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**STRATEGIC LIFT AND THE OPERATIONAL COMMANDER:
IT'S ABOUT TIME**

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract

Phasing combat capability into a theater or across multiple theaters and then sustaining it has been central to a Combatant Commander's operational planning for decades. United States and coalition forces have been experiencing an increasing pace of operations throughout the post Cold War era, particularly as the Long War progresses. Strategic Lift has played a central role in the Combatant Commander's planning process in setting the stage for initial and sustained success. This paper addresses the role of Strategic Lift and whether it is adequate to ensure the success of Combatant Commanders both today and in the future. Operation Desert Storm is used as a baseline case study from which to evaluate Strategic Lift and claims that it was inadequate in the early 1990's. Operation Iraqi Freedom is then used to contrast Strategic Lift capability to determine if a Strategic Lift shortfall still exists. The overarching theme throughout is that Strategic Lift modernization and recapitalization must compete for scarce resources, therefore if a shortfall exists, the Combatant Commander must make the most effective use of assets available. To this end, the Combatant Commander's risk assessment will depend largely on time. Recommendations to improve Strategic Lift are: alternatives for addressing strategic tanker shortfalls, logistics visibility and unit phasing options, logistics war-gaming and reliance on Effects Based Operations to mitigate potential risk.

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INTRODUCTION

A significant debate has progressed over the last decade as to whether sufficient Strategic Lift exists to support combatant commanders in the post Cold War era. Despite this debate, Strategic Lift assets continue to be inadequate today and pose significant risk to Combatant Commanders (CCDR) in the future. In the final analysis, the answer to this question of adequacy is all about time and risk.

A CCDR is responsible for phasing his forces into theater with the support of United States Transportation Command (USTRANSCOM). The CCDR must accomplish this phasing in a Strategic Lift resource constrained environment. Properly phasing the right forces at the right time may not eliminate risk to operational success, but may mitigate it. In the end, the President, with advice from the Secretary of Defense and Chairman of the Joint Chiefs of Staff (CJCS), will have to make the final decision during the planning phase as to whether the risk is acceptable. The level of risk the President must contend with will be largely dependent on the length of time required for the CCDR to build sufficient combat power to be successful. In that sense the answer to whether the United States (US) has sufficient Strategic Lift is “it depends” and more accurately “it depends on time.” The CCDR and his staff must understand these issues during the planning process in order to efficiently and effectively plan for success in any operation.

BACKGROUND

Strategic Lift has been at the forefront of the Operational Commander’s planning effort for decades. An Operational Commander at the CCDR level must be able to deploy forces into his theater of operations and sustain those forces once they arrive. Strategic Lift is the backbone of a CCDR’s ability to conduct a strategic deployment as well as sustain his

forces via his Lines of Communication (LOC). These same strategic assets also provide the CCDR with his ability to move and supply his forces within theater enabling operational logistics which enables operational maneuver. Understanding the strength and limitations of Strategic Lift capabilities by a CCDR and his staff is crucial to their success in planning and executing on the battlefield during campaigns or major operations.

Strategic Lift, as the name suggests, are those assets the US uses to deploy its forces from the Continental United States (CONUS) to a theater of operations. What is not derived from the name is that "...operational commanders and their staffs are solely responsible for the planning of deployment."¹ Deployment responsibility, supported by USTRANSCOM, includes the phasing of forces into Airports of Debarkation (APOD) and Seaports of Debarkation (SPOD) from which personnel are paired with their equipment and are operationally deployed to their assembly areas. This operational deployment of forces often uses Strategic Lift assets as well. Once forces are in place and ready to execute an operation this constitutes the combat capability required by the CCDR to conduct combat operations. This process may sound simple enough, but it is this process and the equipment that supports it that will have a direct impact on the success or failure of combat operations in a CCDR's theater.² Strategic Lift balanced with time available to deploy forces will be the key factors in any successful operation. The first major test of the US to deploy forces at the end of the Cold War was in support of Operations Desert Shield and Desert Storm.

