

USAWC STRATEGY RESEARCH PROJECT

DISTRIBUTION: CONFIGURED LOADS AS A LOGISTICS ENABLER

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ABSTRACT

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The purpose of this paper is to define and describe the Configured Loads (CL) concept. Here is the bottom line up front: The Army should source adequate resources and systems to integrate and synchronize CLs into deployment and sustainment operations. CLs are logistics enablers. The U.S. Army has the capability and capacity to develop and execute CLs for Legacy, Interim, Force XXI, and Objective Forces. CLs should be configured at both strategic, operational, and tactical levels. What are the benefits of this concept? Answer: CLs will help minimize the handling of cargo, optimize throughput, and reduce the logistical footprint in the theater of operations.

TABLE OF CONTENTS

ABSTRACTIII

LIST OF ILLUSTRATIONS.....VII

LIST OF TABLESIX

DISTRIBUTION: CONFIGURED LOADS AS A LOGISTICS ENABLER.....1

BACKGROUND..... 2

OPERATIONAL CONCEPT FOR CONFIGURED LOADS..... 4

 MISSION CONFIGURED LOADS (MCL)..... 4

 UNIT CONFIGURED LOADS (UCL)..... 5

 CLASSES OF SUPPLY 5

CL IMPLICATIONS FOR FORCES..... 7

 LEGACY FORCES..... 7

 STRYKER BRIGADE..... 7

 FORCE XXI 8

 OBJECTIVE FORCES..... 8

 RESERVE COMPONENT (RC) FORCES 8

PROPOSED CONCEPT 9

 CAPABILITY DEVELOPMENT..... 9

 CL CONFIGURATION..... 9

 DEPLOYMENT PHASE..... 10

 SUSTAINMENT PHASE..... 11

 REQUIREMENTS 12

STRYKER Brigade Summary..... 14

Force XXI BCT Summary..... 16

Flatracks 16

RELATIONSHIP TO OTHER ENABLERS AND IMPLEMENTATION IMPACT..... 19

 NEW BUSINESS PROCESSES..... 19

INFORMATION SYSTEMS AND DOCTRINE	21
CONCLUSION.....	22
ENDNOTES.....	25
BIBLIOGRAPHY	27

LIST OF ILLUSTRATIONS

FIGURE 1: ARMY TRANSFORMATION.....	2
FIGURE 2: CONTAINER ROLL-IN/OUT PLATFORM (CROP).....	4
FIGURE 3: CONFIGURED LOADS CONCEPT OF OPERATIONS DEPLOYMENT PHASE..	10
FIGURE 4: CONFIGURED LOADS CONCEPT OF OPERATIONS SUSTAINMENT PHASE.	11
FIGURE 5: STRYKER BRIGADE CUMULATIVE FLATRACK REQUIREMENTS.....	14
FIGURE 6: FORCE XXI BCT CUMULATIVE FLATRACK REQUIREMENTS.....	16
FIGURE 7: HEMTT-LHS WITH PLS TRAILER.	17
FIGURE 8: PLS	18
FIGURE 9: PLS WITH CONTAINER HANDLING UNIT (CHU).....	18

LIST OF TABLES

TABLE 1: INTERIM FORCE DAILY SUSTAINMENT REQUIREMENTS.....	12
TABLE 2: STRYKER BRIGADE SUSTAINMENT AND FLATRACK REQUIREMENTS.....	13
TABLE 3: FORCE XXI BCT SUSTAINMENT AND FLATRACK REQUIREMENTS.....	15

DISTRIBUTION: CONFIGURED LOADS AS A LOGISTICS ENABLER

This paper examines the Configured Load (CL) concept for current and future Army combat service support (CSS) efforts. The purpose of this paper is to identify a feasible and practical CL concept and identify requirements for institutionalizing and implementing them. CLs, consistent with emerging combat service support/combat support (CSS/CS) doctrine, are essential to mission support and require prompt Army action for institutionalizing and implementing them.

