 120 C-17s at the maximum affordable rate. The Air Force obtained congressional approval for and signed a seven-year multi-year procurement contract on June 1, 1996 for the last 80 C-17s. This contract provides savings of nearly $1 billion over current yearly contracts and maintains our airlift capability at the highest possible levels.

C-5: The C-5 Galaxy provides a significant portion of Air Mobility Command's cargo capability and is a vital asset, capable of deploying personnel and cargo between CONUS and overseas locations. The C-5A entered service in 1969 with 50 additional C-5Bs entering service in the mid-1980s. The USAF will concentrate on increasing C-5 fleet effectiveness by implementing a capital investment plan focused on lowering costs of ownership and improving fleet reliability, maintainability, and availability.

C-141: Our current core airlifter, the C-141 is capable of delivering cargo and troops between theaters of operation. The C-141 fleet is nearing the end of its operational service life and is being retired. Over the past several years, fleet structural integrity problems have restricted the C-141's capability. As it is being retired, the fleet will be managed carefully until its replacement, the C-17, is delivered. This includes selectively modifying a group of airplanes to maintain

their operational capability and supportability until retirement in 2006.

C-130: The C-130 is our core theater airlift aircraft. Its primary mission is to rapidly transport and deliver personnel and cargo via airland or airdrop operations within the theater of operations. The C-130 can land and take off on short runways and can operate on austere landing strips. Numerous versions of the C-130 perform a variety of other specialized missions, including special operations, airborne command and control, air refueling, reconnaissance, and electronic warfare.

Several major modification Programs for the C-130 will ensure long-term fleet mission capabilities, including airlift defensive systems, new autopilot, electrical system upgrade, and navigation system improvements. Initial C-130 retirements are scheduled to begin just after the turn of the century when the fleet begins to reach the end of its service life. The Air Force has programmed a low-rate C-130J acquisition profile with initial deliveries slated for training, tactics development and special missions.

CRAF: An essential component of our airlift modernization plan is a continued reliance on civil aircraft. A critical part of our airlift force today, provide up to one third of DOD's cargo capacity and 93 percent of strategic airlift passenger capability when fully mobilized. Mobilization can occur in three stages, each requiring SECDEF or Presidential approval. In

exchange for receiving peacetime transportation business from the Department of Defense, civilian air carriers voluntarily commit aircraft to the wartime/contingency CRAF mission. The result is DOD has a substantial on-call airlift capacity at virtually no cost.[5]

Towards improved and increased Global Mobility, the airlift and aerial refueling forces today provide us with the capability to rapidly deploy, employ, and sustain our nation's armed forces in operations around the world.

Beginning in December 1995, United States and allied nations deployed peacekeeping forces to Bosnia in support of Operation JOINT ENDEAVOR. In just three months, Air Force mobility forces flew 3,000 missions; carried over 15,600 passengers; and delivered more than 30,100 short tons of cargo. While United States fighters patrolled the skies over northern Iraq enforcing the no-fly zone, Air Force C-17 airlifters and air refueling aircraft transported troops and equipment in support of these ongoing operations.

In June 1996, mobility aircraft demonstrated their flexibility by serving in their aeromedical role and flying medical personnel to Dhahran, Saudi Arabia to provide timely care, treatment and movement of injured personnel after the Khobar Towers bombing. Shortly thereafter, C-17 mobility crews were called upon to fly Hurricane Bertha relief missions from the

United States to St. Thomas, Virgin Islands in support of the Federal Emergency Management Agency.

Later, in September 1996, C-17 airlift and air refueling assets were vital to the success of DESERT STRIKE, enabling strike aircraft to reach targets in Iraq. On top of all this, mobility crews and C-17 aircraft continuously supported critical Air Expeditionary Force operations in the Southwest Asia theater and sustained NATO operations in Bosnia--not just supporting Air Force movements and operations, but those of United States' sister Services, allies, and coalition partners as well.[6]

In the early 1990s, the C-5s and C-141s of the Military Air Command (MAC) and KC-10s from the Strategic Air Command (SAC), (all three now part of the AMC), acquitted themselves very well in the Operation Desert Shield/Storm airlift. Much of the palletized cargo and all of the oversize and outsized cargo shipped by air moved on these aircraft. But the airlift highlighted the high degree of reliance on the Guard and Reserves for aircrews and aircraft. Only half of MAC's airlift capability came from active duty forces.[7] Of AMC's 269 C-141s, 16 are now in the Guard or Reserve; 40 of the 122 C-5s are presently in these units.[8] A Presidential Selective Reserve Call-up (PSRC) was required to make full use of the strategic airlift aircraft at the use rates the huge operation demanded.

