STRATEGY RESEARCH PROJECT

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THE NEAR-TERM GAP IN U.S. AIRLIFT CAPABILITY

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ABSTRACT

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Strategic airlift is a key element in executing the United States' national defense strategy. Strategic planners must address such key issues as: How much airlift is required, and is our strategic airlift capability sufficient to meet present and future requirements? This paper discusses mobility requirements of our national defense strategy, focusing on the strategic airlift requirement. It examines present and near-term airlift capabilities of the United States. This will be in the context of determining whether present and planned resources and capabilities are sufficient to meet the mobility requirements set forth in the Mobility Requirement Study Bottom Up Review Update (MRS BURU). MRS BURU requires the deployment of sufficient forces to support two nearly simultaneous major regional contingencies. This paper concludes that our airlift capability falls short of stated requirements to move outsize and oversize cargo. Our capability also falls short of the requirement to perform the Brigade Airdrop requirement. Our current policy is to accept the airlift shortfall as risk, rather than spend the enormous resources required to fix the shortfall.

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I. Scope of Research

"It was useless to have 17 (active) divisions if they could not be transported anywhere in the world in 24 to 48 hours." President Kennedy on 13 March 1961, after he authorized procurement of the Lockheed C-141 Starlifter.[1]

This statement highlights two important points concerning airlift. The first, is that rapid deployment, via airlift, of our combat forces is still an important priority 36 years after President Kennedy spoke these words. Strategic airlift is still a keystone of our defense strategy, even though the threat of the Cold War is over. Second, strategic planners need to consider that mobility resources are finite. The United States (U.S.) has the most capable strategic mobility system of any nation in the world. Though we now have 10 active Army divisions,[2] just over half the number Kennedy had in 1961, several factors impact our ability to provide timely airlift.

This paper will discuss the role of strategic airlift in the Department of Defense (DoD) mobility system. It will also discuss capabilities and limitations of our airlift system. Finally, this paper will address options which strategic policy makers should consider.

II. Defining the Airlift Role Within DoD's Mobility System

At the end of the cold war, the U.S. Army had over 213,000 troops (31.8% of 770,000 total strength) forward deployed in Europe.[3] Our policy of containment and obligation to the North Atlantic Treaty Organization (NATO) required this forward presence. In the event of hostilities, it was anticipated Warsaw Pact forces would launch a lightning strike into the heart of West Germany. The main purpose of forward deployed forces from the U.S. and other NATO countries was to provide deterrence. Should

deterrence fail, these forces would contain the Warsaw Pact forces until reinforcements from the continental U. S. (CONUS) and other NATO countries could arrive.

A mobility triad would support armed forces in the move from CONUS to Europe in the event that additional forces were required to augment the forward deployed forces. The three legs of the triad consisted of sealift, pre-positioned war materiel, and strategic airlift.

Sealift was to be the primary means of moving heavy, bulky, equipment and supplies such as tanks, fuel and ammunition. Military Sealift Command (MSC), a component of Transportation Command, provides sealift to meet mobility requirements with government-owned ships in the Ready Reserve Force (RRF), commercial ships under long-term charter to DoD, and ships operating in the commercial trade. The major demand is for roll-on/roll-off (RO/RO) capacity, container capacity and tanker capacity. Breakbulk ships can also be used.

The RRF, established in 1976, consists of selected vessels of the National Defense Reserve Fleet, owned and operated by the Maritime Administration. Ships in the RRF receive additional funding and maintenance to enable 4, 5, 10 and 20 day readiness states. Each readiness state is the number of days required to activate the ship, provide crew and commence transit to its designated Port of Embarkation (POE).[4]

The MSC established the Fast Sealift Fleet in 1985, when it acquired 8 fast sealift ships (FSS). These ships are kept in a high state of readiness to meet the requirement of closing an Army armored division to a theater of operations within 30 days. To provide the fastest response to a contingency, 8 FSS have a partial crew on board. During Desert Shield, all 8 FSS and 78 RRF ships were activated. Although some RRF ships activated early, the average was 9 days late. As a result, RRF ships today are mobilized in exercises and ocean sailings on a more frequent basis.[5]

Contracts with commercial shipping provide capability in response to contingencies, as well as day to day support to DoD. At least six commercial ships under

long-term charter to DoD, are afloat pre-positioning ships, discussed later in this paper. Commercial ships, especially container and fuel tankers, are also used in the sustainment role.

