SUMMARY

This report explores ways in which the Army might improve its ability to contribute to the prompt, global power-projection capability of the United States. By that we mean the strategic responsiveness of early-entry forces in situations where time is critical. Through a case study based upon the Army's new Stryker Brigade Combat Team (SBCT), we examine two components of early-entry force strategic responsiveness: rapidly tailoring a mission-focused force package and moving the force.

For its future force, the Army has set an aggressive goal of deploying a mounted brigade in 96 hours.[1] The first such unit, leveraging substantial new technology, will not be fully operational until 2012. Thus, to develop lessons and to improve strategic response capabilities in the interim, the Army is fielding SBCTs with the best available sensor and communications technologies to enhance situational awareness and a family of 10 Stryker wheeled armored vehicle variants based upon an off-the-shelf platform. While somewhat heavier and substantially less capable than envisioned future force units, SBCTs are significantly lighter than Army tank and mechanized infantry units and offer more firepower, survivability, and tactical mobility than light infantry units. With this balance between the fire and movement strength of heavy forces and the rapid-deployability strength of light forces, the SBCT offers a new option for prompt power projection.

[1]The term "future force" is the replacement for the term "Objective Force."

Just how fast SBCTs can deploy has been the subject of much debate and analysis, so this report begins by examining *potential* SBCT deployment time. This is done using one scenario to illustrate how various options would change the deployment time and resource requirements. The intent is not to produce definitive deployment times for the SBCT, but rather to draw insights about means for improving the SBCT's, or any force's, deployment potential.

A design element of the SBCT that has received less attention is its ability to enable more rapid deployment initiation, as the organic brigade is preconfigured as a combined arms unit integrating maneuver support and sustainment capabilities. In the second part of the report, we examine how the Army can build upon this organizational design to increase flexibility while preserving the ability to quickly initiate deployment. The concepts presented are expanded beyond the SBCT to other Army unit types as well as Joint forces.

THE DEPLOYMENT PROCESS: AN OVERVIEW

Once a decision is made to consider or employ military force, the designated geographic combatant commander must work with the National Command Authorities to determine the capabilities required to accomplish the mission. Based upon the requisite capabilities and situation, the commander, working with Joint organizations and the services, selects the appropriate units or parts of units (including the requisite support) and determines the deployment sequence. In conjunction with the development of the deployment plan, the U.S. Transportation Command (USTRANSCOM) must prepare, equip, and man, as necessary, a deployment route.

As an example, Figure S.1 shows a route for the movement of Army units stationed at Fort Lewis, Washington, to Skopje, Macedonia. We use a deployment to Skopje as the basis of a case study to compare the various effects of deployment options. As shown in the figure, bases are of three general types: aerial ports of embarkation (APOE) from which deployment units depart; enroute bases used for refueling and other aircraft operations; and aerial ports of debarkation (APOD) at the destination. The selected route employs two enroute bases in both the outbound and return directions. These bases en-

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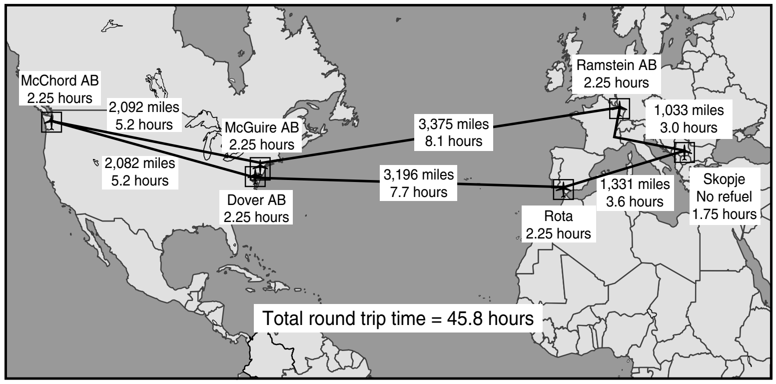

Figure S.1—Route and Approximate Times for Army Units at Fort Lewis, Washington, Deploying to Skopje, Macedonia by C-17

able the route to operate without aerial refueling or the need to refuel at the relatively austere APOD in Skopje. The numbers on the links between bases indicate distances in nautical miles with rough estimates of the C-17 flight times for these distances. The numbers under the base names are the planning factor ground turnaround times for C-17s. Given the times shown, the round trip time for a C-17 would be almost 46 hours. In other words, each C-17 could deliver a load to the APOD every 46 hours.