The retirement of aircraft, planned for in the Airlift Master Plan (an Air Force follow-up study to the CMMS), will

continue to reduce the numbers of aircraft available for airlift. As our C-141s get older, currently a fleet with an average aircraft age of over 25 years, more and more will reach the end of their service life and be retired.[9] Any major airlift like Operation Desert Shield/Storm or Operation Restore Hope will only aggravate the problem facing the C-141 -- the workhorse of the airlift fleet. During Operation Desert Shield/Storm C-141s were flying up to 1400 missions per month, a rate that used one year of service life every seven months.[10]

The purchase of KC-10s and C-5Bs in the 1980s has helped, but even the C-5A fleet's average age is over 20 years. During Operation Desert Shield/Storm the C-5 fleet flew at an operations tempo 3 1/2 times its peacetime rate using a large portion of its finite service life.[11] The next generation of strategic airlifter is needed now to avoid a degradation of capability in the future. The acquisition of the C-17, while controversial due to its cost, is essential to keep the strategic airlift fleet viable in the future.

THE NEED FOR THE C-17

The C-17 tends to blur the traditional lines between strategic airlift and tactical airlift. It has unique capabilities that will allow it to deliver cargo directly to more airfields than current airlifters, thus doing away with the need for a portion of the intratheater tactical airlift. While this

additional capability is a welcomed asset to the needs of the tactical airlift community, this paper will concentrate on the C-17 as a strategic airlifter. The C-17 is intended to replace the lost C-141s as they retire while increasing our total airlift capacity.

The C-17 will be a very formidable airlifter with some unique capabilities. It will have improved equipment like a heads-up display (HUD), improved flight controls, defensive systems, and self sealing fuel lines.[12] It will also require a smaller crew than any other aircraft of this type, two pilots and a loadmaster. The three-member crew is in contrast to the five-member crew on the C-141 and the six-member crew on the C-5. The smaller crew will result in a reduction in operation and support costs as well as fewer crewmembers placed in harm's way during combat operations.[13] It will be capable, like the C-5, of carrying outsized cargo but with its smaller size it will allow a greater number of aircraft on a given ramp. This coupled with the ability to pull into parking spots it cannot taxi through (because of its ability to back up) will enhance its effectiveness by increasing airlift throughput at operating bases.

The Services are strongly in favor of the Joint acquisition of the aircraft since it will increase their reach around the world. The C-17 has had the support of all MAC, AMC, and TRANSCOM commanders since its inception. General Hansford T.

Johnson, when he testified 6 March 1991 before the Senate Armed Services Committee as CINC of USTRANSCOM, gave the following endorsement of the C-17:

> We estimate that if we would have had the C-17 in place of the C-141 during DESERT SHIELD, we could have met our airlift deployment requirements from 20% to 35% faster, depending on the capacity of the airfields made available in the area of operations. The C-17's impact in the first 12 days alone would have allowed us to carry enough cargo to deploy an additional three F-15, three F-16, three F-4, and three A-10 squadrons plus two light infantry brigades. In addition to its strategic contribution, the C-17 could also have provided the equivalent in-theater airlift of a 16 aircraft C-130 squadron. To sum it up, the C-17 means fewer intertheater missions, fewer crew members, less maintenance, additional intratheater capability, and a faster rate of cargo delivery.[14]

Even without the C-17, the current airlift fleet did an outstanding job in the surge of Operation Desert Shield/Storm. The load was tremendous; by mid-August 1990, 95% of the operable C-5s and 90% of the operable C-141s were flying missions in support of the effort.[15] However, the current capacity of the organic strategic airlift assets proved insufficient, especially with regard to passengers. Early in the massive deployment it was clear the CRAF program needed to come into play.