The second leg of the mobility triad is pre-positioning, both ashore and afloat. Pre-positioned Overseas Materiel Configured to Unit Sets (POMCUS) equipment was a key element of NATO's Cold War strategy. This concept stored massive stocks of equipment such as tanks, trucks, artillery pieces and ammunition which would have been vital to blunting a Warsaw Pact attack. This heavy, bulky equipment would have been difficult to move from CONUS to Europe in a timely manner. The POMCUS equipment, mostly stored at sites in Germany, was maintained in a high state of readiness so that it could be pulled out of storage and mobilized on short notice. Troops would be airlifted from CONUS to marry up with the POMCUS equipment. These forces would then augment the forward deployed forces which had been fighting the initial holding action. This capability was exercised annually with Return of Forces to Europe Germany (REFORGER) exercises.

Another strategic deployment option pre-positioned equipment and supplies aboard Afloat and Maritime Pre-Positioning Ships (MPS). Afloat Pre-positioning Ships provide equipment for Air Force and Army units, while a Maritime Pre-Positioning Force (MPF) provides equipment for Marine and Navy units. In addition to the equipment and supplies for combat and combat support units, other ships carry munitions, medical materiel and fuel. An MPF consists of an MPS squadron (MPSRON), a Navy Support Element (NSE), and a Marine Corps air-Ground Task Force (MAGTF). This provides a flexible capability to employ these forces throughout the world under a wide variety of circumstances.[6]

The third leg of the triad, strategic airlift, had a requirement during the Cold War to move 66 million-ton-miles per day (MTM/D). This was the war planners' estimate of

the minimum amount of airlift required to expedite men and equipment in a timely manner so that CONUS-based forces could stop an assault on western Europe.

This airlift goal was to be supported by organic military aircraft as well as civilian passenger and cargo aircraft under the provisions of the Civil Reserve Airlift Fleet (CRAF). Despite their best efforts, planners were never able to achieve the 66 MTM/D goal, because fiscal constraints precluded buying the necessary military aircraft. Airlift capabilities will be discussed in detail later in this paper.

Today, the large threat defined by the Soviet Union and Warsaw Pact forces is gone. Instead, the threat is much less predictable and more complex, requiring contingency plans which consider not only numerous rogue states, but trans-national non-state actors as well. Today's defense planning focuses on maintaining regional stability through the rapid response of CONUS-based units. With the end of the Cold War, Congress directed the downsizing of the military for cost-savings. Many of the force reductions came out of forward-deployed forces as overseas units were deactivated. For comparison with forward deployed forces during the Cold War, we now have 65,000 Army troops, (13.1% of 495,000 total) stationed in Europe.[7]

To define the level of military forces needed to meet the perceived threats, DoD completed the Mobility Requirements Study in 1992 and determined that the greatest threat to U.S. national interests would come from regional contingencies. The most demanding scenario would occur with two near-simultaneous major regional contingencies (MRC). In 1995, the Joint Chiefs of Staff conducted a study which updated the results of the 1992 study. This study, the Mobility Requirements Study Bottom-Up Review Update (MRS BURU), assumes that in a regional crisis the bulk of the forces must come from CONUS-based units. The objective of the MRS BURU was to answer these questions:

"Does the U.S. have the strategic lift to execute and win two near-simultaneous major regional contingencies?"

"What changes, if any, are recommended to the strategic mobility mix to ensure the successful execution of the new strategy?"

"What strategic lift is required to support U.S. national military strategy in the year 2001?"

"What is the required mix of airlift, sealift and pre-positioned equipment given fiscal realities?"[8]

In many ways, airlift is the most critical leg of the triad because of its speed and flexibility. It is difficult to overstate the advantages airlift provides in speed and flexibility during a major troop movement. The following excerpt from a RAND study provides examples of the flexibility airlift provides in the fluid situation of a large troop deployment:

> In response to the Scud attacks on Israel, President Bush ordered the deployment of Patriot batteries to that country. Military Airlift Command (MAC), the precursor of today's Air Mobility Command (AMC), and the Army responded swiftly, and within 24 hours the first fire units were deployed. MAC diverted most of its C-5s (the only aircraft that can handle the many pieces of outsize equipment in a Patriot battery) and many of its C-141s (to carry missiles and other equipment) from other missions to support this move. Within days the deployment was complete. This experience highlighted the inherent flexibility of airlift and significant contribution it can make in a rapidly changing operational environment. Strategic airlift moved other vital cargo to the gulf during the war. For instance, in January the Army found that its armored units did not have enough heavy equipment transports (HETs), assets that would be critical to moving these units in preparation for the ground war. Since at that point shipping the HETs by sea would take too long, CENTCOM decided to move them by air. Only the C-5 could move this outsize equipment. Coming at the same time as the Patriot move, this placed a heavy demand on the limited C-5 fleet. Later, the Air Force needed to move the new GBU-28 "bunker buster" guided bomb to the Gulf quickly and secretly; organic strategic airlift was the answer. Throughout the war, unexpected requirements for high-priority items meant that airlift was constantly in demand.[9]

The drawback is the expense of airlift compared to transportation via land or sea vessels.