“A CL is defined as a preplanned load of supplies built to an anticipated or actual need, intended for maximum throughput and delivery to user units. The loads may be built as a specific mission configured load (MCL) or as a specific unit configured load (UCL).”¹ The CL concept objective is to minimize logistics requirements for forward storage and unnecessary handling, while maximizing throughput and delivery to user units. CLs will fuse information by utilizing logistics technologies to provide rapid crisis response, track and shift assets while enroute and deliver tailored sustainment packages directly to operational and tactical levels of operation.

The CL distribution concept envisions more efficient and effective support to deployed and early deploying legacy, interim and objective forces while reducing the overall battlefield logistics footprint. The CL concept is rooted in current and emerging logistics doctrine, training, leader development, organization, materiel and soldiers (DTLOMS) concepts and on-going major initiatives. The CL concept is a key enabler to the army transformation campaign plan (ATCP) that offers a feasible and practical alternative to the labor intensive, redundant, inventory-based system now in use.

The CL concept must take into consideration emerging concepts and programs such as Single Stock Fund (SSF) and Velocity Management (VM). When institutionalized, CLs will be an integral part of Distribution-Based Logistics (DBL) and Supply Chain Management (SCM) processes. The following sections provide background, outline CL operational concepts, examine supply functions and equipment to make CLs viable, and illustrate how CLs will serve as strategic enablers for our future warfighting forces.

BACKGROUND

Joint Vision 2010 is the Department of Defense (DOD) template for the evolution of America's armed forces into the post-cold-war future. It provides guidance for leveraging capabilities of people and technology to achieve new levels of effectiveness in joint warfighting. By infusing technology into our legacy forces to achieve information superiority, the traditional functions of maneuver, strike, protection and logistics form a framework for new operational concepts. "The goal of achieving full spectrum dominance over any potential adversary is attained through the new operational tenets of dominant maneuver, precision engagement, full-dimensional protection and focused logistics."²

Army Vision 2010 is a reflection of the Army Chief of Staff's vision to change the Army from its current cold-war configuration into an Objective Force that will accomplish the Army's mission in the new, non-polar, operating environment. "It also serves as the blueprint for the Army's contributions to the operational concepts identified in DOD's Joint Vision 2010."³ The premise of Army Vision 2010 is that the significance of land power, as the force of decision, will continue to rise. Land forces constitute the majority of military forces throughout the world and provide the most flexible and versatile capabilities to meet Combatant Commanders force requirements. This is especially true at the lower and middle portions of the spectrum of conflict where the majority of operations are expected to occur over the near and mid term.