DISCUSSION / ANALYSIS

OPERATION'S DESERT SHIELD AND DESERT STORM

United States Central Command (CENTCOM), commanded by General H. Norman Schwarzkopf with the assistance of his planning staff, had the daunting task of phasing forces

into theater to deter further advance by the Iraqi army after their sudden invasion of Kuwait on August 2, 1990. Arguably the most decisive operational factor working against CENTCOM was time. The Iraqi army had taken control of Kuwait with minimal resistance and sat poised to continue its advance into Saudi Arabia. Of additional importance to the CENTCOM planning staff was that Iraqi forces possessed a significant armored capability that would require US and coalition armored forces to counter. Once the government of Saudi Arabia gave permission for US forces to enter Saudi Arabia and utilize its facilities, it was the adequacy of the US, coalition and North Atlantic Treaty Organization (NATO) Strategic Lift that would mitigate the risk of an Iraqi army invasion into Saudi Arabia. The first question that CENTCOM had to answer was given that Strategic Lift is never sufficient to meet all requirements, how would it leverage available lift to deploy a force capable of fulfilling the mission.

Strategic Sea Lift as the primary method of moving heavy equipment and cargo and would be the backbone of US lead efforts to get heavy forces into the CENTCOM theater. Types of sealift platforms are varied and the focus here is their capability to move forces. Moving wheeled and tracked vehicles is preferably done with Roll on/Roll off (RO/RO) ships and during Operation Desert Shield RO/RO ships were in limited supply. This function can be performed by other ships that Lift on/Lift off (LO/LO) at the expense of additional time required to load and unload shipping. During Operations Desert Shield and Desert Storm Strategic Sea Lift was responsible for moving approximately 90% of the cargo tonnage into Southwest Asia (SWA).³ Despite the success of Operation Desert Storm, severe limitations were imposed that elevated operational risk due to an inadequacy of Strategic Sealift.

The decision to deploy US and Coalition forces was given on August 7, 1990.⁴ US forces were deployed from CONUS and European Commands. Deployment of US forces occurred primarily through the Military Sealift Command (MSC) with the assistance of NATO controlled assets (including a 600 ship NATO controlled fleet).⁵ Forward deployed US forces in Europe were greatly assisted in their deployment to SWA by this NATO controlled fleet, relieving some of the strain on the Military Sealift Command (MSC).

In addition to the US forces in Europe, the first US Army armored division to arrive in theater was the 24th Infantry Division (Mechanized), from Savannah, Georgia. The 24th ID required the only 8 “fast” cargo ships the US Navy owned. One of the fast cargo ships had to stop for repairs in route resulting in the need for its cargo to be transferred onto another ship.⁶ Delays in shipping resulted in the 24th ID taking over one and a half months to arrive in theater.

In total the MSC, including 13 Marine Corps Maritime Pre-positioning Ships, chartered 165 ships in addition to NATO supplied ships to provide sealift capability, which was still stretched thin. Some of these shipping charters, which possessed certain capabilities to transport armored vehicles and other combat cargo, were up to double the peacetime cost to the US government.⁷ Seventy two of 96 ships in the Ready Reserve Fleet (RRF), a force which augments MSC, were activated but “...most of these were slow, and ill suited for transporting helicopters, tanks, trucks and other large pieces of military equipment.”⁸ This availability of Strategic Sealift required the CCDR and his subordinate commanders to prioritize force requirements to minimize the mounting risk to their operational plans.

There are other examples of Strategic Sealift shortfalls experienced during the deployment phase of Operations Desert Shield and Desert Storm, though the outcome is what

is significant. It took approximately 5 months to get US and coalition forces into theater and ready to begin combat operations. It is also important to note that adequate Sealift forces were critical to sustainment of forces after the deployment phase closed. Strategic Sealift shortfalls were not the only factor potentially hindering operational success for CENTCOM. Strategic Airlift was put to the test as well.