MRS BURU compared the mobility requirements of the different phases of a theater campaign to determine which had the greatest requirement. To evaluate the effectiveness of the different mobility options a risk analysis was conducted for each force and set of conditions. MRS BURU used the following definitions and assumptions:

> The halting phase proved to be the most demanding on airlift. Therefore, the requirements of the halting phase were used as the determinant for airlift capacity. The objective of the halting phase is to rapidly stop the enemy's attack and requires the rapid deployment of forces sufficient to defend against a short-warning attack. The halting phase should minimize the loss of territory and avoid loss of critical facilities.[10]
>
> Broadly defined, risk is the "likelihood of an undesirable outcome." For the purposes of the study, risk was defined as "the likelihood of failing to achieve strategic level objectives." Halting risk is the likelihood of failing to bring the enemy to a halt without loss of critical forces, locations or infrastructure.[11]
>
> The maximum acceptable level of risk was moderate risk: Moderate risk accomplishes all essential objectives and must accomplish some combination of key objectives. High risk fails to accomplish one or more essential objectives or fails to accomplish some combination of key objectives.[12]

MRS BURU's baseline air fleet is based on assets expected to be available in FY 2001. The next section discusses MRS BURU's analysis of FY 2001 airlift capability and compares it to DoD's airlift capability today.

III. Capabilities and Limitations of DoD's Airlift System

> "In my mind, as far as I see, the single most important enhancement the nation needs to meet our two MRC contingency strategy is strategic lift." General Shalikashvili, 8 February 95.

Airlift is the most expensive mode of transportation, both in initial purchase cost and in the continuing operating costs. There are several programs aimed at improving

our airlift capability, but as described below, these measures leave a gap of capability for the near term.

Shown below are current airlift assets and the planned airlift assets for FY 2001:

CURRENT ASSETS (Total TAI)[13]

C-141	C-17	C-5	KC-10	KC-135
175	29	126	54	546

BASELINE FY 2001 AIRLIFT ASSETS[14]

C-141	C-17	C-5	KC-10	KC-135
88	55	104	37	26

This provides a lift capacity of approximately 47.2 MTM/D[15]

A strategic airlift capability of 49.7 MTM/D is required to support the two near-simultaneous MRC strategy.[16] The Under Secretary of Defense for Acquisition and Technology directed a study of mobility capability, completed in August 1996. This study found several shortfalls and recommended steps to overcome these deficiencies. One of the main concerns is the retirement of the C-141 fleet and the timetable for replacing it with the C-17. The C-141 fleet of 250 aircraft that President Kennedy procured became the backbone of our airlift fleet, serving in every world crisis since 1964. Now, this old aircraft is nearing the end of its life cycle. Today, there are 175 C-141s still serving in active Air Force, Air National Guard (ANG), and Air Force Reserve units. As C-17s roll off the assembly line and become part of the airlift fleet, the number of C-141s still flying continues to decline. The aircraft with the most flying time are taken out of service and sent to the boneyard at Davis Monthan AFB, AZ. However, the replacement is not one-for-one. AMC has a contract with McDonnell Douglas to build 120 C-17s. The C-17 has a larger cargo capability than the C-141 (169,000 vs.

build 120 C-17s. The C-17 has a larger cargo capability than the C-141 (169,000 vs. 70,000 pounds), and can carry outsized cargo which cannot fit into the C-141. Under the current retirement timetable, C-141s will be removed from active Air Force units by 4th quarter of FY 2003[17] and out of ANG and reserve units by 4th quarter of FY 2005.[18] The loss of this aircraft creates a gap of airlift capability below the 49.7 MTM/D level. This gap, which began in FY 1996, and continues until FY 2006, exceeds 1 MTM/D from FY 1998 through FY 2000.[19] As seen above, in FY 2001, the gap in capability is over 2 MTM/D. MRS BURU acknowledges there is a shortfall in strategic airlift capability from FY 2001 until the FY 2006. However, it fails to address the shortfall that already exists and will continue to exist until FY 2001. By using FY 2001 as the baseline, MRS BURU ignores the current shortfall.