STRATEGIC MOBILITY REQUIREMENTS FOR THE C-17

In the Joint Chiefs of Staff's 1995 Mobility Requirements Study Bottom-Up Review (MRS BURU), the Joint Staff identified a small, potential airlift shortfall in the capability of mobility forces to deliver the total tonnage of unit equipment scheduled

for delivery early in the halting phases of two nearly simultaneous major regional contingencies. The shortfall was about 4 percent of the unit equipment tonnage delivered. According to the Army's Office of the Assistant Deputy Chief of Staff for Operations and Plans, this shortfall is marginal. It occurred in only one of the two major regional contingencies and consisted of prepositionable combat support and combat service support materiel. To deliver the entire shortfall by air would have required more than 140 C-17 equivalents. The study, however, recommended that a portion of the shortfall be prepositioned afloat and that the remainder be airlifted into the theater. The solution recommended in the MRS BURU required at least 120 C17s, or the equivalent capacity provided by a mix of C-17s and Non-Developmental Airlift Aircraft (NDAA).

With some additional measures, an airlift fleet with 100 C-17s could provide sufficient airlift capability, including the delivery of outsize cargo, to meet the MRS BURU mobility requirements. These include (1) slightly increasing prepositioning, for example, by placing the shortfall not delivered by 100 C-17s on prepositioned ships when regenerating these ships between the two major regional contingencies; (2) using airlift assets that were assumed not to be available in the MRS BURU; (3) increasing slightly the time frame in which the MRS BURU shortfall would be delivered; or (4) adopting a combination of these measures.

Further, an airlift fleet with only 100 C-17s also provides a hedge against a more constrained airfield environment than that modeled in the MRS BURU. A sensitivity analysis done as part of the force mix analysis showed that under a more constrained airfield environment, an airlift fleet with 100 C-17s delivered only 3 percent, about 500 tons, less outsize cargo than a fleet with 120 C-17s.

AIRFIELD CONSIDERATIONS FOR THE C-17

The Army Material Command (AMC) conducted the 1996 Strategic Airlift Force Mix Analysis (SAFMA) which compared the relative performance of mixed fleets with C-17s and NDAA against fleets with 120 C-17s and 140 C-17s to determine which mixed fleets could meet the airlift performance capability of a fleet with 120 or 140 C-17s during the MRS BURU'S most demanding scenario. This analysis also evaluated the cost-effectiveness of each of the fleet alternatives.

DOD developed a detailed listing of equipment, munitions, and supplies that would be airlifted using the MRS BURU recommended airlift requirements. It then modeled the operations of the strategic airlift fleet during the initial phases of the two major regional contingencies scenario. Air refueling and delivery to locations other than main operating bases were not considered in the SAFMA.

The SAFMA also addressed the impact of airfield constraints due to reduced airfield availability, ramp space, and services; and other limitations on the number of aircraft that can be accommodated and serviced on the ground at one time. The term maximum on ground refers to the maximum number of aircraft on the ground that can be parked, unloaded, and serviced in a given time period. In this regard, the MRS BURU and SAFMA studies assumed a moderate maximum on ground, a reduced level of capability based on the experience of Desert Shield/Desert Storm, AMC Operation plans, and maximum on ground assumptions used in a C-17/NDAA cost and operational effectiveness analysis completed by the Institute for Defense Analyses in December 1993.