IMPROVING DEPLOYMENT CLOSURE TIME

In a deployment time analysis, two critical assumptions are the amount of airlift available and the working maximum on the ground (working MOG) of airfields. Airlift allocation depends upon national and combatant commander priorities and thus the specific mission in conjunction with the global security situation. For example, in Desert Shield, it was critical to get troops on the ground as quickly as possible. As a result, the lead brigade of the 82nd Airborne Division received a high proportion of the airlift, and the Army received 42 percent of the lift missions over the first month.[2] Army deployments to Afghanistan received a much smaller share of lift. Thus, instead of using a "baseline" airlift allocation, our analysis indicates the maximum amount of airlift that could be used given airfield capacities.

In contrast, the working MOG of airfields—how many aircraft can be serviced and unloaded at one time—is much harder for commanders to influence in the short term, particularly for APODs at the deployment location. Deployments since 1990 suggest that an initial deploying force will often be faced with one APOD with a working MOG of 3 or less. While many of the airports in the United States and in other developed regions have relatively large working MOGs, the case can be quite different in other parts of the world or even parts of fairly developed countries away from major cities. Additionally, working MOG is often limited by "allocations." During Desert Storm, for instance, although the airport at Dharan, Saudi Arabia is large and modern, the "effective" working MOG for initial deploying Army units was only equivalent to 2 C-17s, since the airport was also used for other purposes. Rinas airport in Albania had a working MOG of 2 C-17s, in part because it was also used for humanitarian operations. All the airfields in the Afghanistan region in support of Operation Enduring Freedom have working MOGs of 3 or less, with the two deployment locations in Afghanistan starting at less than 3.

Thus, to illustrate the effects of options for improving deployment time, we employ a scenario with an APOD working MOG of 3: Fort Lewis, the home station of the first two SBCTs, to Skopje, Macedonia. Deployment time is examined with respect to three dimensions of the deployment tradespace: the deployment "footprint," the throughput capacity of the system, and force positioning.

There are two primary elements of deployment "footprint": how much must be moved and aircraft loading effectiveness. With its force size, assuming a reasonable level of loading effectiveness that should be achievable with predeployment load planning, and the APOD working MOG of 3, an SBCT could potentially deploy from Fort Lewis to Skopje in 7.4 days or 45 percent faster than a heavy

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[2]John Lund, Ruth Berg, and Corinne Replogle, *Project AIR FORCE Analysis of the Air War in the Gulf: An Assessment of Strategic Airlift Operational Efficiency*, Santa Monica, CA: RAND, R-4269/4-AF, 1993.

brigade combat team, plus or minus about a day depending upon load planning effectiveness. This assumes best-case conditions that do not limit throughput as, for instance, bad weather could do. Achieving this time would require at least 38 percent of the FY05 strategic airlift fleet (maximizing C-17s). Given a route and working MOG, the maximum employable number of aircraft can be determined, beyond which additional lift would not improve deployment timelines.

Forward unit or equipment positioning can improve SBCT strategic responsiveness by keeping the route short or effectively reducing the air deployment footprint. Forward unit positioning dramatically improves deployment speed when airlift capacity is the bottleneck. For example, if airlift were limited to 8 percent of the FY05 fleet, the deployment time from Fort Lewis would take about 27 days, as compared to less than 7 days for a forward-stationed SBCT deploying from Ramstein Air Base in Germany. When working MOG is the constraint, the primary benefit of forward positioning is greatly reduced airlift demand, freeing airlift for other purposes. This presents substantial value to the combatant commander by reducing the opportunity cost of calling for an SBCT. Deploying to Skopje from Germany instead of from Fort Lewis reduces the maximum employable lift from 38 percent to just 8 percent of the FY05 fleet.