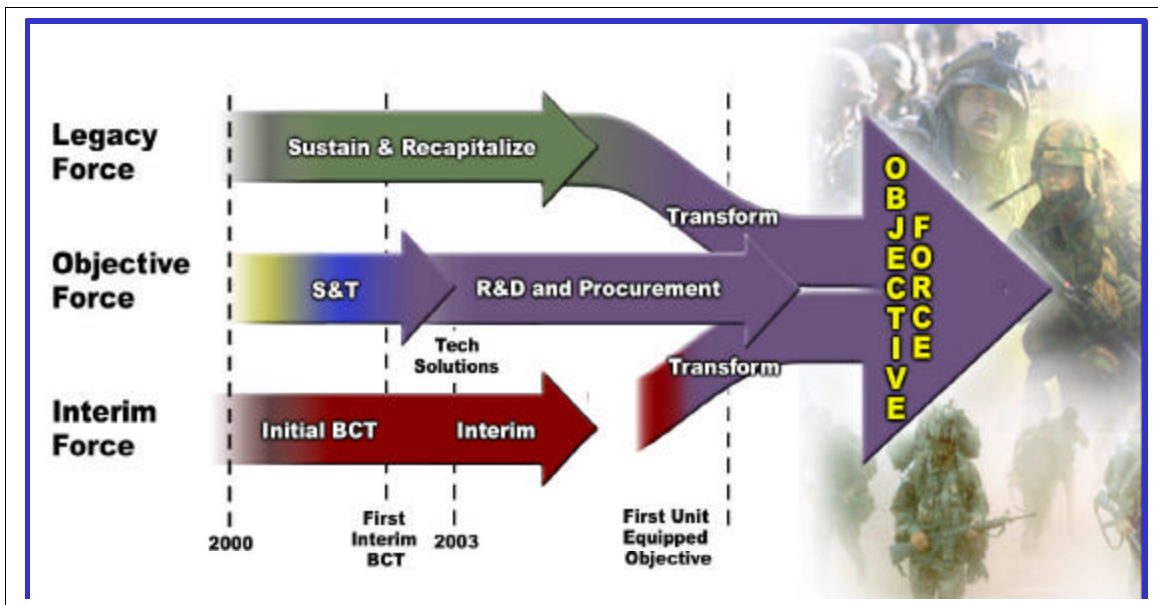


FIGURE 1: ARMY TRANSFORMATION

In order to achieve the strategic mobility, agility, and lethality goals in its vision, the Army has developed an Army Transformation Campaign Plan (ATCP), which is being executed in three phases: Initial Brigade Combat Teams (BCT), Interim Force, and Objective Force (Figure 1). The Initial BCT consists of two initial STRYKER Brigades with commercial off-the-shelf and borrowed equipment. “The Interim Force is a transitional force that will consist of STRYKER Brigades, the Force XXI, and the remaining legacy forces. The Objective Force achieves the transformation objectives through a common design applied throughout the entire Army.”⁴ The strategic mobility goals for the objective force include deploying a brigade anywhere in the world within 96 hours, deploying a division anywhere in the world within 120 hours, and deploying five divisions anywhere in the world within 30 days.

The Army has adopted a systemic approach, embodied in the ATCP, as a means of achieving transformation goals. The plan identifies fourteen lines of operations (LO) focused along four operational axes: trained and ready; transforming the operational forces; transforming the institutional forces; and supporting lines of operations. The Army G4 has been assigned responsibility for LO 9: deploying/sustaining the force. Additionally, the Army Chief of Staff has mandated a G4 Charter to: enhance strategic responsiveness to meet the deployment timelines of the ATCP; reduce the CS and CSS footprint in the combat zone; and reduce the total cost of logistics without reducing or compromising readiness or warfighting capability.

Just as the transformation of the Army to achieve the Army vision is being mapped by means of the ATCP, the transformation of the Army’s logistics system to achieve the Army Logistics vision is embodied in the Army Logistics Transformation Strategy outlined in the Army Strategic Logistics Plan (ASLP). The Army logistics vision foresees continuing requirements for land forces operating in joint, combined and multinational formations in simultaneous missions across the operational spectrum. According to the ASLP, “these missions will range from humanitarian assistance and disaster relief, stability and support operations through major theater warfare.”⁵ The cornerstone of the logistics transformation is the conversion of the support concept from a supply and inventory-based logistics system to a distribution based logistics (DBL) system enabled by a number of logistics initiatives that will significantly change deployment and sustainment processes. CLs are one of the initiatives that will contribute to the creation of a streamlined supply pipeline that minimizes the handling of supplies while maximizing throughput to the battlefield.