Strategic Airlift was responsible for moving the remaining 10% of cargo, and nearly all of US military personnel, into theater.⁹ Strategic Airlift included C-5, C-17, C-141 and C-130 for cargo and personnel. Primarily tactical aircraft, as well as personnel and cargo, were moved by KC-135 and KC-10 strategic tanking assets. The important point here is not a lesson in Strategic Airlift asset types but that in 1990 there was a diverse capability that allowed CENTCOM to rapidly deploy initial defensive capability to the region. Even with this diverse capability, the US also activated the Civil Reserve Air Fleet (CRAF) for the first time since its inception in 1952.¹⁰ The CRAF provided 55 civilian airliners and cargo aircraft to the USTRANSCOM and, after January 18, 1991, an additional 20-30 aircraft.¹¹ By December 1990 the CRAF had moved 20% of the cargo and 60% of the personnel to SWA.¹² Strategic Airlift not only provided rapid deployment of critical forces into theater but ensured CENTCOM's sustainment throughout, particularly for high priority and time critical items.

Despite a robust US Strategic Airlift capability, problems were encountered during the sustainment phase of Operation Desert Storm. Supply requirements designated by unit commanders as high-priority traveled by Strategic Airlift. Logistics communication shortfalls created a lack of visibility on many high-priority supply items resulting in a lack of confidence in the supply system and many requests being reordered. This increase in high-priority supply demand caused an overload on Strategic Airlift. "The airlift system also

became overloaded and could not keep up with demands; by December 1990, 7000 tons of cargo were on the ground at Dover awaiting shipment to Saudi Arabia, six times the total airlift capacity.”¹³ Though it is difficult to say what portion of this 7000 ton overload was due to logistics communication shortfalls, it is clear that supply system capabilities during Operation Desert Storm required more Strategic Airlift.

US Strategic Lift contributed significantly to the success of US and coalition forces in Kuwait and Iraq. The success of this Strategic Lift effort needs to be put in context. Sufficient APOD’s and SPOD’s that were of exceptional quality were available for US and coalition force use. There was no significant threat to coalition forces at these POD’s, which generally allowed permissive use. A very important element, with respect to POD’s, was that some logistic units were phased in late due to CENTCOM’s requirement for initial combat forces balanced against available lift. Army Central Command (ARCENT) noted that some supply staging and distribution was only able to function adequately early on due to the modern facilities and the host nation support available. Even with host nation support, sustainment of some combat supply was unmanageable until more logistics forces arrived in theater later.¹⁴

The most significant contributor to Strategic Lift success, and ultimately CENTCOM’s success, was time. Iraqi forces invaded and took control of Kuwait on August 2, 1990 and stopped. Though insufficient US and coalition forces were present to repel an invasion into Saudi Arabia, Saddam Hussein miscalculated and did not further prosecute his advance for unknown reasons. Had Iraq elected to continue its attack south into Saudi Arabia, CENTCOM’s phasing of forces into theater would have been even more critical. It

is highly likely that Strategic Lift would have been found sorely lacking and possibly unable to support CENTCOM requirements in theater.

TRANSITION

During the last 15 years of the post Cold War period many changes have occurred that effect the CCDR's ability to get sufficient forces into a theater in a timely manner to achieve his military objectives. In some ways "changes" might be an overly optimistic word. To maintain a capable force of any type over time, it is necessary to constantly provide resources to replace aging equipment in order for that aggregate force to maintain an adequate level of capability. US defense spending during the mid 1990's decreased significantly resulting in a "procurement holiday."¹⁵ Since the late 1990's the Department of Defense (DoD) budget has steadily increased though new procurement funds stayed relatively constant through the early 2000's.¹⁶ These constant funding levels have been inadequate to overcome the backlog created by the procurement holiday. What this means to the CCDR is that DoD funding levels are just now attempting to field new platforms to replace legacy platforms which were never designed to last as long as they have been required to. Competition among tactical and strategic combat aircraft has required compromises in allocating scarce defense resources. Major DoD resources have been dedicated to MSC for acquisition of Strategic Sea Lift capability including 19 Large Medium Speed Roll-on/Roll-off ships (LMSR). Resources have also been allocated to procure more Strategic Airlift to include the C-17 and C-130J but those acquisitions have been truncated.