Given the financial demands of procuring SBCT equipment sets, developing the future force, and recapitalizing current units, it has been assumed that prepositioning SBCT equipment is not financially feasible. However, this is premised upon the traditional approach of prepositioning full sets of unit equipment. Instead, reserving airlift for high-value assets, such as Strykers, and prepositioning less-expensive assets might be an affordable means to mitigate airlift throughput limits. Prepositioning the SBCT's trucks and initial supplies would reduce airlift requirements by about 60 percent, yet these vehicles only account for about 10 percent of SBCT equipment procurement costs. Such "selected" prepositioning would make it possible to move the remaining assets by air in 4 days from the continental United States (CONUS) even with a working MOG of 3. If only the Strykers were moved by air, achieving the 4-day deployment time would require 25 percent of the FY05 strategic airlift fleet. If the 7.4-day deployment time were acceptable, the airlift allocation requirement would drop from 38 percent to 13 percent.

Increasing airfield throughput offers a complementary path to reducing deployment times. To do so, the Army and USTRANSCOM should explore ways to improve offload, airfield clearance, and aircraft turnaround times. Further enhancement can come from frequent practice to maximize process potential. An initial review of data and interviews suggest that ground times for airlift missions in support of unit deployments could be substantially lower than planning factors. For example, average aircraft APOD turnaround time for Task Force Hawk's deployment to Albania in 1999 was about 45 minutes, substantially faster than the 105-minute planning factor. The times continually improved through the operation, with over 50 percent of the flights in the last quarter of the operation turning around in 27 minutes or less. In an air deployment of part of an SBCT in May 2003 employing 45 C-17 lift missions, the operation consistently achieved total APOD turnaround times of between 19 and 34 minutes, facilitated in large part because most of the airlift deployment missions for an SBCT have only vehicles that can be driven straight off a C-17.

DEPLOYMENT PHASING: MINIMIZING TIME TO INITIAL CAPABILITY

Similar to how division ready brigades are structured for deployment in the XVIII Airborne Corps, the SBCT's deployment might be divided into phases based upon preplanned modules of capability that represent levels of full SBCT capabilities. The first phase might be a combined arms battalion task force plus (a Stryker Battalion Task Force, or SBnTF) with the full breadth (but not depth) of SBCT capabilities. This might be followed by the remainder of the SBCT and then by echelons above brigade support. A notional SBnTF would be half the size of an SBCT, and possibly even smaller with a more detailed examination of "nonmodular" subunits.[3] Given the Fort Lewis–to–Skopje scenario, this force could deploy in about 4 days with 38 percent of the total FY05 lift and with just 8 percent of the lift if forward based. This would enable the SBCT to be leveraged to get

[3]In fact, through such an examination, the first operational SBCT—the 3rd Brigade, 2nd Infantry Division (SBCT) (3-2 SBCT) at Fort Lewis—has identified an SBnTF design intended to provide initial operating capability that is about 40 percent the size of the full SBCT.

initial presence on the ground very quickly, with the remainder of the full depth of capability then building, providing more flexibility at a critical time in a crisis. Additionally, it improves the ability to leverage multimodal (air and sea) deployment.

A COMPARISON OF DEPLOYMENT STRATEGY OPTIONS

Figure S.2 summarizes the various deployment closure options and strategies discussed. The left set of columns shows the effect of varying the unit deployment footprint. Given the constant route length, the maximum feasible airlift allocation remains constant while the time improves as the footprint gets smaller. The middle set of columns provides forward unit positioning and selected prepositioning excursions. The third set of columns presents a two-phased deployment flow for the organic SBCT. Given APOD planning factors, a force in the size realm of a light BCT or about half of an SBCT can potentially meet the Army's future force brigade-sized unit deployment goal of 96 hours whether from CONUS or if forward based. Forward basing, however, greatly reduces the airlift allocation needed to reach this goal and makes it more feasible to leverage improved ground times.

