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Sustainment of Army Forces in Operation Iraqi Freedom

Major Findings and Recommendations

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Summary

Although Army units always had sufficient sustainment support to accomplish their missions and execute operations as planned, during Operation Iraqi Freedom's major combat operations through the fall of Baghdad, on-hand supplies held by maneuver forces were lower than planned for all commodities except fuel. This was driven by limited theater transportation capacity. The supply of subsistence items, such as food and water, gradually improved, but spare parts support continued to be plagued by distribution problems well into stability and support operations (SASO). Moreover, for spare parts, distribution problems were compounded by national supply shortages as operations continued at a high pace into the fall of 2003 and beyond.

When the ground forces attacked on 21 March 2003, there simply were not enough cargo trucks to meet all of the demands. A confluence of factors created the situation:

- Mobilization and deployment planning produced fewer trucks than requested.
- A change in the troop support plan—to supply bottled water throughout operations rather than rely solely on "bulk" water—more than doubled the cargo truck requirement.
- *Fedayeen* attacks prevented the early, anticipated use of commercial trucking to supplement the Army's capacity.
- Trucks were used to move units to secure supply lines, an unexpected requirement.
- Road conditions were worse than reconnaissance indicated, slowing movement.
- Extremely bad weather brought convoys to a halt.

Despite this "perfect storm" of factors, units carried enough supplies across the border to weather the situation until a fairly steady flow of critical supplies could be established, although it was insufficient to establish unit or intermediate supply buffers. However, a lack of effective automation to provide situational awareness greatly limited visibility of the flow of supplies moving toward units. The resulting uncertainty increased the perceived level of supply risk on the battlefield. A related lack of mobile, non-line-of-sight (NLOS) communications equipment prevented units from

being able to use their automated systems to order parts during combat operations, further disrupting the spare parts supply chain. Unit-level spare parts inventories were not designed to have the quantities of items needed to handle the supply chain disruptions and delays, and the spares inventories in prepositioned unit sets drawn by the 3rd Infantry Division had an ineffective mix of parts, in contrast to the parts they left at home, stemming from problems with the requirements determination process for prepositioned stock.

Many distribution problems for spare parts originated in how Defense Logistics Agency (DLA)-managed distribution centers and Air Mobility Command aerial ports in the continental United States (CONUS) packaged shipments for delivery to the theater. These problems started during the force buildup in Kuwait in January and extended well into SASO. An ineffective process for communicating address codes for deployed Army units and then entering those codes into the DLA information system prevented the usual practice of consolidating small items for each brigade (and other similar-sized units) into large brigade-level boxes. Instead, many boxes initially contained items for a mix of addresses in theater, leading to delays and misshipments. Then a lack of a DLA understanding of Army distribution structures at the theater, division, and support battalion levels led to a misalignment between how shipments were consolidated on pallets in CONUS for air transport and theater distribution capabilities, leading to further delays in theater, as pallets for air cargo were generally mixed across brigades. As the SASO operating tempo exceeded expectations, another problem emerged to contribute to distribution delays: demand for spare parts outstripped the capacity of the distribution centers. It took about three-quarters of a year to gain approval for and build sufficient capacity to handle the volume and to work off the backlogs.

As SASO continued at a heavy pace into the summer of 2003 and beyond, national stock availability became an increasing problem, pushing backorders for Army-managed spare parts as high as 35 percent. War reserve requirements missed many critical items and were poorly resourced, making them of relatively little value in meeting the Army's requirement for spare parts until a production surge could "kick in." Additionally, planning guidance limited war reserve stocks to five months of combat operations, which is shorter than the lead times for many parts. Despite limited spare part war reserves, a production surge was not initiated until the second half of 2003, several months into OIF, as the result of slow requirements and funding approval. Further, the initial production surge that was eventually funded ended up being insufficient, stemming from forecasting problems and the mismatch between the actual and anticipated SASO operating pace. With long production lead times for many items, full recovery from these problems is extending into 2005. Finally, the limited national supply levels and issues with forward positioned war reserve and theater supply base planning led to what have been considered excessive air shipping

costs. Much less costly transport by ship is infeasible except when inventories are available to fill the slower surface pipeline.

We conclude that the problems with the materiel sustainment of Army units that have been exposed in OIF stem from several, cross-cutting issues:

- The lack of a joint, DoD-wide vision of how the supply chain should operate that lays out guiding principles for each node, channel, and organization.
- Within-organization policies that are not aligned with a common vision and each other as well as process design and execution problems.
- A lack of training exercises for theater startup and logistics crisis action planning, which contributes to process execution problems and makes it difficult to expose design problems.
- Deliberate planning guidance focused solely on major combat operations, contributing to underfunding of critical reserve capacity.
- Crisis action planning and resourcing that failed to protect against moderate uncertainty.
- Limited investment in logistics automation, in-transit visibility, and communication systems.
- A lack of theater distribution planning and decision-support tools.
- Organizational structures not well designed to support expeditionary deployment planning and operations.