OPERATIONAL CONCEPT FOR CONFIGURED LOADS

CLs are logistics enablers for force deployment and sustainment operations. They will help units deploy and sustain themselves more efficiently. CLs are designed to provide the warfighter the right stuff at the right place and just as importantly, in a configuration that facilitates its use. According to the Army G-4 Office, an Integrated Product Team (IPT) that was formed in 2001 assessed that CLs may be used to satisfy mission load and unit load requirements, but “no set of standard definitions existed.”⁶ The following are standard definitions of mission load and unit load resulting from the IPT assessment:

A CL is defined as a preplanned load of supplies built to an anticipated or actual need, intended for maximum throughput and delivery to user units. The loads may be built as a specific Mission Configured Load (MCL), a pre-planned load of supplies built for a specific mission or used for a specific purpose, or as a particular Unit Configured Load (UCL) built by any support activity, for anticipated and known requirements and used to fill specific unit needs.⁷

MISSION CONFIGURED LOADS (MCL)

MCLs should be built in a theater of operations for a specific mission, such as emergency resupply. A MCL will normally be configured using resources (personnel, equipment and supplies) found in a corps or theater distribution hub. A MCL may also be configured from retrograded materiel not consumed from a previously distributed CL. According to the U.S. Army Materiel Systems Analysis Activity (AMSAA) Technical Report No. TR-678, /MCL Feasibility Study, CLs are mission packages designed to provide sustainment, including ammo, to the end user with little or no reconfiguration required. CLs are configured on a Container Roll-in/out Platform (Figure 2), loaded in a 20' International Standards Organization (ISO) container and shipped to the theater. “Designed to minimize handling and expedite transportation, a CL can be extracted from the container in-theater using the Palletized Loading System (PLS) and transported directly to the end user.”⁸



FIGURE 2: CONTAINER ROLL-IN/OUT PLATFORM (CROP)

UNIT CONFIGURED LOADS (UCL)

UCLs should be built in response to actual requisitions or for materiel needed to satisfy immediate requirements such as Class IX for a Combat Repair Team (CRT) or Class I for a Forward Support Company (FSC) to prepare meals. These loads could be built in corps forward distribution hubs for direct delivery to consuming units. Typically, a UCL will form the basis of a scheduled delivery of a Logistics Package (LOGPAC) that may consist of a combination of MCLs, UCLs, bulk fuel, and water. UCLs can be comprised of multiple commodities in order to minimize handling and the number of flatracks needed to support using units. They also help reduce the logistics footprint.

CLASSES OF SUPPLY

CLs are designed to improve the distribution system. They provide the warfighter the right stuff at the right place, at the right time, and just as importantly, in a configuration that facilitates its use. They are applicable for several classes of supplies, and may be either MCLs or UCLs for single or mixed commodities, as explained with exceptions below:

- Class I. CL requirements for Class I are computed based almost entirely on personnel strength and an approved feeding plan, influenced by the availability of fresh products. Class I CLs may contain Meals Ready to Eat (MRE) and/or Unitized Group Rations (UGR) and bottled water. They can be built and stored in accordance with the warfighter's contingency plans with subsequent CLs built in accordance with the operational situation and command desires.
- Class II. CLs for this class of supply would consist of a pre-determined amount of replacement uniform items, sun, wind and dust goggles, administrative and housekeeping supplies, tents, and chemical defense equipment.
- Class III. CLs for these items of supply would consist of petroleum, oils, and lubricants required to maintain vehicles and power generation equipment..
- Class IV. These CLs would consist of fortification, obstacle and barrier materiel, and could be built using a modular approach based on the use of pre-determined kits. Each load could contain a force protection kit containing the components (wire, pickets, etc.) required to construct, triple-strand concertina wire, and components (plywood, 4X4's, etc.) to build. The Optimum Stockage Requirements Analysis Program (OSRAP) model, which has the ability to determine the exact NSN level of content of the 21 most common construction tasks and the top 12 barrier and fortification mission requirements, could be used to define these CLs.

