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Improving Inventory Management of Organizational Clothing and Individual Equipment at Central Issue Facilities

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Prepared for the United States Army
Approved for public release; distribution unlimited



The research described in this report was sponsored by the United States Army under Contract No. W74V8H-06-C-0001.

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Summary

More than 90 Central Issue Facilities (CIFs) located at major installations around the world issue Organizational Clothing and Individual Equipment (OCIE) to Active Component soldiers and deploying National Guard and Army Reserve soldiers. The value of OCIE inventory held at CIFs in the continental United States (CONUS) increased by 33 percent between January 2007 and August 2010. This growth was due primarily to two factors: (1) the transition to new OCIE, which necessitated supporting both old and new inventory over the transition period, and (2) an overall increase in the cost of individual OCIE items. Another factor contributing to this inventory growth is the CIF managers' focus on soldier satisfaction, emphasizing availability of OCIE for soldiers on their first visit to the CIF. Finally, the CIFs did not have a formal mechanism to signal when a CIF manager should review inventory levels, requisition items, or how much to requisition. Army logistics leaders viewed the establishment of a routinized inventory review process as a prerequisite to improving the inventory management practices at the CIFs. Therefore, RAND was asked to examine the current inventory management practices at the CIFs, develop an inventory management process, and help the Army implement it.

RAND recommended that (1) the CIFs adopt a standard, data-driven approach to help CIF managers make replenishment decisions and (2) the Army increase the use of lateral transfers across CIFs to use existing inventory rather than ordering from the wholesale system. These recommendations were adopted by the Army and are being included in the next update of Army Regulation 710-2. With the expected reductions in wholesale replenishments and increases in lateral transfers, the Army reduced its fiscal year (FY) 2011 centralized OCIE budget by \$100 million and will reduce it further in future years.

A Standard, Data-Driven Approach to Help CIF Managers Make Replenishment Decisions

CIF managers operate their CIFs in support of soldiers. OCIE materiel is issued to soldiers when they arrive at their first duty station, before deployment, and when their OCIE becomes unserviceable and needs to be exchanged. OCIE materiel is turned in by soldiers when their OCIE becomes unserviceable and before the end of their time in service. When inventory runs low, CIF managers requisition replenishments through the Central Management Office (CMO)—the Army organization that oversees inventory at the CIFs. Replenishments may be filled by orders to the wholesale distribution system through the Defense Logistics Agency (DLA) or via lateral transfers of OCIE inventory from other CIFs.

The current replenishment process is based on managers' experience and expert judgment, which is not always empirically based. Local differences in experience and expertise mean that the replenishment process is executed unevenly and typically infrequently (monthly or quarterly) across the CIFs.¹ To help CIF managers make replenishment decisions, RAND developed a data-driven algorithm and process for setting and executing inventory levels.

The Peak Issue Methodology (PIM) Algorithm Determines When and How Much Inventory to Replenish

RAND developed the PIM algorithm to determine the point at which to replenish inventories and the quantity to replenish to achieve a high level of performance. The approach uses historical issue and turn-in data to determine the breadth and depth of items stocked, i.e., what and what quantity to order. RAND also recommended increasing the requisition frequency to reduce the risk of excess inventory. Under the recommended approach, inventory levels are calculated for a centrally managed item if it has positive net issues, i.e., more issues than serviceable turn-ins, in the past year. The point at which to replenish inventories is based on the "peak net issue," i.e., the largest net issue quantity over a replenishment lead time (RLT)-day period over the past year. The quantity to replenish is an economic order quantity that trades off holding and ordering costs.

The PIM can be adapted to different types of CIFs, including mobilization and training CIFs and main and annex CIFs. The PIM takes into account relationships between new and replaced or substitutable items that are necessary to maintain high performance goals.

Pilot Test of Inventory Levels at Ft. Stewart and Ft. Drum Was Successful

A pilot test of this approach began at Ft. Stewart in August 2009 and at Ft. Drum beginning in May 2010. The pilot was successful in improving performance at CIFs. In November 2010, the approach was expanded to include 18 additional CIFs.

