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BRIEFING

The Strategic Distribution System in Support of Operation Enduring Freedom

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SUMMARY

In a tale of war the reader's mind is filled with the fighting. The battle . . . excites imagination and commands attention. . . . The long trailing line of communications is unnoticed. . . . Victory is the beautiful, bright-colored flower. Transport is the stem without which it could never have blossomed. Yet even the military student, in his zeal to master the fascinating combinations of the actual conflict, often forgets the far more intricate complications of supply . . . In savage warfare in a flat country the power of modern machinery is such that flesh and blood can scarcely prevail, and the chances of battle are reduced to a minimum. Fighting the Dervishes was primarily a matter of transport. The Khalifa was conquered on the railway.²

The Defense distribution system is the part of the Department of Defense (DoD) that manages the storage and movement of supplies to military customers at home and around the world. Unfortunately, throughout the 1990s, the system's performance was often poor and unreliable, and customers were losing confidence in it. As a result, in early 2000, leaders of the U.S. Transportation Command (TRANSCOM) and the Defense Logistics Agency (DLA) agreed to embark jointly on the Strategic Distribution program (SD) to deliver more reliable and cost-effective service to DoD forces and organizations in the United States and around the globe.³ This documented briefing tells the story of SD's inception and achievements, focusing in particular on how well that system met the challenge of Operation Enduring Freedom (OEF).

AFTER THE COLD WAR, PROBLEMS IN DEFENSE DISTRIBUTION BECAME APPARENT

Support to the Persian Gulf in 1990 during Operation Desert Storm provides an example of the kinds of problems facing the Defense distribution system throughout the 1990s. Although combat performance in this operation has been justifiably esteemed, there were significant problems in logistics support for the war. Distribution times were long, variable, and undependable, due largely to inefficient processes, clogged ports, and a myriad of other problems. The result

²Winston S. Churchill, *The River War: An Account of the Reconquest of the Soudan*, New York: Carroll and Graf Publishers, 2000 (originally published 1902), pp. 162-163.

³Before May 2002, SD was known as the Strategic Distribution Management Initiative (SDMI).

was that materiel often took more than 35 days simply to get out of the United States. Problems with the global distribution system persisted throughout the 1990s, despite individual service-specific successes (e.g., the Army's Velocity Management Initiative, the Air Force's Lean Logistics, and the Marine Corps' Precision Logistics).

The Defense distribution system was not structured to meet the needs of its customers effectively or efficiently. Inventory was scattered at dozens of locations in the United States and around the world, effectively making each supply point a "worldwide distributor" and removing the benefits of economies of scale. Whereas the best distribution practices emphasize streamlined flows and a minimization of stops, queues, and handling, Defense distribution modes tended to suffer from significant delays as materiel sat in ports and transit hubs. The unreliability of the military service caused many customers to turn to better – and more expensive – distribution modes, such as FedEx and Worldwide Express. Decreasing customer confidence was especially a problem for military air. The loss of customers contributed to the underuse of military air cargo capacity and caused reverberations for the wartime readiness of air crews and ground elements, which rely on peacetime missions (and the funds they bring in) to support their wartime training.

THE GOAL OF SD IS FAST, RELIABLE, COST-EFFECTIVE SUPPORT TO CUSTOMERS IN PEACE AND WAR

It was these disturbing trends that led leaders of TRANSCOM and DLA to join forces in 2000 to seek improvements, with RAND's assistance. The result of this collaboration, SD, builds upon RAND's similar efforts for the Army's Velocity Management (VM) initiative. Like VM, SD was founded on the principle of partnership among stakeholders and process owners. As in VM, RAND is playing a central role in making the case for change, assembling and integrating data to provide a comprehensive view of processes, and using those data to build metrics, reports, and analytical products to support improvement efforts. One of RAND's contributions to the SD effort has been a DoD-wide "distribution enterprise" database. This database provides a means of looking comprehensively into the performance of DoD's many distribution modes, including commercial services as well as military air distribution.⁴