Maximum on ground constraints and uncertainties were important considerations in the Defense Acquisition Board's (DAB) decision to procure 120 C-17s. As part of the force mix analysis, AMC examined the impact of reducing maximum on ground below the levels assumed in the MRS BURU. AMC found that force mixes with more than 100 C-17s offered a better hedge against uncertainties about airfield availability, congestion, and ground support. For example, when maximum on ground values were reduced by 15 percent in Northeast Asia during the halting phase, all fleet options delivered less outsize cargo than the MRS BURU-established requirement, but an airlift fleet with 120 C-17s delivered more of the outsize cargo than the mixed fleets.[16]

TACTICAL UTILITY OF THE C-17

In preparation for the November 1995 C-17 DAB, DOD also wanted to ensure that the planned analysis for the DAB recognized the potential benefits of the military capabilities of the C-17 that could not be provided by a NDAA. In December 1994, the Under Secretary of Defense for Acquisition and Technology directed DOD's Director, Program Analysis and Evaluation, in concert with the Army and the Air Force, to complete a Tactical Utility Analysis. This analysis was to quantify the C-17's benefits in responding to lesser regional contingencies such as humanitarian relief, peacekeeping, and peace enforcement missions; providing for intratheater delivery and direct delivery to austere airfields; and performing a strategic brigade airdrop. These capabilities were not addressed in the work done in the SAFMA.

The Tactical Utility Analysis found that the most demanding of the lesser regional contingencies was the peace enforcement mission. This mission, as modeled in the study, could be accomplished with varying numbers of C-17s. The analysis showed that as more C-17s were provided less total time was required to deliver troops and equipment. According to the study leader, in the peace enforcement scenario, there were no time requirements and the delivery time saved was not critical to completing the mission.

The Tactical Utility Analysis also evaluated the use of the C17 in an intratheater airlift role, It indicated that a squadron

of aircraft dedicated specifically to this role might be beneficial. However, study analysts acknowledged that these aircraft would be in addition to the 120 C17 equivalents the MRS BURU found were required for strategic airlift. There is no requirement for using C-17s in an intratheater role in DOD's fiscal years 1998 to 2003 Defense Planning Guidance. The Joint Chiefs of Staff completed a study of intratheater airlift needs and concluded that one Squadron of C-17s dedicated to the intratheater mission would be useful. However, that study recommended further analysis of the issue. The Air Force is currently conducting additional intratheater airlift analyses. That analysis is planned to be completed in late spring 1997.[17] Lastly, the Tactical Utility Analysis evaluated the need for C17s to accomplish a strategic brigade airdrop. On the basis of the then existing Defense Planning Guidance, which called for a limited strategic range capability, an airlift fleet with 100 C-17s, along with modified C-5s, would be sufficient to accomplish this mission. The Tactical Utility Analysis, however, also analyzed the number of C-17s that would be used to conduct an extended range brigade airdrop. It found that acquiring 120 C-17s would allow the Air Force to support a strategic brigade airdrop directly from the continental United States to a small, austere airfield located beyond the range required by the Joint Chiefs of Staff at the time of the C-17 DAB.

From the options considered, the DAB found two acceptable options that would provide sufficient strategic airlift capability and a minimum of 100 C-17s to perform the strategic brigade airdrop mission analyzed in the Tactical Utility Analysis. These were 120 C-17s and no NDAA, and 100 C-17s and 18 NDAA. The DAB chose the 120 C-17 option because of the relatively small savings from acquiring a mixed fleet--$300 million in life-cycle costs--and the advantages in increased flexibility from acquiring 20 additional C-17s.[18]

THE CIVIL RESERVE AIR FLEET

The Civil Reserve Air Fleet (CRAF) program was started in 1951 to augment the organic airlift capacity of the US Air Force. The CRAF program's basis is Department of Defense (DOD) directive. There is no legislation that covers it.[19] Participation in the program is voluntary on the part of the civilian air carriers. For participation, the system depends on the incentive AMC provides by limiting its fixed-buy peacetime airlift business to only those carriers who agree to contribute aircraft to the CRAF. This incentive totaled $615 million worth of business for FYs 90-92.[20] There are several types of aircraft targeted by the program, but the greatest need for additional capability today is the intertheater movement of troops and equipment.[21]

The current program has three stages: *Stage I* can be activated by the Commander of AMC when the need arises to reduce the backlog in air terminals to acceptable levels; *Stage II* is activated by the Secretary of Defense, and includes the aircraft activated by Stage I plus additional aircraft for contingencies not warranting a declaration of national emergency; *Stage III* is also activated by the Secretary of Defense but only after a Presidential declaration of national emergency, and includes all aircraft enrolled in the program.[22] The totals in the program shortly after the conflict showed Stage I obligating up to 41 long range cargo and passenger aircraft, Stage II up to 181, and Stage III all 506 aircraft in the program.[23]