- Class V. The CL concept for this class of supply already has been accepted and documented in the U.S. Army Materiel System Analysis Activity (AMSAA) Technical Report that suggests the optimum locations to assemble loads would be the CONUS depots and ammunition plants. “They possess the requisite capabilities, measured in terms of infrastructure, manpower, container/materiel handling equipment and access to transportation and distribution nodes.”⁹ Additionally, substantial progress has been made in the development, assembly and storage of ammunition CLs aboard container ships in the Army’s Prepositioned Stocks (APS-3) program. Class V CLs could contain small arms and main gun ammunition, mines, grenades, explosives, detonators, fuses, missiles and artillery rounds as individual components or in complete round configuration.
- Classes VI. The CL concept has limited applicability for class VI. “Health and comfort packs” will be distributed to the user with Class I. Class VI items would normally be shipped to maximize utilization of transportation assets rather than to facilitate throughput.
- Class VII. The CL concept has limited applicability for Class VII. This class of supply normally will be issued as required and command-directed, not as routine re-supply.
- Class VIII. CL components for this class of supply could consist of pharmaceutical medical set replacement components and components for unit first aid and combat medic kits. As MCLs, they can provide modules for reconstitution of medical logistics units and emergency delivery of class VIII supplies. Class VIII items can be configured separately and linked up with other CL commodities in the area of operations.
- Class IX. Accurately designing loads consisting of Class IX components for company level STRYKER Brigade customers is a complex task. The reason for this is, to date, the new maintenance philosophy has not been translated into doctrine delineating maintenance task responsibilities within the STRYKER Brigade. Additionally, the difficulty in predicting maintenance failures, low equipment densities and the changing OPTEMPO adds to the complexity of the task.
- Class X. The CL concept is not broadly applicable to Class X because of uniqueness of requirements. But, there may be some application during Humanitarian Assistance Operations.

CL IMPLICATIONS FOR FORCES

LEGACY FORCES.

The CL concept is definitely applicable to Legacy Forces, but with trade-offs relating to flexibility and risks. In the XVIII Airborne Corps, an extensive amount of re-supply is expected to come in the form of pre-configured packages. These loads are built by division or corps logistics personnel, initially at the installation by garrison personnel or contractors until the in-theater support force is established. At present, the only loads that actually exist at Fort Bragg consist of the unit basic load of ammunition for one rapid deployment brigade. They are built on 463L pallets and rigged for parachute drop, placed on PLS flat racks and stored at the installation ammunition transfer point. Additional loads are planned for classes of supply: I, II, III (P), IV, V, IX and blood and water.

The structure of heavy Legacy Forces includes sufficient materiel handling equipment and adequate transportation assets to receive, reconfigure and distribute break-bulk and containerized shipments designed to maximize the capabilities of the distribution system, and thereby minimize materiel shortages. The implementation of CLs provides an alternative to the deployment of some Legacy Force logistics assets into the combat zone, resulting in a reduced logistics footprint and a corresponding reduction in consumption. However, this will also be reflected in reduced logistics capabilities and associated flexibility because of more dependence on cargo carrying assets.

STRYKER BRIGADE

The force structure and equipment allowances of these organizations were predicated on the use of logistics initiatives, such as CLs, to help meet the 96 hour deployment and support timelines. "As written, the STRYKER Brigade O&O concept for support specifically states that all initial and subsequent re-supply support of brigade units will be in the form of CLs delivered as far forward as possible."¹⁰ The CSS force structure of the STRYKER Brigade represents a dynamic, streamlined approach and depends on throughput of CLs. Considering that organic transportation and materiel handling equipment in the STRYKER Brigade is limited to Heavy Extended Mobility Tactical Truck – Load Handling System (HEMTT-LHS) trucks with PLS trailers (see figure 7, page 17) and 10,000 pound variable reach rough terrain fork lifts, the distribution system must provide supplies in a form compatible with the equipment available in the brigade area of operations. As such, during the initial stages of a deployment, the STRYKER Brigade may represent the most difficult scenario for Army CLs, and any CL concept developed for the total Army must be capable of sustaining STRYKER Brigade forces.