One option considered would extend the number of C-141s actively flying until the C-17 production caught up to the 49.7 MTM/D level. This would involve additional expense for both airframe maintenance and aircrews. The airframe expense would have to cover structural modifications, such as wing crack repairs to ensure the aircraft could continue to safely fly. In order to comply with international Air Traffic Control requirements, the fleet must be fitted with new navigation and communication equipment. The larger the fleet, the greater the cost, although much of this equipment could be transferred to C-17s as they replace the C-141s. There would also be a larger manpower requirement, which translates into higher costs.

Another option would increase the rate of C-17 production to close the airlift gap. Accelerating the production rate would increase the cost of the total C-17 buy. Both options were rejected because of reluctance to commit more funds to airlift, given the cost of the expensive C-17 program.

The two most significant shortfalls in airlift are in the capabilities to airlift oversize/outsize cargo and to perform the brigade airdrop mission. Another shortfall is in the supporting role of air refueling.[20]

The C-141 was designed to carry military equipment of the 1960s. It cannot carry today's outsize and oversize equipment. Oversize cargo exceeds the dimensions of a single 463L pallet (88" X 108"), but is less than 1,090" length, 117" in width and 105" in height. Oversize cargo can be transported on the C-5, C-17, C-141, C-130 and KC-10. Outsize cargo exceeds the dimension of oversize and requires the use of a C-17 or C-5.[21] The dimensions of the cargo contained in the service data bases are heavily skewed toward oversized in the early deployment sequence. Planners estimate that 70 % of the airlift requirements in this phase will be for oversize and outsize cargo. During the sustainment phase, this drops to 25 - 30 %. However, until the last C-17 is delivered in FY 2006, we cannot meet the requirements of MRS BURU.[22]

The preferred method of delivery, airland, involves landing at an airfield, and the troops either march themselves off, or drive the equipment off the aircraft. However, the airland option may not be available, either because of airfield limitations or a hostile force threat. In these circumstances, the combat airdrop capability would be used. Many of the Army forced entry concepts rely heavily on airdrop capabilities. For this reason, the Joint Chiefs of Staff (JCS) has established a requirement for a strategic brigade airdrop, which provides the capability to immediately respond to a threat by deploying airborne forces throughout the world. This capability of intercontinental force projection includes airdrop and airland insertion of equipment and personnel. This may require formation air refuelings and formations of up to 100 aircraft. This rigorous requirement exceeds the capability of today's C-141 fleet, and will be met in the future with the fleet of 120 C-17s, in conjunction with 50 modified C-5Bs. Currently, these latter two aircraft are not fully certified for this role, but the C-17 should be certified by the end of FY 1997 and the C-5B by FY 1998.[23]

Air Refueling is an important part of contingency airland and airdrop plans. It provides the flexibility to perform strategic airlift on short notice. When airlift aircraft do not have diplomatic clearance to overfly a landmass, the situation may require air

refueling in order to have the range to remain in international airspace. Similarly, air refueling can increase the payload capability on many long-range airlift missions by minimizing the tradeoff between cargo and fuel. With the loss of airfield infrastructure in recent years, air refueling may be required to extend the range of fully-loaded airlifters directly into the theater of operations. Another advantage of air refueling is that it can increase the reliability of airlifters. Many aircraft malfunctions occur either when starting engines or shutting them down. Minimizing en route stops, thereby minimizing en route breakdowns, expedites unit closure. However, in the early stages of a contingency, airlift may compete with deploying fighter and bomber aircraft for available tankers. Up to 50% of all airlift missions can use air refueling for the first 7 days and up to 10% of airlift missions for the remainder of a scenario.[24] The core tanker, the KC-135, continues the R-model conversion, which increases mission effectiveness by enhancing offload capability and reducing operating costs. Since the earliest KC-135s were produced in the late-1950s corrosion has had a significant impact on the fleet, but current plans project at least a 56-year service life for the KC-135.[25]

The limitation for KC-135s is not in aircraft, but in aircrews. The current crew ratios are 1.36 crews per aircraft for AMC, 1.27 for Air Force Reserve and Air National Guard and 1.0 for Air Education and Training Command. These ratios are about one third the crew ratios for airlift aircraft. The tanker crew ratios were established by the Single Integrated Operational Plan (SIOP), the plan for a nuclear response to an attack on the U.S. As the tanker role changed from nuclear support to conventional support, the required number of crews increased. However, the force drawdown and budget cuts precluded increasing the manning to correspond with the new mission focus. AMC is working to provide additional crews through Reserve Associate units, similar to its airlift Reserve Associate units. Reserve Associate tanker units would be co-located with active duty wings and would operate the same aircraft.[26]

What capability can we gain from civilian air carriers? The Civil Reserve Air Fleet (CRAF) is the primary means of moving passengers (93%) as well as moving much of the palletized bulk cargo (39%) under National Mobilization (Stage III CRAF activation).[27] The CRAF concept provides many advantages. During an emergency, the CRAF can be called up in three stages, each providing more airlift capacity. The amount of CRAF participation available depends on the level of emergency declared (Minor Regional Crisis, Defense Airlift Emergency or National Emergency).

