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REPORT OF A RESEARCH PROJECT ON THE EFFECTS OF STRATEGIC MOBILITY ON THE U.S. ARMY

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DEVELOPING STRATEGIC MOBILITY: APLIENS, LACK OF, AND THE P...

BY

COLONEL KEVIN M. DICKINSON, USAF

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7 APRIL 1980



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**ENHANCING STRATEGIC MOBILITY:  
APPLYING LESSONS FROM THE PAST**

An Individual Study Project  
Intended for Publication

by

Colonel Kenneth M. Jenkins (Author)

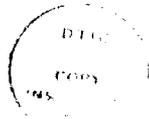
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7 April 1989

ABSTRACT

AUTHOR: Kenneth M. Jenkins, COL, TC  
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Colonel Kenneth M. Jenkins, USA, is the DA DCBOPS Project Manager for the C-17 Program, working out of Edwards Air Force Base, California. Colonel Jenkins has a B.S. in Economics from Troy State University and an M.S. in Transportation from the State University of New York. He graduated from the Army Command and General Staff College in 1976, the Army War College in 1989 and served a year with Trans World Airlines in the Training with Industry program during 1976-77. He has commanded Transportation Corps organizations in Germany and Korea and served as an operations officer in Vietnam, Thailand and Hawaii. From 1980 to 1983 he was a Transportation Staff Officer at MacDill AFB, Florida. Immediately prior to attending war college, he was the Director of Professional Development at the Transportation School, Ft. Eustis, Virginia.

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NOTE: as of July 10, 1989

## INTRODUCTION

### TO THE FRONT!

The mantle of defeat loomed over Paris in early September, 1914. The German army was rapidly approaching the Marne River, threatening the capitol. The French army desperately needed to stem this onslaught but, unfortunately, reinforcements arriving in Paris had no available transport to move them to the front lines. What happened next is history. General Gallieni ordered the Parisian gendarmes to round up every available civilian taxicab and bring them to the Ministry of War headquarters. Army officers quickly briefed the newly recruited drivers and sent them out to load the waiting regiments at collection points throughout the city. Over 1,000 taxis then sped to the front, bringing the needed reinforcements to stop the Germans at the first Battle of the Marne. This resourceful tactic undoubtedly saved the Allies from certain defeat.

This story demonstrates several positive traits of military leadership, perhaps even to the point of crediting a Frenchman with displaying "Yankee Ingenuity." A key point here is that the Parisian taxi fleet was not a military-owned asset, but was a national asset with military applicability. Recognition of this applicability distinguishes General Gallieni from the staffer who was busy writing memos telling everyone to adjust their Latest Arrival Dates at the front due to a shortage of transport!

Or worse, the G-3 busy re-writing the concept of operations because he thought his original forward defense concept wasn't feasible due to lack of mobility. Another point is that the taxi fleet owners and drivers obviously saw it to be in their best interests to assist the army in defending against the German attack at the Marne. Without their help, the front could easily have been the Seine.

In the Marne example, the military defined the need and saw a solution; the civil sector responded and the rest is transportation history. As we enter into the decade of the 90's, the nation is faced with some large budget and social problems that simply cannot be ignored. The DoD budget submission will have to compete with other programs and it is not difficult to foresee shrinking military appropriations ahead. The challenge for the military planner is to get as much capability for the dollar as possible. More importantly, we must avoid a self-defeating attitude of "zero budget growth equals zero capability growth." The Defense Transportation System is a partnership between military and civilian industry. As General Gallieni did some 75 years ago, we must break out of the paradigms which restrict our thinking and press for new solutions. The first step is to look at how we have been attacking (or in many cases, not attacking) the strategic mobility problem the past 20 years.

## IN SEARCH OF TAXIS: 1969-1989

### DEFINING THE NEED

Strategic mobility is defined by the Joint Chiefs of Staff as "the capability to deploy and sustain military forces worldwide in support of national strategy." Sounds fairly straight-forward and perhaps it is, until you start considering what the definition does not say. It does not mention the "requirements" end of the equation. Even the apprentice contingency planner recognizes that requirements always seem to exceed capability. The approved definition also leaves out the concept of time. How fast can you move a fighting force if it has to take everything with it as it deploys to a bare-based theater of operations? Conversely, do we have "more" strategic mobility if the size of an infantry division is cut to enable deployment in an arbitrary number of sorties? When one begins to contemplate all the aspects that encompass the capability to project forces worldwide, terminology becomes less and less simple.

Significant mismatches between strategy and force projection capability would tend to make deterrence less creditable. The worst of all worlds would be a national strategy formulated without an understanding of our actual capability to execute such strategy. Committing forces to execute a war plan which has no reasonable chance of success due to inadequate lift would be unconcionable. The constant struggle to determine how much is enough presents interesting challenges to the long-range

contingency planner. He must not only be concerned with programming force packages with the requisite firepower, but also must argue for the capability to project that force overseas and to sustain it on through to conflict resolution. Trading-off firepower for improved battlefield maneuver is considered brilliant in the Combat Development community. Interesting enough, these same people would probably resist trading-off any element of combat power for improvements to their ability to "maneuver" strategically. This phenomenon is most likely a result of the misconception that deployment is a logistical "service" provided by the Transportation Operating Agencies (MAC/MSC/MTMC). Nothing could be farther from the truth. The ability to deploy rapidly should be a high priority of every CONUS-based commander.

Our ability to deploy, fight and win is contingent upon our proper use of the elements of airlift and sealift, prepositioning, en route support and assistance from allies. After a decade of neglect in the 70's, there was significant improvement in strategic mobility during the 80's. Some of the added capability came in the form of new equipment. Significant organizational changes occurred, both in the Unified Command Plan and other elements charged with getting forces deployed as rapidly as possible. Virtually all of these changes had impact on and were impacted by the civilian transport sector. General Duane H. Cassidy, the Commander-in-Chief, USTRANSCOM, summed up the importance of the civil sector during his congressional testimony in April, 1988. He told the subcommittee, "We rely upon the civilian transportation industry to join with us to project national power



The following chart shows the types and quantities of strategic airlifters assigned to MAC.

MILITARY AIRLIFT COMMAND AIRCRAFT				
TYPE	ACTIVE	RESERVE	GUARD	TOTAL
C-5	80	29	11	120
C-141	251	8	8	267
TOTAL	331	37	19	387

As of November 1988                      Source: MAC

The 404 CRAF contribution added to the 387 MAC planes gives us nearly 800 planes for strategic deployment. However, the raw numbers suggest a partnership that may be stronger on paper than would be experienced in a time of national emergency, especially if that crisis were something less than a clear and present danger to national survival. The CRAF program has been providing ready, cost-effective airlift capability to the military for nearly 40 years, but it must be remembered that it has never actually been activated; the cost and chaos factors preclude a peacetime "test" of the surge capability of this partnership. Even during the Vietnam War peak movement years of 1966 to 1970, willing carriers provided sufficient cargo and passenger contract flights to MAC.