FORCE XXI

Because the plan for Force XXI includes augmentation support for Brigade Combat Teams (BCTs), they will have limited organic transportation assets. CLs could be critical to the BCT success during the early days of deployments and before the full capabilities of the division support organization will be deployed, if they will be deployed. "Within Force XXI, the goal is to minimize materiel handling, trans-loading and storage requirements to improve velocity throughout the pipeline."¹¹ Supplies and materiel will not be stocked in massive amounts. Inventory will move through the logistics pipeline IAW time-definite delivery (TDD) standards. Stockage levels will be measured in operational terms, not hours or days of supply.

OBJECTIVE FORCES

"The CL concept could be an enabler to facilitate the deployment and sustainment of the Objective Force within the timelines contained in the ATCP."¹² The discussions above relating to the STRYKER Brigade and Force XXI unit are also applicable to the Objective Force. Additionally, as the science, technology, and R&D investments inherent in the Army's transformation effort begin to bear fruit in the form of reduced consumption and failure rates, as well as increased lethality of weapons systems and munitions, CLs have the potential to evolve into the Army's primary distribution alternative. The CL concept will enable elements of the Objective Force to be employed, over operational distances and in tactical conditions that require commanders to reach back, forward and lateral for sustainment.

RESERVE COMPONENT (RC) FORCES

The CL concept could support RC units. As RC units mobilize to support operations, their initial deployment and sustainment consumption rates must be considered in the overall operational plan. Pre-planned coordination at supporting installations must occur. However, the relationship linking units to their installation DOL does not necessarily exist for RC units, and suitable deployment and sustainment support will need to be established. This would include alerting prime vendors, national providers and implementing an integrated logistics system to support the development and execution of CLs. According to emerging doctrine, the Director of Logistics (DOL) will have a significant role in deploying and initially supporting units, particularly as it relates to the building, storing and shipping of CLs.

PROPOSED CONCEPT

The following section provides a review of emerging doctrine for STRYKER Brigade and Force XXI operations. Although these emerging doctrines are being reviewed, they provide the way ahead for the implementation of this concept.

CAPABILITY DEVELOPMENT

FORSCOM, in conjunction with national providers, must determine and institutionalize the content of a number of standard CLs. Standard CLs should include mixed loads, where applicable, scaled to accommodate the lifting capabilities of the using units. HEMTT-LHS is the primary lifting and organic transportation assets of the STRYKER BDE. But because of the limitation of the lifting arm, 11 short tons (ST) of cargo, the HEMTT- LHS defines the cargo weight limit of CLs for STRYKER Brigades. For Force XXI the situation is different. The Palletized Loading System (PLS) represents the primary lifting and transportation assets of the Force XXI units and is capable of lifting 16 ST. Institutionalization includes the cataloging of these standard CLs to provide for the requisitioning of the CL content collectively or as individual components.

CL CONFIGURATION

Once CLs are institutionalized and business processes clarified, CLs can be built and stored in anticipation of a crisis. "At the installation level, the using unit assisted by the DOL could build CLs equivalent to seven days of supply on flatracks for storage by the DOL. These responsibilities could be accomplished by a dedicated/direct support depot, or contractors as well as the DOL."¹³ Seven days of supply (DOS) is the basic load requirement for interim and objective forces. Seven DOS would consist of three DOS to accompany the unit upon deployment on D-Day, and four DOS of sustainment supplies to be shipped by the supporting organization to arrive in the combat zone, beginning on D+2.

In accordance with the ATCP, the deployment of a STRYKER Brigade is envisioned as being executed over a 96-hour period. The first units to deploy would have one DOS remaining from their UBL at the end of D+2. At the same time, national providers would begin building the number of CLs on flatracks for storage that would enable them to provide an uninterrupted flow of CLs into the combat zone with initial CLs arriving NLT D+7. Although

there will be some cross-leveling of supplies between units, the first deploying unit would, theoretically, be consuming the last of their supplies at this time. CLs could be built and stored at provider facilities, at a consolidated assembly and storage site, assembled, and shipped to a consolidated storage or some combination there of to ensure responsive support. Additionally, national providers may agree to use regional OCONUS assembly and or storage sites.