Though progress has been made in procuring new Strategic Lift assets, time is the enemy of legacy platforms. Strategic Sealift platforms such as those in the RRF, which were old and less capable to begin with, are becoming less reliable. Strategic Airlift platforms

such as the C-5 have mission capable rates that continue to drop. Modernization programs for the C-5 such as the Reliability Enhancement and Re-engining Program (RERP) have only been approved recently.¹⁷ Much of the C-130 fleet has been either grounded or restricted within the last year due to aircraft structural fatigue. The entire C-141 fleet has been retired. Finally, many strategic tanker assets are over 40 years old. A significant portion of the KC-135 fleet was grounded in the last two years alone due to structural concerns.¹⁸ In the case of Strategic Tanking assets, after failed attempts by the US Air Force to acquire new platforms through a streamlined acquisition process, a new analysis of alternatives is just now under way.

US military force restructuring has changed dramatically since the end of the Cold War. DoD transformation initiatives have had far reaching implications to CCDRs around the world. Forward US presence in South Korea and Europe have been altered significantly with 60,000 to 70,000 service members and units being returned to CONUS bases. In conjunction with personnel moves in Europe over 160 bases are being closed.¹⁹ Decreases in forward deployed forces have not been replaced by substantial forward deployed equipment as of yet though United States European Command (EUCOM) is seeking alternatives to do so.²⁰ This is not to say that US armed forces do not maintain any forward deployed stocks. All services maintain various forward deployed goods such as ammunition, equipment repair capability, dry cargo, petroleum and others which are maintained by MSC. What is important is that a significant offset for the loss of forward bases has not been established and continues to be a work in progress. This lack of forward deployed assets suggests an increasing requirement for Strategic Lift capability.

Each of the US armed services has actively pursued initiatives designed, in part, to make more efficient use of available Strategic Lift assets. The US Army, the largest force requiring Strategic Lift, is currently undergoing a transformation toward the Future Combat System (FCS) to support its new Brigade Combat Team (BCT) concept. This initiative is designed to make the US Army lighter and more modular to increase its ability to deploy rapidly to any theater. Though much of its lighter armored vehicles are being designed to facilitate strategic, operational or tactical airlifting, some FCS platforms are nearing top end weight restrictions to be moved by some strategic and operational airlift platforms.²¹ The Army is also planning to utilize LMSR's mentioned earlier for pre-positioning some of its equipment much like the US Marine Corps uses its Maritime Pre-positioning Squadrons (MPS). Though this initiative will provide an increase to its ability to rapidly deploy in support of a CCDR, there are much broader challenges, with regard to Strategic Lift implications for an army that is now primarily based in CONUS, especially since the FCS is not a capable reality yet. Future Strategic Lift capability procurement is being based on projections of future force structure and not current or interim force structure. Until FCS is a fielded reality, CCDR staffs will be forced to deal with a complicated Strategic Lift problem. Even when FCS is fielded, CCDRs may require combat loading²² of forces to reduce risk in certain theaters, which will continue to tax Strategic Lift adequacy.

What is also apparent is the increasing number of commitments in various theaters around the globe involving every CCDR. In the post Cold War years leading up to Operation Iraqi Freedom (OIF), the US has participated in an increasing number of operations of all types including combat operations, peace keeping, non-combatant evacuations, humanitarian

assistance, etc. Increased operational tempo will continue to strain Strategic Lift assets and potentially increase risk to successful operations for CCDRs worldwide.

OPERATION IRAQI FREEDOM

The events of September 11, 2001 have ensured that CCDR operational tempo and Strategic Lift requirements will remain aggressive for the foreseeable future. Operation Iraqi Freedom brings us to the present capability of Strategic Lift to support CENTCOM. The question to be answered is whether availability of Strategic Lift forces has improved since Operations Desert Shield and Desert Storm and are they adequate? US forces and “the coalition of the willing” executed a rapid and successful advance to Bagdad where phase IV operations are on-going. What is important is what risk was assumed by CENTCOM due to the deployment phase.