LEVERAGING MODULARITY FOR RAPID MISSION TAILORING

A traditional Army strength is the ability to pull elements of many different units together to precisely tailor a force to a mission need. However, this generally begins once a deployment need is identified, and getting to the point where deployment can be initiated can be time-consuming. It is also a process that introduces a great deal of uncertainty about Army lift requirements into the Joint community, complicating the decision process of the combatant commander.

Tailoring, though, reflects an underlying assessment of the capabilities needed and those that each unit or piece of a unit can provide. Additionally, thought must be given to how they are to be tied together by command and control capabilities and how they will be supported. This process could be done more quickly if predefined building blocks of capabilities with detailed time-phased force deployment data were available. These capabilities could include sup-

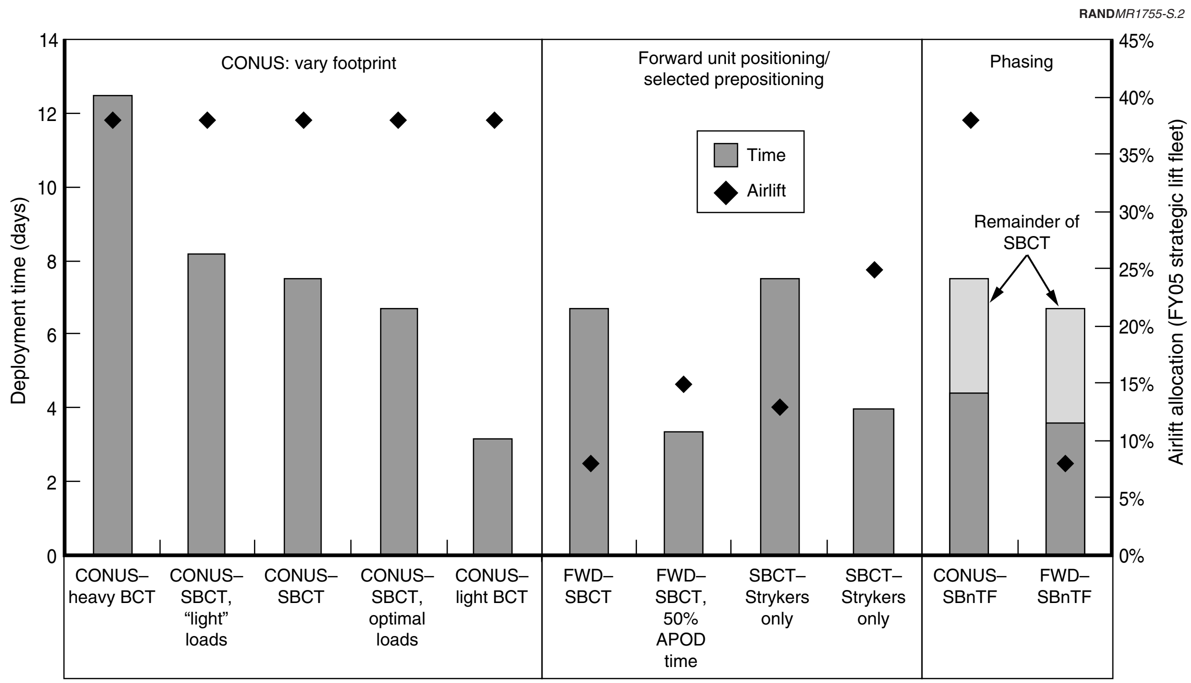

Figure S.2—Comparison of Deployment Times

port augmentation modules based upon potential combinations (e.g., support module of fuel, ammunition, and recovery vehicles for augmentation of an SBCT with a tank unit). Then, for example, some or all of the predefined SBCT capabilities could be combined with other capabilities to meet a wide range of mission needs for early-entry forces. Once capabilities and the associated forces are predefined, a "menu" of modular deployment capabilities can be created for combatant commanders. This would give Joint planners a tool to help them quickly analyze the force package options for a mission. The menu would clearly communicate the deployment resources associated with various options for providing capabilities. The keys to making these concepts work are detailed planning, targeted deployment and operational training, well-designed building blocks, and information systems. Joint habitual relationships could also be created in training to improve joint force effectiveness as well as further enhancing strategic responsiveness.