This report examines the root causes of supply chain problems to the extent possible and offers recommendations designed to address these issues. Some of the recommendations set a "foundation" for the others based upon a linked high-level supply chain architecture:

- The newly designated Distribution Process Owner (USTRANSCOM), in concert with the Army, its sister services, and DLA, should develop and promulgate a supply chain vision articulating the complementary roles of production, inventory, and distribution, which includes transportation, movement control, transshipment operations, and shipment preparation. The first chapter of this report offers a recommended vision, with the remainder of the report focused on gaps between OIF sustainment and this vision.
- Every joint logistics organization should examine and refine its processes to ensure detailed alignment with the supply chain vision.
- Metrics, in conjunction with automated signaling systems for process monitoring and control, should be adopted to facilitate command and control efforts to maintain alignment with the vision, especially as contingencies place demand and supply "shocks" on the logistics system.

- All processes should be exercised on a periodic basis to check alignment with the vision and ensure that personnel are well-trained, especially for processes only executed during contingencies.

General recommendations that build upon this foundation include:

- Information system resourcing for logistics units needs higher priority. Non-line-of-sight, mobile communications and logistics and operational situational awareness capabilities are essential for logistics forces supporting distributed operations over extended distances.
- While differing in the nature of demands, SASO can be as or even more logistically demanding than major combat operations and need equal attention in joint sustainment planning. Deliberate planning guidance should be reviewed to assess whether the scenarios provide an adequate basis for resource planning. Within the Army, this would affect the force structure process and war reserve planning. For DLA and USTRANSCOM, this may affect the design of strategic distribution capacity. Planning for contingency operations should also include consideration of SASO requirements—what does it take to "win the peace"?
- Resourcing processes should consider uncertainty and more appropriately weigh the implications of capacity shortages, as even relatively small, quickly resolved shortfalls can have extended effects arising from the buildup of backlogs. Surprises and forecasting errors must be expected. Thus, supply and force risk assessments during planning should recognize the relatively long-term operational effects of insufficient capacity that arise from the difficulty of working off a backlog while simultaneously handling a higher level of demand, affecting decisions about how much slack or buffer capacity should be in the system. Additionally, resourcing processes must be responsive, with decisionmakers made fully cognizant of the implications of delay, and the supply chain from the industrial base to tactical distribution capability must be agile enough to respond.
- Joint and interagency training should be extended to exercise the entire logistics system as it will have to operate in wartime, from contingency planning and resourcing through redeployment. The Army and its supply chain partners should review all wartime and contingency processes from the tactical to the national level to determine which ones are not fully exercised in training, with all requisite organizations participating. The same review should determine which tasks do not have adequate doctrine and mission training plans upon which to base training.
- Planning tools and organizational structures need to better support expeditionary operations. First, to support fast-paced, frequently changing expeditionary operations, logistics system planners need effective automation to rapidly de-

termine capability requirements as operational requirements change. Second, organizational structures should be designed to enable these requirements to be easily and quickly resourced. Third, the structures and automation should support effective deployment planning.

Specifically, the report recommends that the Army:

- Redesign the methodology for developing prepositioned unit-level spare parts inventories (authorized stockage lists) to ensure that units will have an effective mix of parts to maintain readiness.
- Configure prepositioned ASL storage to support expeditionary operations. This will enable rapid deployment with immediate, sustainable employment.
- Improve the ability to change ASLs when task organization changes, which hampered support in some situations during major combat operations.
- Increase tactical inventory per item quantities to accommodate contingency demand rates and to cover a reasonable range of contingency distribution conditions, to include short disruptions and longer delivery times than experienced in garrison.
- Provide mobile, NLOS communications capability to all key logistics nodes.
- Develop and field effective and adequately distributed logistics and operational situational awareness capabilities for logistics units.
- Develop improved theater distribution planning automation.
- Practice joint theater setup planning.
- Plan for bottled water (until alternative solutions are developed that satisfy field needs) and plan for sufficient cargo trucks to meet this requirement.
- Create modular logistics organizational designs that more effectively support phased theater opening to support expeditionary operations.
- Create distribution center units to improve theater distribution setup capabilities.
- Focus forward positioned war reserve sustainment stocks on big, heavy items, and stock theater and national inventories with sufficient quantities of these items to support replenishment by sealift.
- Redesign the war reserve determination process (forward positioned and CONUS).
- Align war reserve funding with its intended role in contingency operations.
- Include SASO requirements in the war reserve determination process.
- Improve the speed and accuracy of the national-level spare parts contingency forecasting process.

- Redesign the spare parts contingency funding process to make it responsive to contingency support requirements.
- Practice (exercise) the contingency forecasting and funding processes.
- Work with DLA and USTRANSCOM and its subordinate commands to:
  - Improve unit addressing information flow and system usage.
  - Align joint load policy with Army unit capabilities.
  - Reexamine roles of aerial ports in load building to assess what materiel they should consolidate for shipment versus DLA distribution centers.
  - Increase CONUS distribution center wartime capacity expansion speed and evaluate capacity planning adequacy.
- Introduce standard consideration of uncertainty and risk management in planning processes with capabilities embedded in automated decision-support tools.

The adoption of these recommendations will better prepare the U.S. Army and the DoD more broadly to conduct future contingency operations. Some would help improve support to ongoing operations in Iraq, and many are being acted upon by the U.S. Army or are consistent with Army initiatives.