In the years leading up to OIF, MSC had accomplished significant improvements. The new LMSR fleet, totaling 19 ships, completed delivery in 2003 and in addition to existing MPS and other supply ships, has been available for deployment of US forces.²³ The active MSC fleet, 33 of the remaining 59 RRF ships and commercially contracted shipping participated in Strategic Sealift operations into SWA delivering over nine million square feet of cargo.²⁴ Sealift requirements were met in support of OIF and the current Strategic Sealift program, to include RRF and commercial contract fleet, was deemed adequate according the Mobility Capabilities Study (MSC) delivered in November 2005.²⁵

Strategic Airlift sorties in support of OIF have already exceeded the airlift operations of Operation Desert Storm according to USTRANSCOM.²⁶ Initial military operations in support of CENTCOM were successful despite the retirement of the C-141 fleet, structural aging issues with the C-5 and C-130 fleet and truncated buy of the C-17 fleet. Tracking of

sustainment supply being moved by strategic air assets, though improved, is still a work in progress. It is likely that this supply tracking issue contributed to Strategic Airlift requirements. Strategic tanking assets were able to move adequate tactical air assets into theater to support robust air operations and contributed significantly to the success of a high tempo ground offensive. These accomplishments were achieved despite continued concern over structural and corrosion issues that plague the KC-135 fleet. It can be argued that Strategic Airlift was adequate to support the initial phases of OIF due to the success of the deployment and ongoing sustainment of CENTCOM operations. It can also be argued that success of Strategic Lift was due as much to CCDR force phasing plans as it was to the adequacy of Strategic Lift platforms. CENTCOM accurately phased military forces into SWA utilizing available assets over a time that mitigated risk to a manageable level. It does not necessarily follow from either argument that Strategic Airlift is adequate to support worldwide CCDR's concurrent requirements in light of National Military Strategy (NMS) mandates requiring the capability to conduct overlapping operations simultaneously. In the case of OIF, operations are still ongoing and only time will tell.

STUDIES

Since the year 2000 two major studies have taken place to address various aspects of strategic mobility. Both of these studies have strong implications as to the ability of Strategic Lift to support near term and future military operations. The Mobility Requirements Study (MRS) was published in 2000 which was followed by the Mobility Capabilities Study (MCS) published in November 2005. The later report was the foundation around which the 2006 QDR forged the Strategic Lift road ahead.

In general, the MRS concluded that the Military Sealift Command had a sufficient program to deem Strategic Sealift adequate. Some minor improvements necessary included ensuring appropriate port facilities to ensure surge loading capability in CONUS ports and addressing containerization issues to facilitate more rapid loading capabilities. In addition, it was stressed that commercial contract initiatives must continue to be focused on to ensure an adequate total lift capability. The MRS also concluded that Strategic Airlift was inadequate. A 54.5 Million Ton Miles per Day (MTM/D) capability requirement was adopted by the CJCS to support the NMS.²⁷ This requirement could be supported in the future by 180 C-17's and 112 C-5's that had been through RERP. This aircraft requirement would have to be augmented by a capable CRAF program to meet all CCDR needs concurrently around the world.

The MCS, which was accepted by the CJCS and the CCDRs, built upon the MRS and was designed to inform generation of the 2006 QDR. In general the MCS concurred that Strategic Sealift was adequate and voiced many of the same minor concerns of the MRS. The MCS also concluded that the MRS Strategic Airlift modernization and recapitalization plan was adequate to meet future needs. In addition the MCS indicated the need to recapitalize the strategic tanking fleet with multi-mission tankers when the analysis of alternatives was complete. A fully viable CRAF was identified as essential to the Strategic Airlift plan.²⁸

CONCLUSIONS

The post Cold War era continues to present ever increasing demands on CCDRs worldwide. The significance of ensuring each CCDR is supported concurrently by the most capable Strategic Lift available is and will be paramount to successful support of NMS

objectives today and into the future. In a fiscally constrained environment CCDRs will be forced to plan operations, weighing the risk associated with timely arrival of adequate combat capability in their theater of operations.