On the other hand, the ocean shipping industry hasn't and probably never will have the internal capacity to respond to a large deployment. Over the past 20 years, our maritime position

has sunk to dangerously low levels. It appears as though Congress listens to testimony concerning the plight of our sea deployment fleet, then fails to act upon it. A quick look at the sealift case since 1970 will point this out.

## **OCEAN CAPABILITY**

You don't have to dig deeply to find big problems with our U.S. Merchant Marine capability. Twenty years ago we had 18 major shipping companies with a total of more than 430 ships in service. Today, there are four major companies with a total of 88 ships that operate in the foreign trades. On the plus side, the military was able to acquire many of those ships for the maritime and afloat prepositioning programs and significantly upgraded the Ready Reserve Force of mothballed ships. However, the crucial factor is that most of these ships are tied up idle, placing no demand on an already declining pool of trained seamen to crew them in a call-up. Overall, our capability to meet the ocean cargo requirements has been at high risk for more than two decades.

As far back as Fiscal Year 1969, the Department of Defense stated a requirement for 30 new Fast Deployment Logistic (FDL) ships to complement the C-141 and new C5-A aircraft. The program called for a rapid deployment team of air and ocean capability. The FDL program was never funded for the sea requirement. In the air, procurement problems with vast cost overruns caused the original planned buy of 120 C5-A's to be cut to 80.

After successive years of being turned down on the FDL proposal, the Navy tried another approach. It sought 10

Multi-Purpose Ships (MPS) to be built by industry and chartered back to the Navy. That program failed, too. Its failure was blamed, by at least some observers, on "commercial carriers strongly opposed to the MPS program."4 Efforts to fund these programs simply could not get through the Congress. It is important to note that since 1970 our overall military requirement for ocean cargo movement in a contingency has remained relatively unchanged. There was significant shortfall identified during the entire period of neglect of the 70's. In spite of some programs to upgrade the military fleet of transport ships in the 80's, the requirements still far exceed capability and there is a danger of losing creditability of our "deterrence thru deployment" motto.

It is time for both the civilian and military sectors to recognize our Merchant Marine for what it is --a disaster--, and continue to urge a national solution to the problem. As hard as one looks, it's virtually impossible to be optimistic about increasing U.S. ocean shipping capability in the 90's. The few minor programs accomplished in the 80's pale in comparison to the steady loss of Merchant Mariners needed to crew all the ships of the Ready Reserve Force. There may be a few lessons to glean from the ocean shipping programs of the 80's, though. Just because they weren't enough it doesn't mean they weren't significant.

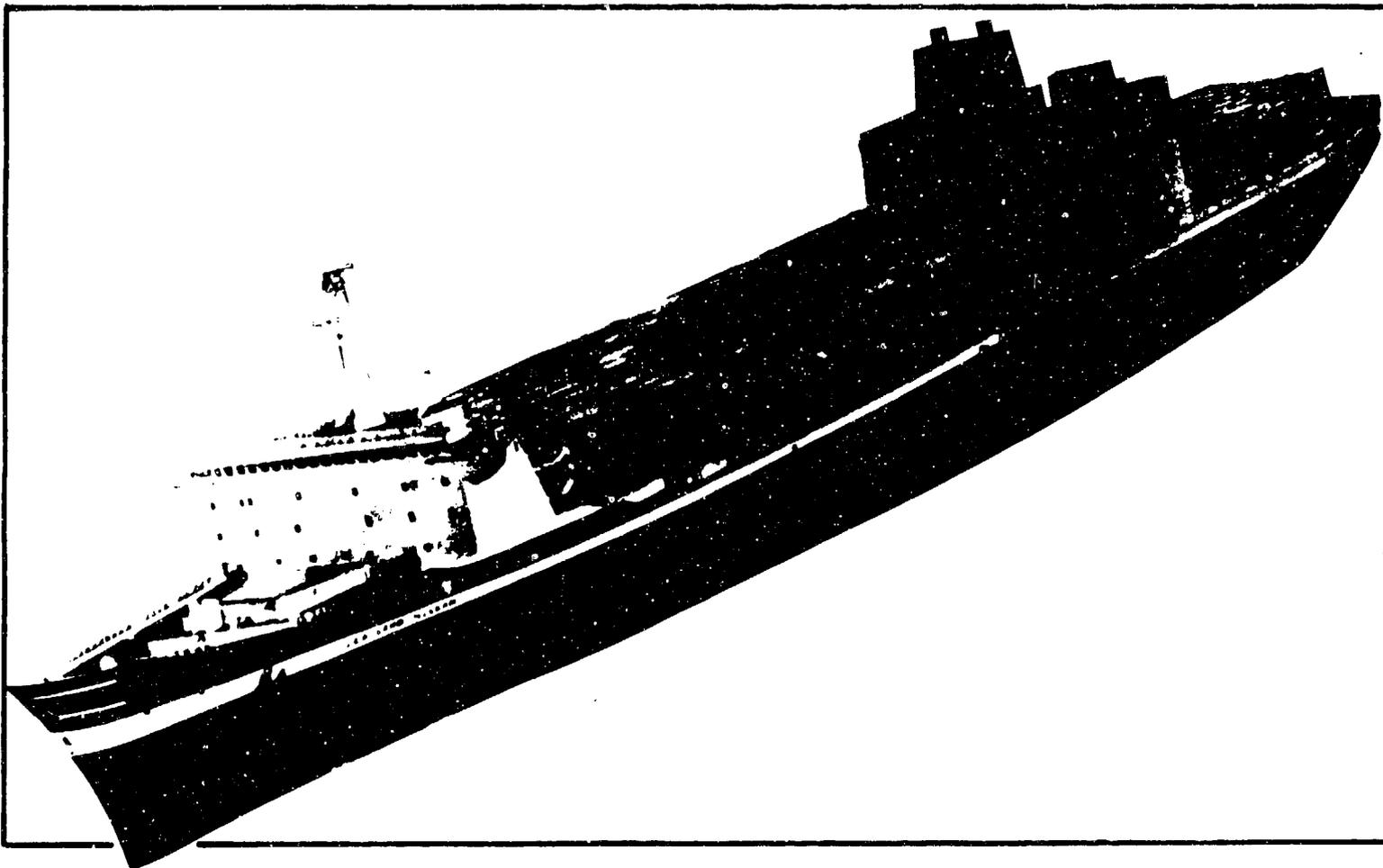
### **SOME BRIGHT SPOTS**

The Military Sealift Command added a number of ships to its fleet through three related, yet distinct, ship acquisition programs completed in the last decade. The Navy spent over \$6 bil-