We've learned a lot about the program recently since the only time the CRAF has been activated in its 39-year history was during Operation Desert Shield/Storm. CINCTRANSCOM activated Stage I on 18 August 1990, and the Secretary of Defense activated Stage II on 16 January 1991. The program proved successful with over 4,700 missions flown.[24] A total of 26 airlines provided up to 70 widebody aircraft (at any given time), flew 20% of the strategic airlift missions, transported 310,000 troops (64% of the total moved) and 150,000 tons of cargo (27% of that airlifted).[25] The lessons learned during the Gulf crisis, however, point out several areas where the program needs improvement before the next activation.

INCENTIVES

The Gulf crisis implementation of the CRAF proved costly to some carriers. The activation came at a busy time of the year for carriers and they had difficulty providing seats for passengers already holding tickets. The resulting loss of customer confidence and satisfaction proved troublesome to CRAF carriers. They perceived a loss of market share in both passengers and cargo, particularly to foreign-flag carriers. Since foreign-flag carriers are prohibited from participating in the CRAF, the perception exists that they take undo advantage of the market share the CRAF participants lose.[26] This has proven to be a disincentive to continued participation in the CRAF. The incentives of the program should be addressed to prevent the loss of participating carriers.

Experts have suggested that to increase the incentives for carriers to participate in the program, AMC should favor those air carriers with the greatest commitment to CRAF when they award peacetime contracts for airlift.[27] In light of the assistance that foreign-flag carriers received from their home governments to offset losses during Operation Desert Shield/Storm (especially since these foreign-flag carriers are prohibited from participating in the CRAF and encountering its drawbacks), the US carriers will need additional incentives to participate in the voluntary program. The losses incurred during Operation Desert

Shield/Storm could sour a very successful program if the incentives are not studied and improved.

THE CRAF STAGES

The seeming inflexibility of the CRAF Stage structure proved to be a problem during Operation Desert Shield/Storm. Since the activation of each stage was rigid, providing a large increment of airlift capability, there were periods when MAC did not need all of the aircraft that were activated by the program.[28] This inflexibility proved costly to MAC and frustrating to the carriers involved.

A study was commissioned by the Department of Defense to study the program following the Persian Gulf War. The Logistics Management Institute (LMI) study suggested the inflexible three-stage program be replaced with eight segments that match the types of aircraft currently in the civilian carrier's inventories today to specific requirements for airlift. The segments suggested by the LMI study are: (1) long-range international, passenger, (2) short-range international, passenger, (3) long-range international, cargo, (4) short-range international, cargo, (5) long-range aeromedical evacuation, (6) short-range aeromedical evacuation, (7) Continental United States, and (8) Alaskan.[29] With these more specific segments a future contingency could have CRAF aircraft designated to efficiently fill the specific shortfall the strategic airlift system is

encountering. This should avoid the problem of activating more airlift than necessary when a shortfall exists. In addition, the study recommended a formal volunteer program for the CRAF structure within each of the eight segments. If the capability of the volunteers exceeds the aircraft needed, a lottery should be used to award the business.

LMI also suggested the new CRAF program be designed to allow AMC to deactivate the CRAF as soon as the need is gone. Their system would give AMC, through USTRANSCOM, the authority to call up the first 15% of the available aircraft in each category. Any call-ups beyond 15% would be authorized at the Secretary of Defense level.[30]

COMMUNICATION SYSTEMS

MAC identified in numerous exercises before Operation Desert Shield/Storm that there were compatibility problems between the communication and navigation systems in use by civilian airlines and those used by the military.[31] The activation of the CRAF and the introduction of these aircraft into the military-use fields of Saudi Arabia during the airlift highlighted the problems.[32] The lack of an instrument landing system (ILS) at several Saudi fields forced them to be daylight-only for the civilian aircraft until portable ILS systems could be set up and inspected by the Federal Aviation Administration (FAA), resulting in some flow problems into the theater. The military's heavy reliance on the

tactical air navigation (TACAN) system also hindered the civilian fleet in-theater operations since few civilian aircraft use the system. The work-arounds used in Operation Desert Shield/Storm worked, however, the next scenario may not provide the time or the opportunity to make such adjustments.