Replenishment requisitions are being reviewed more frequently, closer to the goal of weekly review. RAND recommended that replenishment requisitions be reviewed weekly to reduce the risk of ordering too much inventory. Before implementation of the PIM inventory levels at the end of July 2009, Ft. Stewart typically executed requisitions every 2.7 weeks.² Since the start of 2011, Ft. Stewart has been executing requisitions every 0.9 weeks.³ Note that if no replenishments are required during a given week, then it is possible to review but not execute replenishment requisitions during that week. Similarly, before implementation, Ft. Drum was

¹ The CIF manager determines monthly or quarterly whether items need to be replenished.

² Replenishment requisitions executed between December 31, 2008, and July 23, 2009.

³ Replenishment requisitions executed between January 11, 2011, and April 26, 2011.

executing replenishment requisitions every 2.4 weeks and is now executing replenishment requisitions every 1.7 weeks.⁴

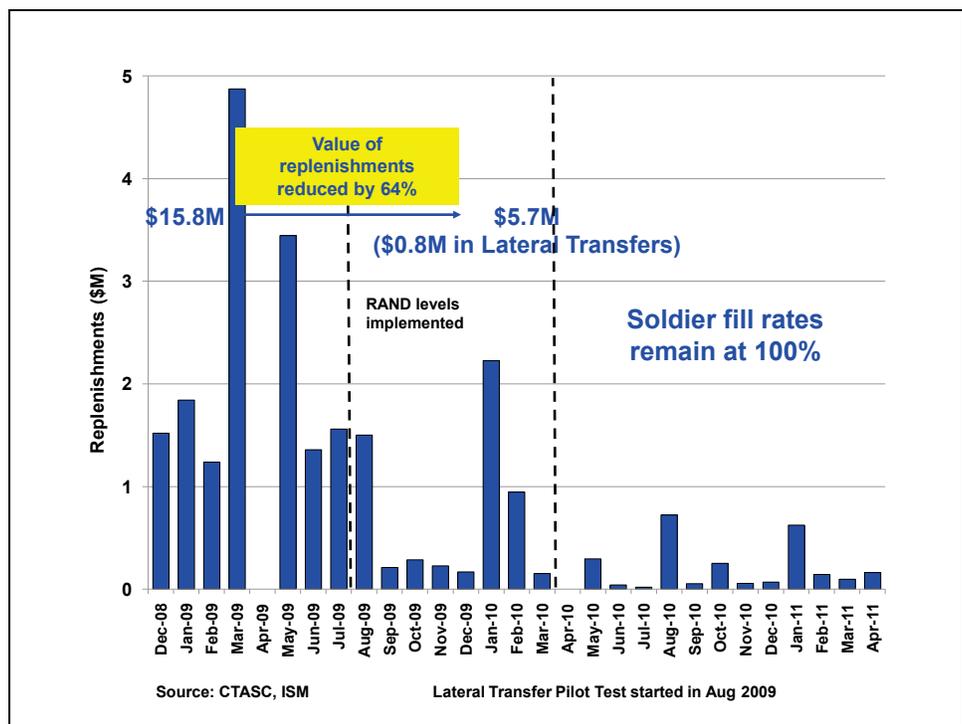
The value of replenishment requisitions decreased by as much as 64 percent. The goal of the inventory levels pilot test was to reduce the value of replenishment requisitions while maintaining high performance goals. We looked at the monthly value of replenishment requisitions at Ft. Stewart, as shown in Figure S.1.

A comparison of the eight-month period before and after inventory levels were established at Ft. Stewart shows a 64 percent reduction (\$15.8 million to \$5.7 million) in the value of replenishment requisitions. During this time, soldier fill rates remained at 100 percent.

Similarly, we found a 60 percent reduction (\$4.5 million to \$1.8 million) in the value of replenishment requisitions over the nine-month period before and after the implementation of inventory levels at Ft. Drum. During this time, soldier fill rates remained at 100 percent.