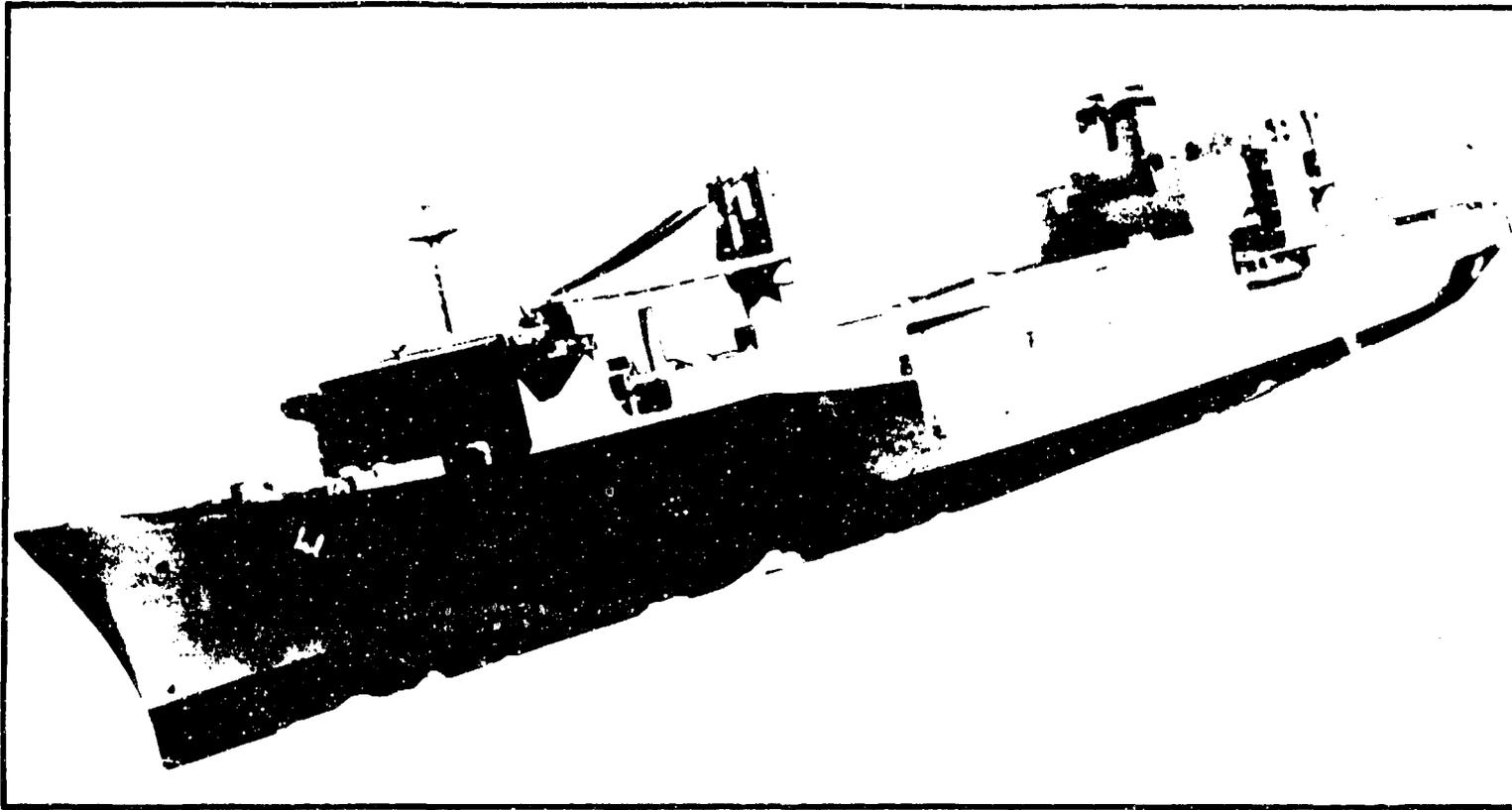
lion on acquiring and modifying several ships to meet military requirements. One MPS program, Multi-Purpose Ships, was defeated in Congress in the early 70's. That MPS wasn't favored by commercial shipping interests. In the 1980's, the Navy finally obtained a program called MPS, except this time it stood for Maritime Prepositioning Ships. This demonstrates the value of never throwing out an acronym. The 13 ship contingent carries a full range of U. S. Marine Corps cargo, from ammunition and artillery to water and rations. These fully-loaded ships are deployed in three strategically located squadrons. Each squadron is capable of supporting a Marine Expeditionary Brigade of 16,000 troops for 30 days. While significantly increasing flexibility for war planners, it must be noted that an MPS element cannot conduct forced entry operations. The Marines will be flown to an airport near the port of discharge where the cargo will be administratively off-loaded for eventual marry-up with the arriving troops. The empty ships then revert to the MSC fleet for other loads to the theater of operations. The MPS concept was little more than a recognition that the Navy was not going to fund amphibious shipbuilding at the expense of capital ships.

A second initiative added 10 ships to MSC control under a program called Afloat Prepositioning Ships. They are cargo ships and tankers strategically deployed and loaded primarily with U.S. Army and Air Force supplies. Again, the intent was to reduce the early burden on the airlift flow in order to free airframes for unit equipment and personnel missions. After discharge, these ships return to CONUS for additional loads.

The SL-7 program and certainly the most detailed of any program in the Navy. Eight ships (FSS-7) were built in the late 1960s and the earliest of these ships in the U.S. that were modified to make them self-sustaining, and equipped with a. These ships are normally in a reduced operating status capable of being fully activated within five days. They have been used with great success on many Joint Readiness Exercises. The eight ships represent a tremendous increase in capability, but they were the only eight in existence. Since there is no likelihood of building a new FSS, we won't be adding anymore like them. It was a one time great deal at only \$113 million per copy, a bargain by anyone's standards. The SL-7 is pictured below.



The "not militarily useful" SL-7 on the list page  
above the very useful Fast Sealift Ship below.



#### LESSONS LEARNED

Before we congratulate ourselves on such a smart "Off The Shelf" acquisition, it's important to note the difference a decade can make. During the late 60's and early 70's we wanted, but could not obtain, the MPS program because the commercial shipping industry didn't see its economic interests being served. By the 1990's, rising fuel costs and significantly higher wage scales caused many carriers to sell off assets en route to bankruptcy court. In the case of Sealand, which owned the eight SL-7's, its fleet-wide cost per container mile dropped from 13 cents to 10 cents when the SL-7's were removed from service. When first

introduced in 1972, the "Queen of the Ocean" SL-7 was described as the difference between a DC-3 aircraft and a 747. A Sealand vice president remarked, "This class of versatile, modern container ship will be without equal on the oceans of the world and will insure the competitive superiority of our hardware for the future." That vision was offered shortly before the Arab oil embargo and OPEC actions which greatly increased the cost of oil. The SL-7, which could attain a maximum service speed of an unbelievable 33 knots, had one big drawback--MPG! The vessel consumed 614 tons of fuel oil per day and could only go 6450 nautical miles at her top speed before requiring re-fueling. As fuel prices escalated, the attractiveness of the SL-7 plummeted. In the late Seventies they frequently operated at only one-fourth power just to save fuel.