⁴SD's focus, and that of the "distribution enterprise" database, is "sustainment" materiel requisitioned through the wholesale system. It does not cover deployments or materiel

One of the major challenges for the Defense distribution system is to provide fast, reliable, cost-effective support to customers despite the unpredictability and volatility of customer demand, which can surge or decline tremendously from one year to the next. To meet this challenge, SD has adopted a strategic vision built around what are known as the “3 S’s” – stock positioning, scheduled movements, and synchronization. Stock positioning means putting inventory in the right place; for example, within the United States, SD seeks to maximize the amount of cargo at two Strategic Distribution Platforms located, respectively, on the East and West Coasts. Scheduled movements from these distribution centers ensure that trucks leave at a certain time each day and arrive at their destination at a set time. Further, these steps are synchronized to minimize queuing and hold times – all the non-value-adding elements that make performance slow and unreliable.

SD’s initial efforts have yielded positive results, including the consolidation of inventory at the East Coast and West Coast U.S. locations, the expansion of stock points closer to customers in Europe, and the establishment of new customers and routes for scheduled trucks. These improvements will yield savings to taxpayers as well as better service to forces. DLA estimates that these actions will save at least \$120 million over the five-year period 2003–2007. In addition, improved military air distribution is matching commercial performance. A two-part example of the improvement is shown in Figure S.1, which displays monthly average end-to-end distribution times to forces deployed in Bosnia (left) and Kuwait (right) from January 1997 through August 2001.

As indicated by the chart on the left, not only did the monthly average end-to-end times drop sharply after the SD began, but the variability of the process was also significantly reduced. The chart on the right shows similar improvement in service to Kuwait, but adds an interesting twist. In this case, Army leaders had been so dissatisfied with the length and variability of performance that, in September 1999, they decided to contract with a commercial firm for air deliveries. This shift did result in improved service, as shown. However, leaders in SD and Central Command later decided that it would be better if Kuwait-bound cargo were once again carried by military air – but only if service and price were not harmed. Kuwait cargo reverted to military air carriers in April 2001, and the chart shows that, during the initial months after this switch,

“pushed” forward, or certain bulk commodities like fuel and food. Also, the focus to date has been on the distribution elements of the larger DoD supply chain. It does not take on the issues of supply availability or the incidence and length of backordered supplies. Also, it does not track the movement of personal cargo, such as luggage, household goods, or mail.