The value of authorized inventory at Ft. Stewart has started to decrease. Despite the significant reductions in the value of replenishment requisitions at Ft. Stewart, the value of overall on-hand inventory has not decreased. The fluctuations in on-hand inventory value are due

Figure S.1
Value of Replenishment Requisitions at Ft. Stewart Decreased by 64 Percent



⁴ Replenishment requisitions executed before implementation between January 20, 2009, and March 22, 2010, and after implementation between April 6, 2010, and April 27, 2011.

to two receipts of body armor, valued at \$4.5 million and \$4 million each, as well as replenishment requisitions placed before implementation of inventory levels. However, when body armor is excluded, the value of authorized items decreased by 22 percent (\$18 million to \$14 million) between August 2009 and April 2011.

Plans for Army-Wide Implementation and Increased Automation Are Under Way

In August 2010, inventory levels were set and implemented at four CIFs: Fts. Stewart, Drum, and Leonard Wood, and Hunter Army Airfield. The Army-wide implementation plan is to expand along three fronts: mobilization CIFs, training CIFs, and outside the continental United States (OCONUS) CIFs.

Increased automation, including generation of replenishment recommendations based on PIM inventory levels, and approval of replenishment recommendations under a dollar threshold, will reduce workload and lessen uncertainty in the replenishment process. In August 2011, these automated features became available in Installation Support Module (ISM), the information system used at the CIFs to track OCIE.

Increased Use of Lateral Transfers Across CIFs

RAND's second recommendation was to increase lateral transfers to make better use of existing inventory at CIFs. RAND developed a standard, data-driven approach to setting a total stockage allowance (TSA) to help make the lateral transfer decision process. An algorithm and process to set TSA levels and execute the lateral transfer decision process began testing at 22 CIFs in November 2010.

The TSA Enables Easier Identification of Inventory Available for Lateral Transfer

The purpose of TSA is to facilitate the identification of materiel available for lateral transfer between CIFs. By setting TSAs for each CIF-item combination, the CMO can easily track down potential sending CIFs with on-hand inventory that exceeds the TSA, indicating that there is materiel available for lateral transfer.

The Potential Benefits of Increasing Lateral Transfers Are Significant

RAND also estimated the costs and benefits of lateral transfers. Lateral transfer costs include transportation and the labor involved in picking, packing, and shipping the lateral transfer at the sending CIF. On the benefit side, lateral transfers reduce the holding cost of inventory at the sending CIF and can reduce the time between request and receipt, particularly for items in short supply Army-wide. A final benefit is that funds that would have been obligated on a requisition to DLA are now available for other uses.

During the pilot test, RAND, CMO, and G-4 decided to focus on executing lateral transfers of items with large inventory value, i.e., greater than \$10,000. The evaluation found that the

potential benefits of lateral transfers are significant. The total value of inventory above the TSA is \$180 million. Of this \$180 million, \$100 million is in centrally managed items (CMI) inventory and, of this \$100 million, \$47 million is in inventory that is in short supply Army-wide. This \$47 million can be leveraged immediately through lateral transfers. Within a few months of identification, CMO was able to reuse over \$100,000 of this \$47 million in inventory.

Plans Are Under Way to Implement the Approach for Increasing Lateral Transfers Widely

An algorithm and process to set TSA levels and execute the lateral transfer decision process began testing at 22 CIFs in November 2010. The Army-wide implementation plan is to expand along three fronts: (1) CONUS CIFs with inventory levels, (2) training CIFs with inventory levels, and (3) OCONUS CIFs.

In addition, increased automation can help with the lateral transfer decision process in three areas: identification of materiel available for lateral transfer, due-in tracking, and lateral transfer request coordination across CIFs. With this additional automation, potential lateral transfers will automatically be identified and prioritized and due-ins will be recorded automatically so that replenishment requisitions are not recommended erroneously over and over again. The implementation of data-based TSAs will increase the use of existing inventory, thereby increasing inventory efficiency while maintaining high performance goals. As of December 2011, these automated features became available in ISM.