The 1979 Iranian hostage crisis and subsequent formation of the Rapid Deployment Joint Task Force (RDJTF) brought renewed interest in strategic mobility. However, the problem of a sealift capability shortfall existed and was documented long before Iran stirred our interests in going long distances with soldiers and guns. The RDJTF might have been the catalyst, but the main elements were a long standing need coupled with a burning desire by industry to dump those eight ships. It worked out well for both parties. SeaLand got out of a financial bind. The military got a significant capability in two years instead of waiting for the development of a new class Navy ship costing billions and taking 15 years to complete.

There was one other key argument for going with the SL-7 conversion program--the "bird in the hand" theory. Projecting continued Congressional interest during the dozen years it would take to design and build a new ship for rapid deployment would have been a high-risk venture, especially given their dismal track record on non-capital ship funding. Also, one could envision a scenario in which the Navy would be forced to choose between a combatant for their 600 ship navy and a sealift vessel used for "logistics". The outcome would be fairly predictable. For a variety of reasons we opted for the FSS because it was in our best interests. It could be described as selecting a good alternative that was available now, rather than take chances with a better alternative later and therefore more susceptible to down-sizing or outright cancellation. It is a valuable lesson, though, to recognize that the deal was possible only because of a highly motivated seller; highly motivated by business economics and the belief that they owned a pink elephant.

This is important to keep in mind as we look at possibilities for improving airlift capability in the decade ahead. A humorous bumper sticker once read: WHEN "MY SHIP COMES IN", I'LL PROBABLY BE AT THE AIRPORT!!! Perhaps this is not just a mixed metaphor. If we consider the "ship" to be "opportunity", the most likely place for that opportunity to present itself may well be at the airport.

## REQUIRING TAXIS TO FLY

### DETERMINING NEEDS

Current national strategy places great emphasis on flexible response. A fundamental principle of that strategy is to react in an appropriate and timely manner to threats to our national interests. Airlift enables us to multiply the deterrent effect of all U.S. forces. It provides what can be termed a "remote presence" in that forces can be rapidly dispatched to any location in response to a real or threatened conflict.

The 1981 Defense Authorization Act required the DoD to conduct a mobility study to determine the lift capability needed for response to contingencies. The report, which came to be known as the Congressionally Mandated Mobility Study (CMMS), concluded that DoD was short of cargo capability and recommended a program be developed to reach the goal of 66 million ton miles per day (MTMD).<sup>10</sup> Ton miles measure capability without tying the answer to only one specific scenario. A ton mile requirement is what it would take to move one ton one nautical mile. An example would be the requirement to move one tank weighing 60 tons from Fort Knox to Europe (4200 NM). The equation would be 60 tons x 4200 miles, for a figure of 252,000 ton miles. This in turn equates to 0.252 MTM. When you consider that only four tanks would require one million ton miles of capability, the figure of 66 MTM per day isn't as much as it might seem. When you further consider that our actual airlift capability in 1981 was less than



extended period. This takes into consideration the empty return leg, or even a full plane load of non-combatants who could be loaded and off-loaded in normally reasonable times. When you factor in the wide-body international planes owned and operated by our NATO allies, passenger movement is really not constrained by airframe availability. It is quite logical and reasonable to assume the use of our NATO allies' passenger capability. In a large-scale shooting war, tourism tends to drop considerably. Transporters of all kinds would be much better off not spending time worrying about sufficiency of long-range international passenger seats in time of war. The overseas theater's reception, staging, and onward movement capability, on the other hand, is worthy of serious study. In all probability, slow clearing of the Ports of Debarkation will curtail the smooth flow of troops well before any airplane shortage.

#### **TRYING TO MEET THE NEED**

The CMMS is the benchmark which has driven all improvement programs for the past decade and is cited as the requirements document for added airlift well into the 1990's. At the time of the study we possessed a capability to move slightly less than 30 million ton-miles per day. Once again, the Iranian situation and the forming of the Rapid Deployment Force did not increase requirements for strategic mobility. As in the sealift case, the requirements were there all along, but quietly ignored. The RDJTF merely highlighted the need. As a result, several actions were initiated to improve the airlift posture.

The following chart shows growth in capability over a ten year period.

DOD AND CRAF LONG RANGE INTERNATIONAL SEGMENT CARGO AIRCRAFT FY80-90			
DEPT OF DEFENSE	FY80	FY86	FY90
C-5A.....	76	77	76
C-5B.....	-	-	44
C-141.....	270	267	267
KC-10A....	-	48	57
C-17.....	-	-	1
total..	346	392	445
CRAF CARGO	FY80	FY86	FY90
B-707.....	9	2	6
DC-8.....	68	22	45
B-747.....	30	30	50
DC-10.....	17	14	26
total..	124	68	127
GRAND TOTAL.	470	460	572

Source: ALMANAC, Def Trans Jrnl 80,86,89

In addition to a significant increase in actual military airframes, the CRAF side of the partnership greatly upgraded the wide-body capability. It is important to note that these incremental improvements were really nothing more than consolation for avoiding the larger problem of making a positive decision on a new class of tactically-oriented transports.

In not approving the "C-X" concept, the Congress approved purchase of an additional 50 C-5 Galaxy aircraft, upgraded to "B-models". Ironically, that addition brought the Military Airlift Command up to the 120 plane complement envisioned by Secretary of Defense Robert McNamara in 1968. Other airlift programs bought 60 KC-10A's, the military version of the familiar DC-10 passenger plane. These dual-capable tanker/transport aircraft added both range and breadth to the DoD fleet. Finally, modifications to several commercial passenger planes, making them easily convertible to cargo carriers in an emergency, added another million ton miles per day to our capability.

The improvements of the 80's have increased cargo capability by almost 50%. The current daily figure is up to about 48 million ton-miles per day. A fleet of 210 new C-17 aircraft are projected to be procured between now and 1998. With the buy complete, hopefully before the end of the century, we will have achieved the 66 million ton-mile goal. The big question is, though, at \$178 million per airplane, can we expect Congress to fully fund the \$37 billion program over the next nine years? Any reduction in the programmed buy will mean another delay in meeting the CMMS ton-mile goal. That shortfall would have to be made up either from the U.S. civilian sector or from the assets of friendly nations. Another question that should be addressed concerns the validity of the 1981 requirements data. It's a virtual given that we won't obtain additional funding for more military aircraft should the daily ton-mile requirement actually be too low.