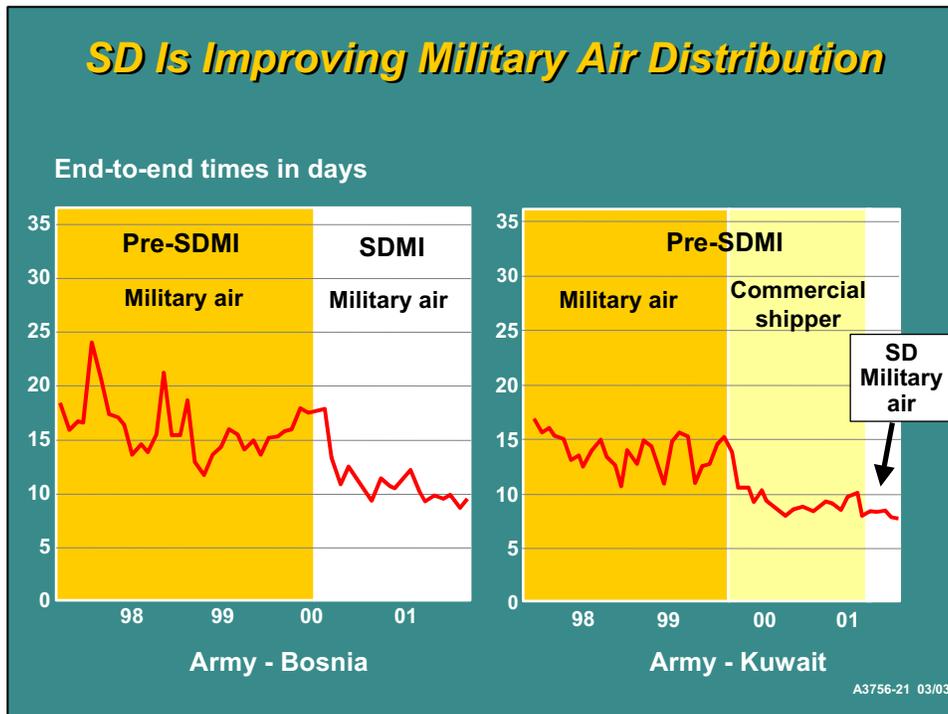


Figure S.1 – End-to-End Times for Military Air Distribution to Bosnia and Kuwait, January 1997–August 2001

military air performance matched (or slightly outperformed) that of the commercial carrier.

But then came September 11. The onset of Operation Enduring Freedom meant that virtually all military aircraft normally used in distribution were given to other missions, such as supporting deployment to and movement within the theater of operations. How well would the Defense distribution system perform its mission during wartime, in terms of both supporting deployed forces in the field and maintaining service to the worldwide customer base?

SD MET THE CHALLENGES OF OPERATION ENDURING FREEDOM

Through the strategic management of resources, the Defense distribution system was able to meet the challenges of OEF's first three months.⁵ To maintain service

⁵Combat operations began over Afghanistan on October 7, 2001, led by Air Force and Navy carrier-based bombers, and supported by Army special operations forces operating out of

to worldwide customers, commercial 747s were hired to take on routes previously flown by military aircraft, virtually all of which were removed from non-OEF service.⁶ Figure S.2 shows the impact of this move on support to the customer. The bars show the end-to-end times for the three major commands (European, Pacific, and Central) averaged together, while the darker and lighter lines in the background represent, respectively, the drop in the number of shipments carried by military air and the increase in shipments carried by commercial aircraft before and after the beginning of OEF. The consistent level of the bars demonstrates that, despite the disruptions of OEF, there was no noticeable impact on support to customers. This was the case even though the

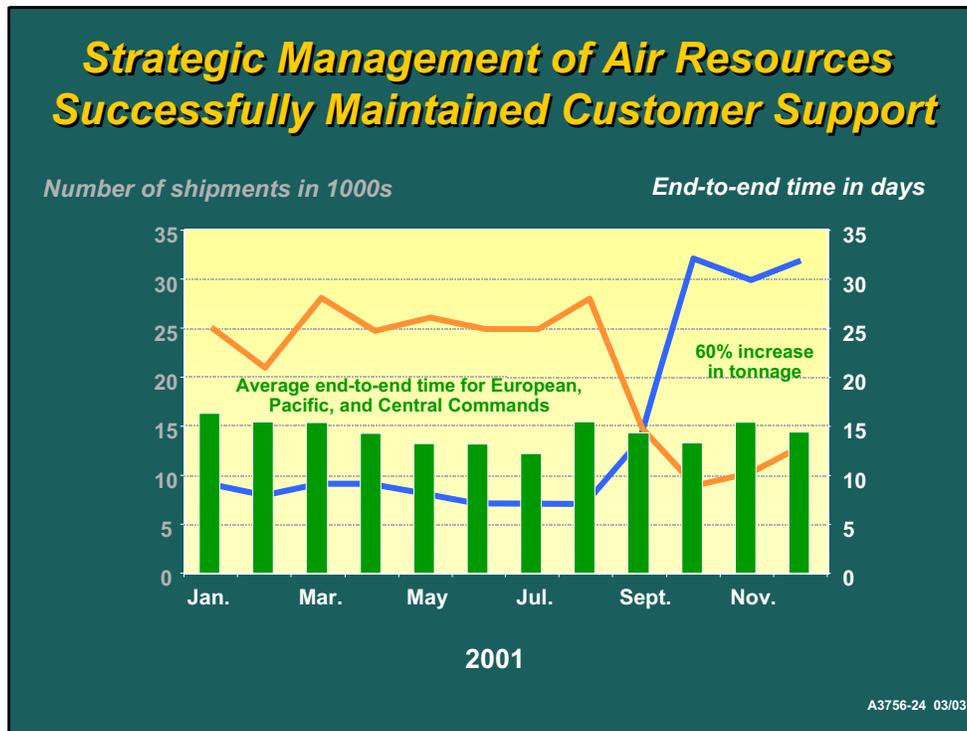


Figure S.2— Average End-to-End Times for European, Pacific, and Central Commands Before and After the Onset of OEF