CRAF Stage I - Committed Expansion: provides increased cargo and passenger airlift capability for our long-range international requirements. Requirements are for 30 wide body equivalents (WBE), for passengers and 30 WBE for cargo.[28] Stage I is used when our organic fleet cannot meet early contingency deployment and other traffic requirements simultaneously. USCINCTRANS has authority to activate CRAF Stage I when approved by the Secretary of Defense.

CRAF Stage II - Defense Airlift Emergency: This an additional airlift expansion program in support of a national security crisis short of a declared national emergency and involves partial national mobilization. Requirements are for 87 passenger WBE and 81 cargo WBE.[29] USCINCTRANS on approval of the Secretary of Defense, has authority to activate Stage II.

CRAF Stage III - National Emergency: Use of Stage III requires a declaration of national emergency by the President or Congress. The Secretary of Defense issues the order to USCINCTRANS to activate CRAF Stage III. CRAF Stage III involves 37% of passenger (161 WBE) and 76% of the cargo aircraft (114 WBE) in the long-range commercial U.S. fleet.[30] Since activation of CRAF Stage III could cause a significant hardship on the industry, approval of CRAF Stage III activation should not be taken for granted.[31]

An advantage of using CRAF is that, during a contingency, airlift is available to the military but the enormous cost of airframe acquisition and crew training has already

been borne by private industry in the pursuit of peacetime business. To reward air carriers' commitment of their assets to this program, CRAF carriers are awarded peacetime contracts for movement of personnel and cargo. If an aircraft requires modification in order to meet its wartime commitment (e.g. cargo door installation), the cost is shared with DoD. The design of civilian aircraft does not allow movement of oversize or outsize cargo, but they can efficiently haul bulk, palletized cargo.

The only time CRAF Stage III has been activated was during Operation DESERT SHIELD/STORM. Over 5,500 missions (20% of the total) were flown by civil carriers. During the deployment phase, civil aircraft flew 62% of passengers and 27% of cargo. During the redeployment phase they flew 84% of passengers and 40% of cargo.[32] MRS BURU assumes that 17.5 MTM/D will be available in Stage III CRAF.[33]

One may ask, what are the consequences of a failure to meet the requirements stated in MRS BURU? Any failure to meet the defined requirements must be labeled as risk. As stated earlier, MRS BURU defines risk as "the likelihood of failing to achieve strategic level objectives." Therefore, for the next 10 years national policy planners are risking American lives and national interests. This shortfall, which exceeds 2 MTM/D, demonstrates that the plan for fighting two near-simultaneous MRCs is not feasible. MRS BURU also makes some optimistic assumptions which are unrealistic. The net effect is that our actual airlift gap is probably even larger than acknowledged by MRS BURU. Some of MRS BURU's assumptions are discussed below.

This was the assumption concerning attrition, "For the purpose of this study, strategic airlift attrition is not considered a limiting factor."[34] This may not be a realistic assumption, based on losses in past airlift efforts. While strategic airlift aircraft losses have never been substantiated to be combat losses, aircraft have been lost during contingency airlift efforts due to aircraft malfunctions and crew error. At least one C-141 and one C-5 were lost while directly supporting the Vietnam conflict. The most recent loss during a contingency is the C-5 that crashed on takeoff from Ramstein during

DESERT SHIELD/STORM. In today's world, with the availability of modern weapons in the marketplace, it is highly conceivable that an adversary or terrorist group can gain access to high-technology weapons, including man-portable surface-to-air missiles. It would not be difficult to infiltrate approach and departure paths to airports and fire these weapons at airlift aircraft. As our airlift capability becomes concentrated in fewer aircraft, each loss would represent a more significant percentage of our total airlift capacity.

The following table shows the aircraft utilization (UTE) rates, in flying hours per day, assumed by MRS BURU:

Aircraft UTE Rates[35]

	C-141	C-5	C-17	KC-10	KC-135
Peacetime	2.73	1.82	3.98	1.66	1.01
Surge	10.16	10.87	15.15	12.50	6.0
Sustain	7.9	8.4	13..9	10.0	6.0

Given the C-5's reliability rate in peacetime, the surge and sustainment UTE rates can only be described as optimistic at best. The C-5 falls short of the standard of 75% mission-capable rate for the fleet. The C-5A currently has a mission capable rate of 58.8%, while the C-5B has a 67.9% rate.[36] During recent contingencies, the C-5 fleet overall has had less than a 50% on-time departure rate. In some instances air refueling was used in lieu of en route refueling stops, because of concern that C-5s would break down at en route stops before cargo was delivered. The C-5 will become AMC's core airlifter as the C-141 is retired and before the C-17 fleet reaches full strength. Thus, the C-5 fleet will represent a significant portion of AMC's airlift capability.