## HOW MUCH IS ENOUGH?

At least one senior official has declared that the 66 MTMD was not enough even when the study was written in 1981. In testimony before the House Sub-committee on Readiness in October 1988, Major General Richard J. Trzaskoma called it "a fiscally constrained, reasonably attainable goal and is not a panacea for our airlift shortfalls." He also referred to the C-17 as "the only logical alternative to provide the warfighting CINCs with responsive airlift where they want it, when they need it."<sup>12</sup>

For the sake of discussion, though, let's stipulate that the CMMS was reasonably correct at the time it was written. Some developments since 1981 bring that original goal into question. One that comes readily to mind is the improved hand-held, ground-to-air missiles used so effectively in Afghanistan. Widespread use of these weapons could dramatically increase the attrition factors used for planning. Another consideration is the possible reduction of forward deployed forces in NATO and elsewhere. In all likelihood, a reduction in actual troops overseas would not reduce our commitment to the host country, therefore requiring increased rapid return capability.

The sorry state of our current Merchant Marine is well documented and the future looks even worse unless that situation receives proper attention. Without improvement on the high seas, a larger burden falls on our air assets. If recent trends in military thinking continue, contingency planning at the operational level of war will necessarily cause a significant increase in

demand on both strategic and intratheater airlift. General Trzaskoma, MAC's Deputy Chief of Staff for Plans, says that the C-17 offers warfighting flexibility not possible with the C-5 or C-130 aircraft.

The fleet of 210 will in all probability "shrink" for the strategic missions as they become the saviors of commanders planning theater campaigns. Conducting operational maneuver to gain advantage over an enemy is becoming an imperative. As wargaming increases the use of operational maneuver, it is reasonable to predict a heavier theater demand on the C-17. Everyone is hopeful of the prospect of the C-17 actually performing close to the tactical battle. However, there are still quite a few officers around who remember the hoopla surrounding development of the "tactical" C5-A. Once procured and operational, the Air Force was hesitant to risk it in a forward battle area. As one U.S. Army general said, regarding the use of the C-5 to support a European battle, "They want us to land at Orly (Paris) and start walking."<sup>12</sup> At any rate, the Air Force is now publishing numerous articles on the direct delivery capability of the C-17 and one such article actually challenges the Army to change its doctrine "to integrate the throughput and direct delivery concepts where appropriate."<sup>14</sup> In the same article, the author alludes to conducting war at the operational level and urges users to study the new intratheater capability of the C-17. The second order effect of using large numbers of C-17 in that way may very well cause a strategic leg shortfall. If the C-17 turns out to be as tactically useful as is now being touted, the Air Force can rest

assured that commanders in the field will use that capability to the fullest. The result is good and sufficient reason to believe that the 66 MTMD is too low for the 90's. Can the difference be made up commercially?

### **INCREASING THE CIVIL FLEET**

It is not the purpose of this article to argue the merits or possible drawbacks to CRAF. In looking at a major superpower confrontation, which is the only likelihood of full CRAF activation, you have to assume it will work as planned or you won't have much of a war. At least you couldn't prosecute much of a conventional war. It is common knowledge that the Army and Air Force can't project substantial combat power without calling up the Reserve Components. It is equally true that they won't get to the war at all if we can't count on getting the CRAF fleet as planned. Since the military already has most of the usable cargo airframes committed to CRAF, how do you expand capability?

### **EL AL IN THE ATTACK**

As the French general discovered in 1914, taxis make good troop transports when that's all you have available. The Israelis too experienced a strategy/force mismatch in transportation capability early in the 1973 "Yom Kippur" War. Faced with a threat to their national survival, the Israelis needed war materiel from the United States badly, but had no cargo planes of their own. The United States offered to provide the materiel, but for the first few days did not make a commitment to use U.S.

military planes. U.S. flag carriers were reluctant to fly into the combat-ridden area. The Israelis owned only passenger versions of the Boeing 747. When faced with a problem that simply couldn't be assumed away, the Israelis did what had to be done. They quickly stripped the seats out of the El Al aircraft and placed sheets of plywood on the floor to strengthen and protect it.<sup>15</sup> Critically needed munitions were then loaded through the passenger doors, repalletized inside and flown to Israel from JFK International Airport. It wasn't pretty and the loading time was excessive compared to "real" cargo planes. However, until the massive MAC aerial resupply was approved, this emergency interim action by the Israelis showed, once again, the criticality of recognizing a commercial asset with military application.

MAC learned a lesson from that operation, and by 1980 had 26 plywood kits designed for converting B-747 passenger planes to cargo capable craft, but "only for extreme emergencies."<sup>16</sup> It might be interesting to inspect those emergency kits today for serviceability and to check out the corporate memory to see if anyone remembers why they are there. Based upon a promise of non-attribution, a knowledgeable official recently told me that there are only 20 of the kits in the system now and they have been consolidated at Travis Air Force Base, California. There are no written plans or procedures to use them in an emergency. According to him, "MAC would probably just play it by ear" because loading cargo through a passenger door is very inefficient. That understatement sets the stage for the probing question, "Before starting a war, will an adversary wait until we can meet our

strategic deployment requirements in the most efficient method?" The airlift shortfall, although greatly reduced in the last several years, still represents only the bare minimum needed. Even if the military gets the entire buy of 210 C-17 aircraft, the program would not be completed until 1998 in the rosiest scenario. In the interim we have to come up with alternative solutions to the problem.

As in the Paris taxi case, the Israeli reaction to their problem points out that help can come from previously unrecognized sources. They did what they had to do when the chips were down. You can also bet that the national airline of Israel never again purchased another long-range aircraft without a convertibility feature. In the good old "American way of war", we learned a lesson from the Israelis in the heat of battle and took credit for having the foresight to pre-fabricate plywood kits. Having done that, the mission was completed and forgotten. It seems a little like a bank laying off the payroll guard because they haven't had a robbery lately.

## ON FINDING NEW "TAXIS" FOR THE 21st CENTURY

### PARADIGMS AND OTHER DISEASES

A paradigm (pronounced pair-ah-dime) is defined simply as "example", or "pattern." In its proper usage, the word is meant to represent an "outstandingly clear or typical example" of something. Paradigms can be very useful timesavers. You see a small portion of the whole problem, but identify a relationship emerging which allows you (through reasoning and experience) to arrive at the final answer without actually having to work through each step to the end. Paradigms provide the structure to arrive at solutions based upon information you already know to be true. Paradigms become unhealthy when applied as rules which stymie creative thought.