Uzbekistan and elsewhere. The Taliban regime collapsed, and Kabul was liberated on November 16, 2001. This document analyzes support to forces deployed to the theater in the first three months of operation (October–December 2001). Operations continued past that period but entered a different phase, with the buildup of a more mature theater structure and more reliance on a theater distribution system. The follow-on phase of OEF operations will be analyzed in a future document that investigates strategic distribution to this more “mature phase” of OEF and the run-up to and actions during Operation Iraqi Freedom.

⁶Cargo was also diverted to surface modes when it made sense to do so.

volume of materiel carried through these channels increased by 60 percent following September 11.

To support forces engaged in OEF, TRANSCOM developed plans tailored to the specific needs of each type of force engaged in the fight. For the Air Force, the center of gravity in the first three months of OEF was Diego Garcia (in the Indian Ocean), where 18 B-1 and B-52 bombers were stationed. This small force was critical to the success of OEF; thus, the Air Force had a major need for fast and reliable movement of critical parts to keep all the bombers as operational as possible. Premium service from a commercial carrier like Worldwide Express was not an option, since there is no commercial service to Diego Garcia. Therefore, the Air Force negotiated with TRANSCOM and its Air Mobility Command about the level and speed of service needed. By synchronizing each step and bringing in commercial charters to fly routes generally flown by military aircraft between military ports, Air Mobility Command was able to achieve overall times to Diego Garcia that compared favorably to Worldwide Express performance and reduced end-to-end distribution times from 14 days to 9.

For the Navy, the main concern was to maintain at least the traditional level of support coming from the United States even as demand quadrupled with an increase in carrier battle groups in theater from one to four. Because the Navy operates within the area all the time, it has a well-developed base of operations in the Persian Gulf and was able, from the earliest moments of OEF, to apply large, sustained combat force over Afghanistan from attack aircraft launched from aircraft carriers in the Arabian Sea. The Navy's need for dependable service was answered through increased reliance on commercial charters flying within the "military air" system. And the large carrying capacity of the 747s allowed for a surge in capacity even while the level of responsiveness was maintained. Total cargo carried by commercial charters within the military air system went from 463 tons in June–August 2001 to over 2,000 tons in October–December, compared to increases from 333 to 727 tons for military aircraft.

Support for Army forces operating out of Karshi Khanabad in Uzbekistan posed a different kind of challenge. Karshi Khanabad is a bare-bones base with no history of U.S. deployments; its location was about as far as one can get from established U.S. support bases. The Army needed fast and dependable distribution to its deployed support structure, especially because its special operations forces supply activity was responsible for the needs of an unusually wide array of military units.

By relying upon the SD principles of stock positioning, schedules, and synchronization, TRANSCOM and DLA were able to provide the necessary level of support to the Uzbekistan deployment. Figure S.3 shows average end-to-end distribution time for Army forces deployed to Karshi Khanabad for the period of October–December 2001. Times, from request date to receipt, averaged about 16 days. In this case, there is no comparison of before and after, since the Army had never before deployed to Uzbekistan. But we can put these times into perspective by comparing the distribution time for Uzbekistan to times for other Army deployments that were using the Defense distribution system at roughly equivalent stages of deployment. The figure shows the times experienced by Army deployments to Kosovo, Bosnia, and Kuwait in the first months after setting up operations. Support to the Uzbekistan deployment compared favorably to the early deployment times of other Army operations – despite the much greater distance, the greater number of cargo “touches,” and channel congestion. Supplies sent to Uzbekistan required at least two transloadings, compared to one (such as to Kosovo and Bosnia) or none (to get to Kuwait). Unlike distribution during times of peace, shipments to Uzbekistan during OEF had to contend with the absence of any organic airlift capability. Finally, much