An assumption of MRS BURU is that en route airfields will be available for servicing and recovery. Recovery bases allow aircraft to offload at the primary debarkation airfield and then fly to the recovery base to refuel, conduct maintenance and change crews. This allows valuable parking space and servicing facilities at the

debarkation airfield to be used solely for cargo discharge and for more efficient scheduling of aircrews. Since DESERT STORM/SHIELD, numerous Air Force facilities have closed within the CONUS and overseas, thus limiting our capability to run another large-scale deployment. These bases provided locations to onload/offload passengers and cargo as well as routine servicing en route. AMC closed its largest base in Europe, Rhein-Main Air Base at Frankfurt, Germany, in 1995. Most of the remaining bases in Europe have operations restricted by quiet hour rules in deference to local agreements.

The impact of base closures is that the remaining airfields quickly reach maximum capacity during a large airlift operation. A description of an airfield's capacity to handle airlift aircraft is called Maximum-On Ground (MOG). MOG is a critical measure of an airfield's throughput capacity which depends on a number of different factors such as allocated parking spaces, fueling capacity, Materiel Handling Equipment, manpower, and Air Traffic Control. Working MOG gives the number of aircraft that can be serviced in their scheduled ground time. Working MOG can be decreased by aircraft other than strategic airlifters parking on a ramp.[37]

Another assumption of MRS BURU is that diplomatic clearance for overflights and landing would be granted. During recent deployments to Southwest Asia, some allied countries refused to grant diplomatic clearances on short notice. These countries may have been concerned about the reaction of other countries within the region if they cooperated with unpopular U.S. unilateral military policies. In other cases, the countries may have been asserting their sovereignty, reacting to perceived past U.S. abuses of short-notice requests. Or, it may have been reciprocal for difficulties encountered in obtaining diplomatic clearances through the U.S. bureaucracy for their own flights. Whatever the case, these decisions severely limited U.S. options. In some cases, planners were able to overcome the denials by rerouting flights and incorporating aerial refueling: a time-consuming and expensive option. In other cases, the flights had to be delayed until approval was granted.

If the assumptions in MRS BURU are not true during an airlift effort, airlift capability would be further degraded. MRS BURU set an aggressive pace for force deployment in response to the 2 MRC strategy. "The basic strategic mobility planning and execution task is to have the MRC-1 force in place within 75 days with flow to MRC-2 beginning at day 45. This will require a pace of force buildup in the theater 2.5 to 3 times greater than achieved in DESERT STORM."[38] As discussed above, with less overall airlift capacity and loss of en route facilities, this pace cannot be achieved by airlift alone. Strategic leaders need to consider these mobility limitations when formulating policies.

IV. Planning Factors for Strategic Policy Makers

Airlift is terribly inefficient for moving heavy equipment. Only the C-17 and C-5 can haul the M-1 Abrams tank. Each aircraft can haul only one tank per trip. For each flying hour, the Defense Business Operations Fund-Transportation (DBOF-T) charges $5,979 for the C-17, and $10,729[39] for the C-5 to pay for fuel, maintenance and port operating expenses. That equates to about $119,580 for a C-17 and $214,580 for a C-5 to haul one tank from a base in the Midwest to Southwest Asia. If this cost is multiplied by the number of tanks in an armored brigade, the sum would very easily pay for a fast ship or additional equipment to pre-position. Paying the money up front for either choice of new equipment would seem to provide a better use of taxpayers' dollars.

Options besides airlift must be considered for projecting U.S. forces. MRS BURU developed a set of options representing alternative mobility programs. Each option consisted of possible additions to programmed airlift, sealift, and pre-positioning programs. Comprehensive life-cycle cost estimates were made for each option. Following is a summary of the discussion in MRS BURU on the issues of sealift and pre-positioned equipment.

The baseline organic surge dry-cargo fleet is currently 110 vessels including 8 FSS and 102 other ships in the RRF. MRS BURU recommended an enhancement to the organic surge dry-cargo fleet of 11 large medium-speed roll-on/roll-off (LMSRs) bringing the total to 121 vessels. It also recommended a total of 36 RO/RO vessels. Currently there are 31 RO/RO vessels in the RRF, and we are building one or two a year to meet that requirement.[40] With fast ships in development, the en route time can be cut considerably for some conflicts.