A related concept is called "pattern matching", used frequently in home computer operations as a shortcut. An example is typing a two letter command for new programs. If you plan ahead as you write or copy programs, naming them carefully, you can call up any program by typing only two strokes regardless of the length of the actual title. Pattern matching allows you to use less effort to get the thing you want. Both you and the computer know your "shorthand" and you can communicate faster. After all, you are only re-calling something that you already have done the long way once. Pattern matching in the extreme is the

opposite of creative thinking.

Another possible roadblock to finding new solutions to old problems is the idea of autokinesis. There seems to be a built-in manipulation or coercion in the military deliberate planning process which forces individuals toward minimum dispersion for the sake of consensus. Most mavericks are referred to in nostalgic terms and it is hard to find a true "skunk works" in existence. Even those who use the term are most often only describing a team put together for a predetermined outcome. This seems to be particularly true if the product is needed sooner than the official bureaucracy might otherwise grind it out.

Additionally, creative thought is often slowed by what I call "irrefutable truths". The selection of "Facts Bearing on the Problem" in the early stages of the typical military staff study can fall into this category. It is possible to actually rule out a solution that might solve your problem by listing too many "truths" in the initial stages of a study. An example of this malady is "it is unrealistic to assume we can solve our cargo airlift problem with civil aircraft" as was said recently to Congress.<sup>17</sup> There must be a dozen different ways to display statistics that show an already over-burdened civil cargo fleet for CRAF activation. Accepting this statement as fact, though, can result in a loss of unconventional options. We should not lock ourselves out of a solution just because it might be unusual or constitute a long shot.

## A VISION OF OPPORTUNITY

Each year, more and more people take to the skies for travel. Interestingly enough, much of the travelling public is still skeptical of statistics which show how very safe flying is compared to the other modes of transport. The "white-knuckle" flyers among us are convinced that there is good reason to fear air travel. By comparison, the fatality rate from automobile accidents in 1986 was an astonishing 126 people each and every day. Increasing the speed limit from 55 to 65 miles per hour will have the predictable result of producing many more fatalities each year than will result from airplane mishaps.<sup>12</sup> In spite of all the statistical evidence, in spite of all the valid reasons to believe that flying is safe, flyers renew their emotional insecurity each time an incident in the air occurs. An incident in which the airplane involved happens to be an L-1011 will result in many people changing their flight reservations for weeks thereafter just to avoid flying on an L-1011. Nervous flyers look for any excuse to "beat the odds" that, in their minds, are stacked against them at seven miles up in the air.

CRIPPLED ALOHA JET LANDS SAFELY. The headline addressed the most important fact that over 90 people aboard the damaged plane landed safely.<sup>13</sup> However, what the flying public has remembered since April 28, 1987 is that a gaping hole blew open in the fuselage and a stewardess was sucked out of the jet by the escaping air. A terrorist's bomb did not cause this fatal air disaster, but rather a suspicion of structural failure.

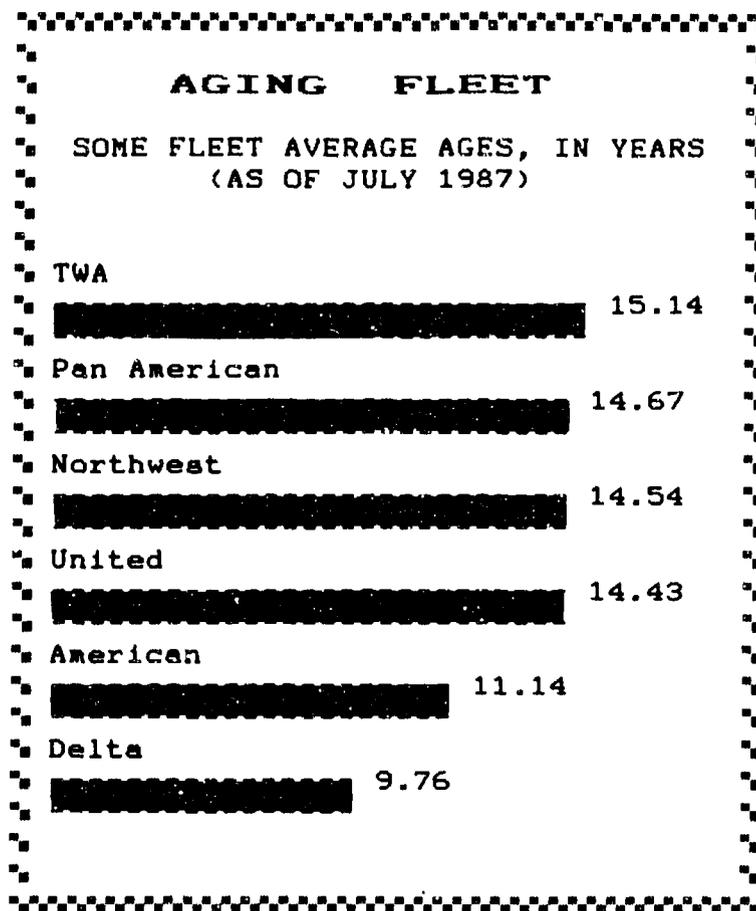
The plane involved in the accident had been flown by Aloha Airlines for 19 years. PANEL RIPS OFF PART OF WING BUT JETLINER IS LANDED SAFELY. None of the 357 people were injured as it returned to Manila about an hour after departing from there.<sup>20</sup>

The report, in making the point that this was an 18-year-old Boeing 747, also made the connection to the Aloha accident being a 19-year-old plane. However, both of these pale in comparison to the incident in February of this year aboard a United 747 departing Honolulu shortly after midnight. NINE SUCKED OUT OF HOLE IN PLANE. NINE PASSENGERS MEET HORRIBLE DEATHS IN MIDDLE OF NIGHT. AIRCRAFT INVOLVED ONE OF THE OLDEST IN FLEET. News coverage, both in print and television, zeroed in on the age of America's airline fleet.

#### **HOW OLD IS TOO OLD?**

Several industry and government task forces have been studying the problem. Mishaps involving older jets have been occurring with some frequency. Federal records show that there were 14 accidents or incidents on U.S. airlines caused by cracks, corrosion or metal fatigue on some part of the airframe in older jets between 1976 and 1988. If problems with associated metal fatigue in engines or landing gear are counted, the number of incidents jumps to near 150.<sup>21</sup> Manufacturers say the "economic" or profitable life of a jet is roughly 20 years. However, there are many variables that enter into the longevity equation and it is currently left up to the airlines to decide when it is time to retire its airplanes.

Statistics show that the U.S. fleet is not being replaced as rapidly as in the past. The following chart shows four major airlines who will face difficult decisions in the coming few years.



Source: Avmark Inc., Arlington, VA.