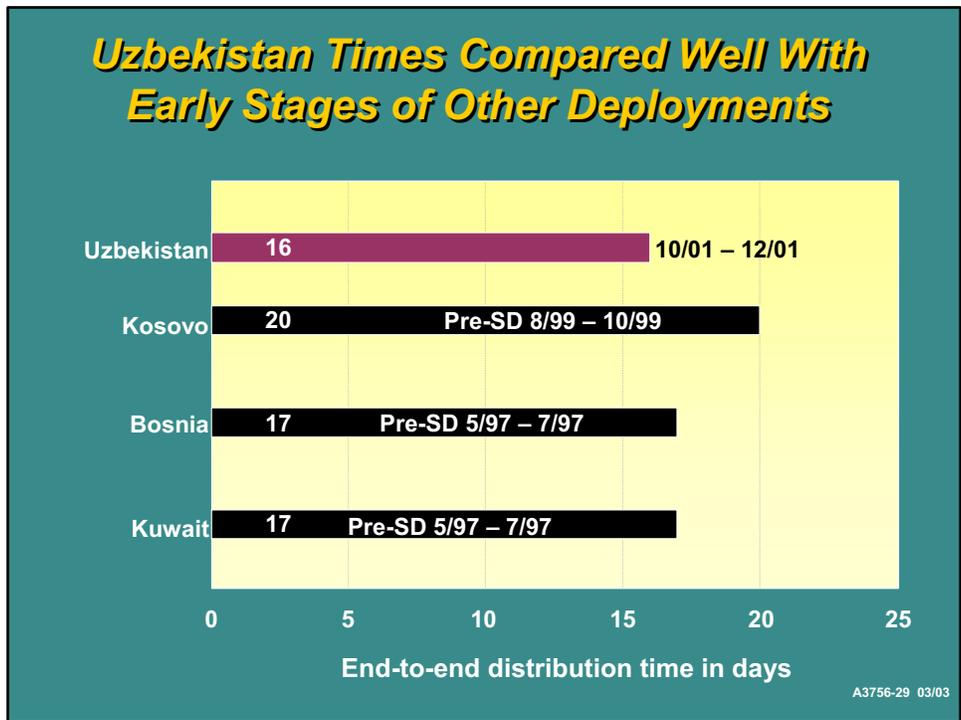


Figure S.3 – End-to-End Times for Early Stages of Uzbekistan and Other Deployments

of the beginning-to-end time to Uzbekistan was accounted for by delays in the receiving units' ability to receive and process the incoming materiel, after it had left the strategic distribution system.

AFTER THE FALL OF THE TALIBAN

Operation Enduring Freedom was only the first challenge faced by the Defense distribution system after September 11, 2001. Since then, the system has been operating at virtually peak capacity at the same time that it is trying to implement the Strategic Distribution vision. In this new world, new areas and new challenges are taking on greater prominence:

- Integrating the strategic elements of the Defense distribution system with theater processes will become more prominent.
- Developing an integrated management to control the entire distribution process will become even more critical.
- Balancing the needs for deployment and sustainment across shared resources (ports, aircraft, etc.) will become more pressing.
- Improving the quality of in-transit visibility, such as through the use of radio frequency tags, will help deployed forces to better manage their needs.
- The continued reliance on commercial sources to carry cargo from Air Mobility Command ports will necessitate clearer policies on the division of labor between organic and commercial craft and how to manage the Civil Reserve Air Fleet (CRAF).
- The fact of U.S. forces increasingly dispersed across the globe suggests the need for expanding our view of stock positioning and balancing the usefulness of U.S.-based stocks at Strategic Distribution Platforms and theater-based stocks.