RECOMMENDATIONS

First, we recommend that the Army begin evaluating how to transition force deployment to a more capabilities-based approach. A key part of this is to understand the command and control and combat service support implications of creating transparent modularity. In the short term, the Army can apply modularity and new deployment planning concepts to create a phasing strategy for the SBCT and other units that would enable fast response of initial operating capability and flexibility for a range of situations. The longer term will require the development of standards for defining capabilities across the entire force, including "base" and augmentation requirements.

If a deployment speed faster than what is possible from CONUS is desired for SBCTs, other Army units, or future Army forces, the Army and the Department of Defense should develop an integrated global response strategy. A mixed strategy of forward unit positioning and selected prepositioning of some SBCT assets is probably ideal, given financial and political constraints. Decisions will most likely have to be made about the extent of global coverage requiring various response speeds.

With regard to throughput capacity and deployment speed, there are several things the Army can do in conjunction with the other services and Joint organizations to improve. More effective utilization of aircraft through careful preplanning, coordinated with USTRANSCOM, offers an opportunity to improve upon historic aircraft loads, reducing the total number of lift missions for a force. In conjunction with improving load effectiveness, the services should work together to improve tactics, techniques, and procedures (TTP), initially through the designation of a Joint team dedicated to this effort for a short period. Then rigorous practice can ensure that the promise of these TTP can be achieved. Additionally, many of the deployment process capabilities for a unit such as the SBCT could be better than those specified by some of the U.S. Air Force's planning factors. To a large degree, deployment planning factors average many different types of situations. To better understand the responsiveness of a unit such as the SBCT, more detailed planning factors should be developed. Ideally, they should be maintained in a living document as TTP improve. This would enable deployment planners to more effectively communicate deployment capabilities for small-scale contingencies.

Finally, the last recommendation builds upon work the Army has already started with USTRANSCOM and its Air Mobility Command and Military Traffic Management Command Transportation Engineering Agency components. Formal site surveys of SBCT power-projection platforms have been conducted, and projects have been proposed, funded, and initiated to varying degrees to improve outload capabilities. This type of work and monitoring should continue, and it should include enroute bases as well. Beyond facilities and equipment, potential personnel bottlenecks, such as joint inspection or airlift control teams, should be identified.

The deployment problem represents a complex tradespace that, when combined with the need for expert judgment to trade off benefits against costs, is not amenable to optimization. The "best" solution set depends on how fast is fast enough to each region of the world and on assessments of basing and prepositioning site options. Additionally, the recommendations are complementary rather than competing. The force-tailoring recommendations focus on how the Army characterizes its forces and defines the capabilities that they provide. They are intended to improve the effectiveness of force phasing and rapid tailoring so that combatant commanders understand the value of potential Army force options and how they will fit into the overall operational deployment scheme. The intent is that when commanders ask for a capability, the "right force"—with a known associated demand on lift assets—can quickly be made available for movement. The force-positioning recommendations deal with means for reducing not only deployment time but also airlift requirements once a force package has been selected. While the Army has been thinking primarily in terms of speed, the combatant commander must consider the airlift question as well. It is in this context that forward basing and selected prepositioning are especially useful: for any desired deployment time, they free assets that the commander can use for other purposes. Recommendations to improve throughput ensure that the base structure can be used as effectively as possible. In some cases there is synergy between the two—e.g., forward basing leverages faster ground times. Overall, rather than a specific solution, we have tried to provide a conceptual framework for thinking about how to deploy units within the context of the broader challenge facing combatant commanders.