Several airlines have continued to operate older jets due to relatively low fuel and maintenance costs. Some consumer groups want the Federal Aviation Administration to consider mandatory retirement. Although it is recognized that nothing lasts forever, the criteria for declaring a plane "too old" is difficult to determine. Among passengers, airplane retirement seems no burning issue. Few have the expertise even to recognize an older plane.

Says a consumer-group official, "It's not the kind of thing you can check out with your travel agent." It is here that the author must depart from the conventional wisdom of the people currently speaking for the airline industry and even the government.

A plausible vision for the Nineties could include an environment where the age of a plane will make a great difference. Imagine a travel agent quoting fares to a prospective passenger on the phone. The conversation goes something like this, "Sir, the New York to Los Angeles fare is \$500 for a newer plane. If the plane is between 5 and 15 years old, the fare is \$400. On a plane over 16 years old the fare is only \$100! No, sir, you won't have any trouble getting on. Hardly anyone will fly on those old planes anymore." Sound impossible? Perhaps not, if the right circumstances materialize in the next few years. It wouldn't be a matter of a government report or the great Chilian grape scare of 1989. It wouldn't be the result of consumer group action calling for different fares. Rather, the scenario would unfold with another of those mishaps where people are sucked out of gaping holes in a 747. In the course of the news reporting it would be continually reiterated that the plane was "22 years old last month." The media would go on to report each airline's inventory, year by year, model by model. People simply would not take a chance, especially if they thought they had an alternative. That is where the free enterprise system will solve the aging air fleet problem. A problem no government agency could solve on its own. The marketing folks in Delta or American, for example, will figure out that they don't have any of the planes that the public is

being told are dangerous. If they do have any, it would be so few that they could ground them immediately.

The fickle and often superstitious flying public will flood the phone reservation lines of those airlines who do not have old, "unsafe" airplanes. Any of the major airlines who want to stay viable will have to ground their "old" airplanes. My prediction can hold true with as few as two more incidents as long as they are reasonably close together and sufficiently horrifying in detail. In recent cases, the bodies were never found. If it were to happen over land where massive searches for days occupied most of the television news, you would see the "guilty" airline companies rush to jettison their aging fleets. As we approach the Nineties, it does not appear that the FAA is ready to set any retirement rules for commercial planes. However, under the circumstances that were painted on a "what if" basis, this author is convinced that there would be an almost immediate glut on the market for used 747's. There does not appear to be a secondary foreign market for aging 747's the way there used to be for the 707 model. National pride, often without regard to the national pocketbook, dictates that a new aircraft be procured for these national namesake airlines. Domestically, some of the 747's would be purchased by freight forwarders for conversion to full time cargo aircraft, but not enough to absorb the entire fleet of aging wide-body planes.

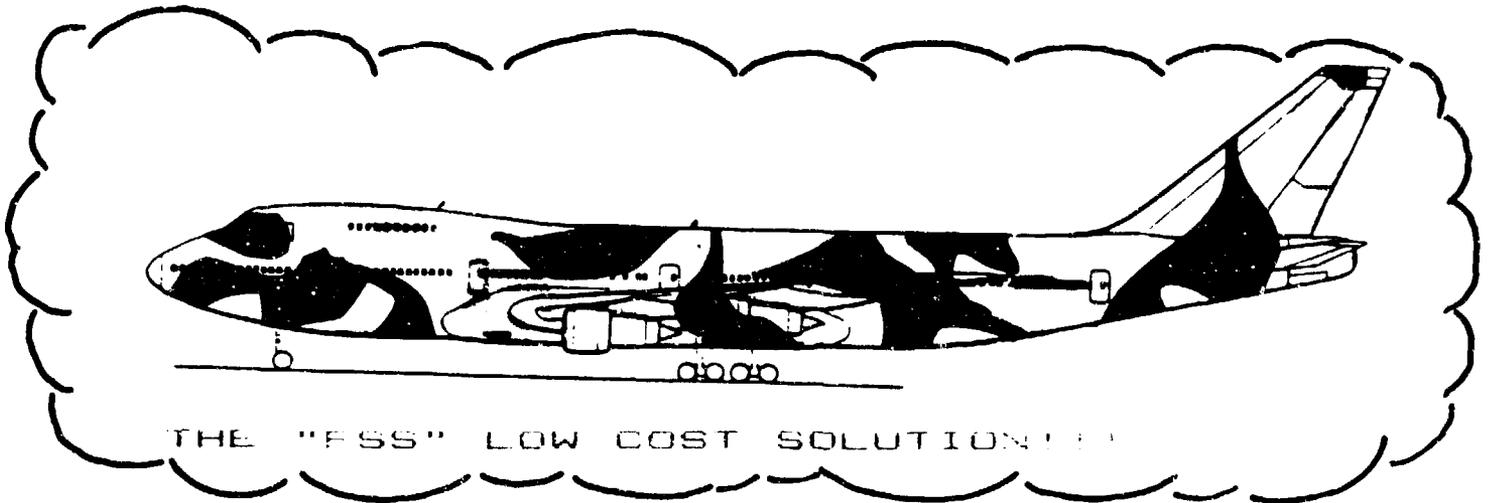
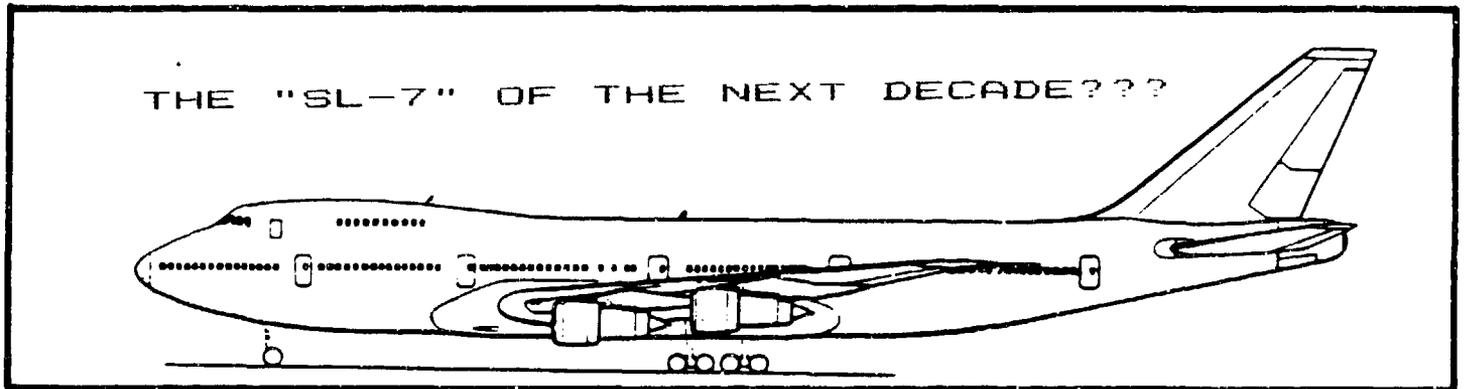
## SEIZING THE OPPORTUNITY

If the events unfold as projected and are of sufficient magnitude to cause serious loss of faith in older wide-body planes, the military needs to be prepared for action. A significant portion of the airlift shortfall could be covered by using an SL-7 technique. The parallel is uncanny; civilian vehicles which have lost their commercial usefulness, but which can become militarily useful. The necessary modifications can be done at a fraction of the cost of procuring and operating military aircraft. Envisioned is a fleet of 40 B-747 passenger aircraft purchased at a very attractive price and modified by contractors to meet cargo airlift needs.