Operation Desert Storm provided the baseline of post Cold War Strategic Lift adequacy. Though operations were successful, several potential shortfalls were noted. Strategic Sealift took over 5 months to build adequate combat power on the ground to begin offensive operations. Phasing of some logistical units was delayed to satisfy the need to get combat forces on the ground. This limitation hindered initial movement of supplies into forward areas once they arrived into theater. Poor tracking capability of high-priority supplies caused a strain on Strategic Airlift, not to mention it frustrated commanders in theater. In the end it was time that facilitated CENTCOM success. Had Iraq not stopped in Kuwait the outcome of Desert Storm could have been far different.

Operation Iraqi Freedom, as well as the MRS and MCS, were the report cards on whether US Strategic Lift had improved since Operations Desert Shield and Desert Storm. Significant improvements in Strategic Sealift provided for unprecedented movement of equipment and supplies into SWA. Total Asset Visibility (TAV) of sustainment supplies had improved but, over a decade later, still requires significant improvement to build consumer confidence to levels that will reduce strain on Strategic Airlift. Logistical unit phasing did not seem to be a problem, possibly due to the factor of time and significant US and coalition infrastructure that was already in place after over 10 years of operating in the region. Strategic Airlift seemed to be up to the task as CENTCOM was very successful in the initial stages of operations but did this truly prove the adequacy of Strategic Airlift?

The answer to the adequacy of Strategic Airlift is not as easy as the MRS and MCS might lead you to believe. Strategic Airlift continues to make significant contributions but what has not been addressed adequately is the trend created by aging platforms whose modernization and recapitalization plans had been delayed by funding shortfalls post Operation Desert Storm. Groundings and structural concerns have been identified by the MRS and MCS but much of this is too late to avert at least a near term shortfall. For example the C-5 RERP program that was identified by the 2006 QDR as a requirement won't see the initial work done to the first four aircraft until 2007.²⁹ The final delivery of 180 proposed C-17's is not forecast to be complete until 2008.³⁰ The recapitalization of the KC-135 is still in the analysis of alternatives phase as that same platform suffers groundings and other concerns due to airframe age. Certainly the US Strategic Airlift capability is in jeopardy.

One could argue that the US has yet to loose a conflict in the post Cold War era due to any professed Strategic Lift shortfalls. CENTCOM was able to plan and execute the two major operations of the last decade and half and achieve overwhelming victory with Strategic Lift forces that were on hand. In neither case did the US lack in its ability to get combat forces into theater in time to ensure success. One could further argue that the 2006 QDR supports this conclusion by adequately analyzing the current Strategic Lift situation and proposing that current modernization and recapitalization strategies envisioned by the US military are on the mark and will ensure that CCDRs will have the tools to meet future challenges. Conclusions made by the QDR were supported by the MCS which had buy-in not only from the CJCS but from CCDRs as well.

This would be a convincing counter argument if it were not for one detail that has been swept aside for the casual observer...time. The 2006 QDR established a road ahead to support acquisition game plans that are a balance of projected available resources over time. Programs such as these are best case plans which will generally slide later before they will be accelerated. What is not addressed is what is to be done until these programs can be fully executed. The current procurement and modernization plan calls for 180 C-17's around 2008, C-5 RERP completion later and strategic tanking barely on the drawing board and well past the need for all of these platforms. As late as 2004 "...David Merrell, chief of AMC's studies and analysis division, estimated that the current requirement for [Strategic Airlift] is fast approaching 60 MTM/D."³¹ When compared to the accepted rate requirement of 54.5 MTM/D addressed in the MRS and confirmed in the MCS, it becomes apparent that the numbers may not be adding up and that disparity may get worse, especially if the maximum requirement of the NMS were required. What provides the most risk to CCDRs in this environment is what Strategic Airlift platforms will be available to support them in the near term. What CCDR staffs do to mitigate that risk in the near term and beyond will determine the continued success of US and coalition forces abroad. The operational factor that will be the guiding variable facilitating those successes will be time.