In other regions, pre-positioned equipment may make more sense. Although there is a large up-front expense for the purchase of equipment, it may be a bargain compared to the cost of airlift. In response to MRS BURU, measures taken to improve responsiveness include pre-positioning of additional assets. In addition to the assets aboard pre-positioned ships, we now have pre-positioned warfighting assets in Germany, Norway, Korea, and several location in Southwest Asia.

Since the end of the cold war, the optempo for U.S. armed forces has risen due to a smaller military overall and increased tension in several regions. In some cases, the U.S. has acted unilaterally. In addition to the financial and manpower expense, this has, at times caused political friction with allies within the region. A consequence of unilateral action is that it may strain relations with allies, and in future flare-ups, the allies may be less willing to cooperate with the U.S.

U.S. policy makers must fine tune our role in regional interests. We seem to have taken on the role of the global policeman, but we cannot answer every "911" call. Each region should be evaluated with the following questions: What vital interests are here for which we are willing to pay American blood? Who else shares this interest? Are there interests the U.S. absolutely must respond to, even if it means a unilateral response?

In many cases, a coalition may be more effective than a unilateral response. Working within the framework of regional organizations for a multilateral solution has some distinct advantages. If other nations are part of the solution in their region, they

will be more willing to assist in providing resources. This will boost U.S. efforts in many ways. First, the scale of U.S. resources may be cut down. Second, with respect to approval of diplomatic clearances, the countries may be more willing to provide assistance if they do not feel coerced to provide clearances for a unilateral solution. Third, depending on the region, airlift may not be required to get to the fight, instead overland transportation such as railroads or highways may be utilized. If U.S. airlift assistance is required, the distances involved will be much shorter than bringing all the forces from CONUS. And finally, many of these countries have some airlift capability of their own. This capability can be employed in airlifting U.S. resources as well as their own resources.

In many past crises, strategic airlift has been viewed as the only solution to a timely response. In the future, strategic planners must formulate the priorities requiring a U.S. response, negotiate for others to respond and plan for the appropriate mobility tools.

V. Conclusion

This paper has discussed the strategic mobility requirements for the Department of Defense, set forth in the Mobility Requirements Study Bottom-Up Review Update. The four questions posed at the beginning of this paper can now be answered as follows:

Does the U.S. have the strategic lift to execute and win two near-simultaneous major regional contingencies? Our strategic lift capability falls short of the standard set in MRS BURU. Until the gap between available lift and required lift is closed, our national strategy for executing two MRCs must accept a level of risk.

What changes, if any, are recommended to the strategic mobility mix to ensure the successful execution of the new strategy? MRS BURU recommended several measures including: buying more fast sealift ships, pre-positioning more war materiel, and extending the C-17 buy from 40 to 120. These measures have been implemented, but fiscal constraints preclude achieving the total requirement immediately.

What strategic lift is required to support U.S. national military strategy in the year 2001? MRS BURU has defined this as 49.7 MTM/D of airlift and acknowledges that there will be a gap from 2001 until 2006. It does not address the gap that exists now. MRS BURU also uses several optimistic assumptions, which may hide a larger gap than acknowledged.

What is the required mix of airlift, sealift and pre-positioned equipment given fiscal realities?[41] As stated above, our nation's resources are purchasing improvements to our strategic lift capability, but fiscal realities leave a gap for 10 years.

Many options were considered to close this gap, but all required increased funding. In the current climate of budget reductions, a compromise between lift requirements and budget constraints had to be reached. Any gap between capability and a known standard is assumed risk. Planners must know the true measure of risk assumed before they build war plans that can't be achieved. Leaders, both military and political, must forthrightly acknowledge current strategic lift limitations and incorporate these realities into the nation's military strategy.

Glossary of Acronyms and Definitions

BB Breakbulk

C-Day Day Deployment Commences

D-Day Date hostility begins

Life-cycle cost estimates

Each life-cycle cost estimate included all appropriate development, production, and operating and support costs over the FY 1996-2025 period. Life-cycle cost estimates were made in constant FY 1995 dollars, discounted at 2.8 per cent per year, in accordance with Office of Management and Budget guidance. All costs associated with the addition of an option were included regardless of funding source or management control. To allow the assessment of affordability for each option, each cost estimate was additionally displayed in then-year dollars (without discounting) spread on a FY basis. Each affordability display was shown as a cost increase relative to FY 1996 POM over the FYDP 1996-2001 period.[42]