Another contract should be awarded for maintenance and upkeep of this special fleet which would logically be based at Davis-Monthan AFB, Arizona. The contract could be written such that the special contingency fleet would be able to fully activate within four days notice. Peacetime flight testing could be performed by recently retired commercial pilots under a contract. Several airlines are now requiring their pilots to retire at 60 years of age. There would probably be a sufficient pool of interested pilots to fulfill such a contract.

There are precedents in formation of such a contingency fleet, albeit in ocean capability. This proposed air concept could be handled somewhat like the SL-7 conversion to the Fast Sealift Ships which greatly boosted sealift capability in the 80's. It is estimated that we could add another 6 million ton

miles daily to the strategic mobility fleet if this opportunity ever presented itself. Could we ever pull it off, or would we strangle on our own red tape? The answer would lie in our ability to shake off all the "truths" we know about hauling military air cargo and our resolve to remove regulatory proscriptions.



## CONCLUSIONS

As we enter the decade of the Nineties, the nation is faced with some large budget and social problems that cannot be ignored. The DoD portion of the overall federal budget will therefore necessarily shrink as Congress and the Administration jockey to display fiscal resolve to the taxpayers. The general public is satisfied that enough "extra" money was spent on the military during the Reagan years and that cuts will not drastically hurt readiness. This sensing of the American people is reflected in the halls of Congress. In the absence of a significant increase in world tensions, it is reasonable to project falling military outlays over the next several years.

Strategic mobility represents the bridge between residual combat power and the capability to actually bring that power to bear in the furtherance of national interests. Our civilian leaders should never commit forces to execute a war plan which has no reasonable chance of success due to inadequate lift. Likewise, the military should not unduly restrict the options of the President by failing to take advantage of opportunities to reduce shortfalls in airlift and sealift. Formulation of national policy which involves a military option is not complete until an assessment is made regarding our ability to strategically "maneuver" the required forces to do the mission.

Deployment of forces is a requirement at the operational level of war, not a logistical "service" performed by the Transportation Operating Agencies. A review of the last 20 years

of major strategic mobility decisions leads one to conclude that there is a mismatch between our zeal to acquire new weapons systems and our complacency in assuring an ability to get them overseas to fight. Mobilization and deployment will require not only augmentation by the Reserve Components, but also a large effort by the civilian transport industries. It is important to understand this partnership and even more important to ensure its health.

Sealift is essential in executing any plan larger than a modest "Show of Force" option. However, unless the continuing decline of our maritime capability is reversed, we will not be able to conduct unilateral responses to regional threats. Sufficient U.S. ships and crews are becoming less available due to an inability to compete in world trade routes. There is little reason to conclude that this problem will abate itself in the coming decade. Proclamations and policy statements issued without the requisite programs to produce results will continue to ring hollow. On the positive side, the acquisition and modification of the SL-7 containerships in the early 80's was particularly instructive. The added capability, obtained at very low cost, resulted from seeing and seizing an unexpected opportunity.

Current national strategy rests on flexible response. Air-lift provides "remote presence" throughout the world by rapid deployment to real or threatening trouble spots. Several enhancement programs were completed during the 80's which represented a 50% increase in air cargo capability. There is one remaining program to close the gap between requirements and

capability. Over the next ten years, the DoD wants to field a new class of airlifter called the C-17. This \$40 billion dollar buy of 210 planes will meet a minimum goal, but would not totally meet air cargo requirements in a major war. Additionally, mounting pressures to reduce the federal deficit may result in a smaller C-17 fleet. From studying past decisions, one can only conclude that there is a strong tendency to sacrifice strategic lift for the sake of continued weapons systems purchases. There is little reason to feel confident that the Services will rally each year behind a full C-17 buy. It is reasonable to conclude that we will still have a significant air cargo shortfall into the beginning of the 21st century.

There may, however, be an opportunity to significantly enhance airlift capability in the 90's. Many of the initial wide-body passenger planes placed in service in the late 60's and early 70's are rapidly reaching the end of their economic (profitable) life. Further incidents involving fatalities blamed on "old" airplanes may cause a sudden glut on the market. It can be concluded that the supply of those old planes will greatly exceed the demand. In that situation, the marketplace will produce an opportunity too good to pass up. As was done with the SL-7 program, we should be able to purchase and modify Boeing 747's to meet military contingency needs. While such a program should be an addition to the C-17 fleet, it is not improbable for it to end up being partially in lieu of the full C-17 buy.

## RECOMMENDATIONS

It is easy to say that a national solution is needed for our maritime dilemma. Envisioning the actual remedial program is much more difficult. U.S. owned and operated ocean shipping capability will not increase significantly in the next decade without major intervention by the federal government. The only interim recommendation is to stay abreast of the international shipping scene to identify bargains as they come into the marketplace. Our most viable option is to rely on friendly nations and alliances to produce the ocean fleet necessary to deploy a sizable force.

Airlift, on the other hand, offers some hope for the 90's. After several false starts and foot-dragging, the C-X and C-XX concepts became the C-17 program. It is the cornerstone of airlift modernization and will take us well into the 21st century. It is recommended that the Service staffs endorse the C-17 as whole-heartedly as the Chairman of the Joint Chiefs of Staff and the various warfighting CINC's.

The Air Force, as executive agent for common-user airlift, should form a study team to develop a program for acquiring an augmentation fleet of wide-body craft leaving commercial service. A target of 40 planes is recommended, contingent upon total overall costs to acquire and modify. Using Air Force figures, though, it would cost less than \$5 million per plane conversion since they wouldn't have to be convertible. Total modification cost for a fleet of 40 would then be well under the price of two C-17's.

Acquisition costs for the old 747's would be strictly a function of the circumstances under which they are offered for sale. A wise study team would look at the full range of possible scenarios and recommend changes to legislation to enable swift action if and when the opportunity arises.

Tearing a page from the lessons learned in the SL-7 to FSS program, the Department of Defense has the opportunity to greatly enhance strategic airlift. All it will take is a willingness to attempt the unconventional and the vision to see a good alternative now versus the better alternative that never comes.

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