RECOMMENDATIONS

It would be ludicrous to suggest that DoD has the resources to provide unlimited Strategic Lift support to CCDRs. In making recommendations it is wise to continually be mindful of the constrained resource environment in addressing shortfalls in Strategic Lift. As noted in the MRS, MCS and 2006 QDR the Strategic Sealift program is relatively healthy and continues to address facility and civil support issues and will not be further addressed.

Strategic Airlift programs will continue to be of concern due to the large obstacles to be overcome. Vitality of the CRAF is being addressed and resourced through various government programs. Current Strategic Tanker recapitalization programs are well behind schedule and ways to mitigate this risk must be addressed in the short term. Commercial tanker programs such as Omega Aerial Refueling Services, Inc. have shown great promise.³² Investment or encouragement for civilian investment in a commercial tanking capability could show great dividends. Movement of tactical air forces into or near a CCDR theater by commercial tankers could free up Air Force strategic tanking assets for higher risk missions. The same reasoning would hold true for supporting on station time in lower intensity conflict areas, offering CCDRs more operational flexibility. Training of tactical air forces could also benefit from the services of a commercial strategic tanking capability. The uses for commercial strategic tanking are numerous and worthy of further research.

Logistics employment is an area that requires improvement. Logistics tracking programs such as TAV have been in development for over a decade in various forms but still lack a coherent strategy to drastically improve this program. Numerous articles were reviewed while researching this paper and what is apparent in each one is that each service is striving to improve in a similar direction but each seems to be disconnected from the other to a large extent. Operating systems appear to be service specific in many regards and service logistics personnel are focused (as they should be) on making their system work in theater and improve their process. A dedicated joint oversight process needs to be established to continue to bring logistic tracking systems (including real time tracking) under one joint architecture, to include software and hardware compatibility. The CCDR and subordinate commanders in today's joint theater must have insight as to sustainment status through a

single reliable source. The joint nature of this system needs to allow services to assist each other through joint visibility provided by common tracking systems. Improved joint tracking will facilitate reduced strain on Strategic Airlift assets by improving consumer confidence in status of high-priority supply items as was noted in Operation Desert Storm.

An additional logistical concern noted earlier was a CCDR's ability to phase his logistics units into theater in a timely manner. This decision requires a careful assessment of risk to combat capability that may be required due to Strategic Lift asset availability. Though more robust Strategic Lift may get logistics forces into theater faster, there is an approach that could help the CCDR's ability to more accurately assess that risk. Logistics is not a significant part of many war-games.³³ Increased emphasis by service War Colleges and CCDRs on having logistics play a significant part in war-gaming could allow CCDRs to make better decisions as to phasing in logistics forces when having to weigh time and risk against available Strategic Lift assets.

The final recommendation concerns time as well. Operating in a constrained resource environment means risk has to be balanced. In most of the examples addressed here, increasing efficiency can allow a CCDR to do more with the time available. Increasing time available can also mitigate risk. Coordinating other elements of national power through a CCDR's Joint Interagency Coordination Group³⁴ can help provide the CCDR more time through the use of diplomatic, information or economic means. Though this is a very broad recommendation it is merely a reminder that other elements of national power may facilitate overcoming shortfalls in military capabilities. In the end the CCDR will have to deal with available resources, weighing risk and making the best use of time.

NOTES

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- ¹ Milan N. Vego, Operational Warfare, (Naval War College, 2000), 302.
- ² Ibid, 289.
- ³ David F Bond, "Troop and Materiel Deployment Missions Central Elements in Desert Storm Success," Aviation Week & Space Technology. (22 Apr 1991): 94.
- ⁴ Center for Strategic & International Studies, The Gulf War Military Lessons Learned, (Washington, D.C: 1991), 34.
- ⁵ Vego, 298.
- ⁶ Kent N Gourdin, and Richard L. Clarke, "Winning Transportation Partnerships: Learning from the Desert Storm Experience," Transportation Journal, (Fall 1992): 30.
- ⁷ Ibid, 35.
- ⁸ Ibid
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