MTM Million Ton Miles

ROS Reduced Operating Status

T-ACS Tactical - Auxiliary Crane Ship

UTE Rate The average number of hours per day the PAI aircraft fly, and is measured as either "surge or "sustained." The surge period is the first 45 days of a contingency and the sustained period is the time thereafter. During the surge period, every effort is made to maximize aircraft utilization and deliver the maximum cargo and troops during the critical early days. After 45 days at the surge rate, the flying rate decreases to a sustained rate--allowing for logistics to catch up on repairs and inspections deferred during the surge. Each weapon system is assigned an objective UTE rate for planning and programming. The objective UTE rate is based on the inherent reliability, maintainability, performance, ground handling, and loading characteristics of each particular aircraft. These factors account for aircraft availability and capability, en route flight time, and ground times. Objective UTE rates are the basis for maintenance manpower, spare stock levels, and aircrew programming.[43]

WBE Wide Body Equivalent: the capability of a Boeing 747-100, but may be met with a greater number of smaller aircraft.

ENDNOTES

[1] William Head, Dr., Reworking the workhorse: the C-141B Stretch Modification Program, (Office of History, WR-ALC/HO, Robins Air Force Base, GA, September 1984), 4, quoted in Lt Col Dann McDonald, "Retiring the C-141 Starlifter--Are We Ready?", Mobility Times, Volume 7, April 1996, 14

[2] Army Budget Office, The Army Budget, (Washington: Office of the Assistant Secretary of the Army for Financial Management & Comptroller, March, 1996), 2

[3] Ibid., 7

[4] Office of the Joint Chiefs of Staff, Mobility Requirements Study Bottom-Up Review Update (MRS BURU), (Washington: 28 March 1995), IV-B-2

[5] MRS BURU, IV-B-2 and IV-B-7

[6] Ibid., IV-A-2, IV-B-2

[7] Army Budget, 11

[8] MRS BURU, Executive Summary, 1 and I-1

[9] John Lund, Ruth Berg and Corinne Replogle, An assessment of strategic Airlift Operational Efficiency, Project AIR FORCE Analysis of the Air War in the Gulf, (Santa Monica, CA: RAND, 1993), 17, 18

[10] MRS BURU, Executive Summary, 2

[11] Ibid., III-A-3 and III-A-6, (Table III-A-1)

[12] Ibid., III-A-6, (Table III-A-1)

[13] Air Mobility Command, 1997 Air Mobility Master Plan (AMMP), (Scott Air Force Base, IL: U.S. Air Force, Headquarters Air Mobility Command, 1996), 5-42 and Roadmap attachments 1, 2, 3, 5

[14] MRS BURU, Appendix C, 2 (Table C-1)

[15] Ibid., IV-F-16

[16] Secretary of Defense William J. Perry, "Strategic Airlift Requirement," memorandum for Chairman, Joint Chiefs of Staff, Washington, 3 May 1996

[17] AMMP, Executive Summary viii

[18] Mr. David Merrill, Headquarters Air Mobility Command/Strategic Planning, telephone interview by author, 30 December 1996

[19] Office of the Secretary of Defense, Report of the Defense Science Board Task Force on Strategic Mobility, (Washington: Office of the Under Secretary of Defense for Acquisition and Technology, August 1996), 65

[20] AMMP, Executive Summary iii

[21] Ibid., 1-12

[22] Merrill Interview

[23] Ibid.

[24] MRS BURU, Appendix C, 13

[25] AMMP, 5-41 and KC-135 Roadmap

[26] AMMP, 3-11

[27] Air Mobility Command, Point Paper on Civil Reserve Air Fleet, (Scott Air Force Base: Headquarters Air Mobility Command/DOF, 6 June 96)

[28] Air Mobility Command, Civil Reserve Air Fleet Capability Summary, (Scott Air Force Base: Headquarters Air Mobility Command, 1 January 97)

[29] Ibid.

[30] Ibid.

[31] MRS BURU, IV-G-15

[32] AMC's CRAF point paper

[33] Report of the Defense Science Board, 65

[34] MRS BURU, Appendix C, 20

[35] Ibid., Appendix C, 6 (Table C-4)

[36] AMMP, C-5 Roadmap

[37] MRS BURU, Annex C, 14

[38] Report of the Defense Science Board, 27

[39] Ms. Kim McClure, Headquarters Air Mobility Command, Tanker Airlift Control Center/Special Assignment Airlift Mission Director, telephone interview by author, 4 April 1997

[40] Army Budget, 10

[41] MRS BURU, Executive Summary 1 and I-1

[42] MRS BURU, V-1

[43] AMMP, 1-23

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