CARRIER INSURANCE PROVISIONS IN A COMBAT ENVIRONMENT

The uncertainty of security at offload bases in the Persian Gulf region further complicated the operation for the civilian carriers activated by the CRAF. The introduction of the SCUD missile into the conflict by Saddam Hussein caused even more concern. Commercial insurance carriers dramatically raised their premiums on those aircraft flying into the theater. This caused the FAA and the Department of Transportation (DOT) to consider War Risk Insurance coverage on a case-by-case basis, according to the provisions of Title VIII of the FAA act of 1958.[33] The law authorizes the Secretary of Transportation to insure aircraft engaged in international commerce, when commercial insurance is not available, are insured at reasonable rates. The provisions of the law are outdated, pointing out the need for updated legislation specifically covering similar situations like this that may arise in the future.

RECOMMENDATIONS

There are several specific recommendations to correct the problem areas listed in this paper. All these should be considered to enhance the effectiveness of the strategic airlift system, both organic and the CRAF.

The Air Reserve forces and Air National Guard units associated with strategic lift should be aware that with 50% of strategic airlift aircrews in their units, activation of the PSRC will happen more often in the future than it has in the past. The greater reliance on these forces and the recent trend to return more and more units to the CONUS will make any operation requiring significant forces one sure to result in a Reserve mobilization. The National Command Authority (NCA) should also be aware that a PSRC to support strategic airlift must be made very early in future major contingencies; the force structure we now have will require it. They must be prepared for that eventuality, despite its potential adverse political considerations.

The aging C-141 fleet needs to be replaced soon. The Operation Desert Shield/Storm airlift took its toll on an aircraft that has already begun to be retired. The decision by the Defense Secretary to purchase a total of 120 C-17s is a step in the right direction. General Johnson, in his address to the Senate on 6 March 1991 summed up his support for the rapid acquisition of the C-17 by saying:

> The C-17 is vital to our future airlift capability. The Secretary of Defense's decision to build to an 18 aircraft per year production rate recognizes the need for this critical airlift asset.[34]

The C-17, even with its controversial price tag in a time of reduced spending levels, is a critical purchase for the future of strategic airlift. When the first ones arrive at Charleston AFB this year, a tremendous capability to project US power will begin to build. The new administration should continue the program at the current levels and consider expanding the buy to provide additional lift capability up to the CMMS's goal of 66 MTM/Day.

The Logistic Management Institute (LMI) made several recommendations to strengthen what they felt was a true success story during the operation. They suggested that the Assistant Secretary of Defense for Production and Logistics, ASD(P&L), should prepare a new DOD directive revising the CRAF program.[35] The directive should specifically address activation authority, aircraft selection criteria, and the management and oversight of the program. It should provide specific responsibilities for AMC, USTRANSCOM, the Joint Chiefs of Staff (JCS), and ASD(P&L) for program effectiveness. ASD(P&L) should seriously consider the other suggestions made by the LMI study when they write the new CRAF directive.

The issue of aircraft insurance for civilian carriers flying into a combat zone should be addressed by an FAA review of the War-Risk Insurance program. ASD(P&L) should make inputs to

advocate the needed changes to bring them to fruition, thereby avoiding this problem in the next activation.[36]

DOD is now conducting a Mobility Requirements Study (MRS). The aim of the study is to quantify the strategic lift requirements, including airlift, into the future. The results of the study should be used to make a case, in this time of dwindling resources, for a strong commitment to fund the needed changes in our strategic airlift system.

SUMMARY

Today, we have the most capable strategic airlift system of any country in the world. The Operation Desert Shield/Storm airlift numbers were awesome: by the end of the ground war, strategic airlift assets flew 16,400 missions transporting 544,000 passengers and 562,000 tons of cargo to the Persian Gulf -- the equivalent of a Berlin Airlift every 6 weeks.[37] From 7 August 1990 until the end of 1991, strategic airlift had flown 26,764 missions moving 1,016,752 passengers and 796,221 tons of cargo to/from the Gulf.[38]

Strategic airlift is an integral part of the Force Enhancement role of today's Air Force.[39] It provides the ability to deploy and sustain aerospace and ground forces in Joint operations. These forces are designed to deter aggression and,

should deterrence fail, fight and win. A viable airlift system is critical if the deterrence is to be effective.

Chairman of the Joint Chiefs of Staff, General Colin Powell, testifying before the House Armed Services Committee on 7 January 1991 summed up the need to maintain a strong airlift force by stating, "Deterrence is only credible if we possess a robust means of power projection and the mobility to deploy and sustain our forces."[40]

It is incumbent on the Air Force and the civilian leadership to address the issues facing the strategic airlift system so the successes of Operation Desert Shield/Storm can be followed by even greater achievements in the next period of crisis. It is our responsibility to maintain this vital national asset.
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ENDNOTES

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[3] Ibid, 26.

[4] Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force: Volume I*, 1992, 13.

[5] United States Air Force Issues Book, Department of the Air Force, 1997, 68-69.

[6] Ibid, 11.

[7] "Military Airlift Command," *Air Force Magazine*, Vol 75, No.5, May 1992, 18.

[8] Ibid, 34.

[9] Ibid, 34.

[10] Johnson, General Hansford T., "Statement of General Hansford T. Johnson, Commander in Chief United States Transportation Command, to the Committee on Armed Services of the United States Senate, 6 March 1991," *Armed Forces Staff College Pub 1S40 Vol III*, Norfolk, VA, 185.

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[14] Ibid, 185.

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[17] Ibid, 22.

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[23] Hoover, William W., "The Desert Shield Airlift: A Great Success That Holds Some Valuable Lessons for the Future," *Defense Transportation Journal*, Vol.47, No.3, June 1991, 54.

[24] Schwartz, Lawrence, et al, *Review of DOD's Strategic Mobility Programs: Civil Reserve Air Fleet*, Bethesda, Maryland, Logistics Management Institute, 1991, iii.

[25] Hoover, William W., "The Desert Shield Airlift: A Great Success That Holds Some Valuable Lessons for the Future," *Defense Transportation Journal*, Vol.47, No.3, June 1991, 54.

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[27] Ibid, 54.

[28] Schwartz, Lawrence, et al, *Review of DOD's Strategic Mobility Programs: Civil Reserve Air Fleet*, Bethesda, Maryland, Logistics Management Institute, 1991, iv.

[29] Ibid, 30.

[30] Ibid, 31.

[31] Chenoweth, Mary, *The Civil Reserve Air Fleet: An Example of the Use of Commercial Assets to Expand Military Capabilities During Contingencies*, RAND Corporation, 1990, 335.

[32] Schwartz, Lawrence, et al, *Review of DOD's Strategic Mobility Programs: Civil Reserve Air Fleet*, Bethesda, Maryland, Logistics Management Institute, 1991, iv.

[33] Ibid, iv.

[34] Johnson, General Hansford T., "Statement of General Hansford T. Johnson, Commander in Chief United States Transportation Command, to the Committee on Armed Services of the United States Senate, 6 March 1991," *Armed Forces Staff College Pub 1S40 Vol III*, Norfolk, VA, 195.

[35] Schwartz, Lawrence, et al, *Review of DOD's Strategic Mobility Programs: Civil Reserve Air Fleet*, Bethesda, Maryland, Logistics Management Institute, 1991, 30.

[36] Ibid, 31.

[37] Butler, Katharine, "Operation Desert Storm: The Logistics Story," *Government Executive*, Vol 23, No.5, May 1991, 41.

[38] "Military Airlift Command," *Air Force Magazine*, Vol 75, No.5, May 1992, 65.

[39] United States Department of Defense, Office of the Secretary of Defense, *Conduct of the Persian Gulf War; Final Report to Congress, Appendix D*, Washington, GPO, April 1992, 13.

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