Loads could be built as either MCLs or UCLs depending on location and requirements. National providers, installations, and depots could build either UCLs or MCLs, depending on the scope of operations, and could include either single or mixed commodities. Flatracks would be positioned at CL assembly sites by the organization responsible for flatrack management. Sufficient flatracks must be dedicated to assure an uninterrupted flow of CLs until D+30, when sealift sustainment is assumed available. All flatracks and containers used for CLs should be equipped with automatic identification technology (AIT) capability, such as RF tags and automated manifest cards, in order to facilitate asset visibility.

DEPLOYMENT PHASE

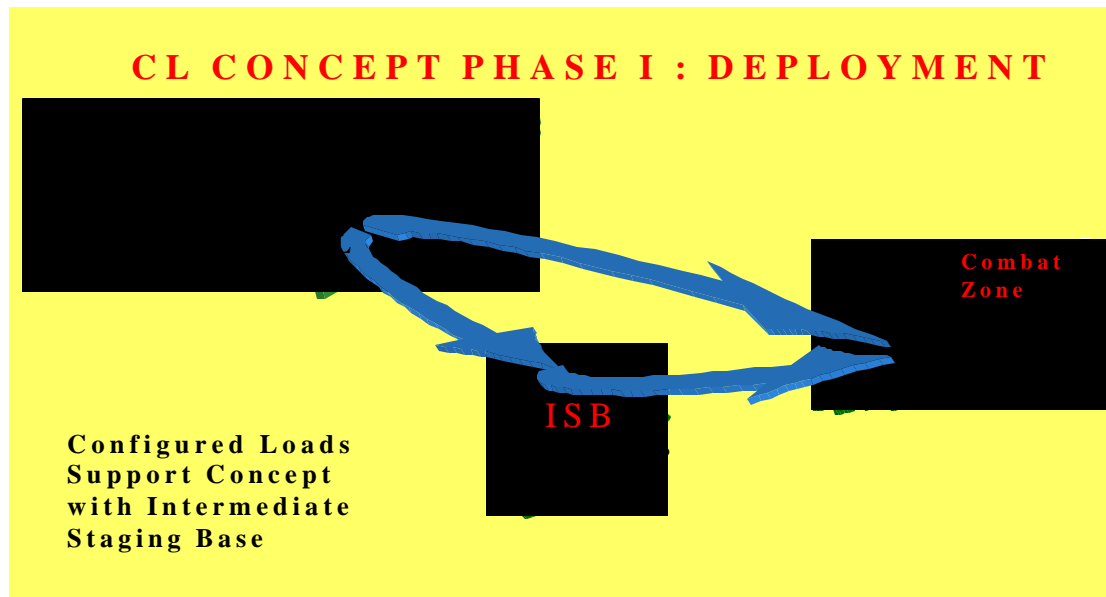


FIGURE 3: CONFIGURED LOADS CONCEPT OF OPERATIONS DEPLOYMENT PHASE¹⁴

As indicated in Figure 3, a unit would deploy by air directly into the combat zone, or through an ISB on D-Day accompanied by its UBL of three DOS. If the ISB is contiguous to the combat zone, the unit could move to the combat zone via ground convoys. If the ISB is not contiguous, units will move to the combat zone via strategic and tactical airlift, as appropriate.

On D+2 the unit would begin receiving shipments containing four DOS from its installation DOL or direct support depot, either directly or through the ISB. The unit will begin receiving CLs from the national providers NLT D+7 via Air Lines Of Communication (ALOC). Additional sustainment stocks will be available in some theaters in the form of pre-positioned stocks, and it is assumed that Army Prepositioned Ships (APS-3) will be available about D+7 to supplement/offset national provider sustainment. As sustainment supplies begin arriving by sealift on D+30, some could be configured as CLs to facilitate throughput to units.

SUSTAINMENT PHASE

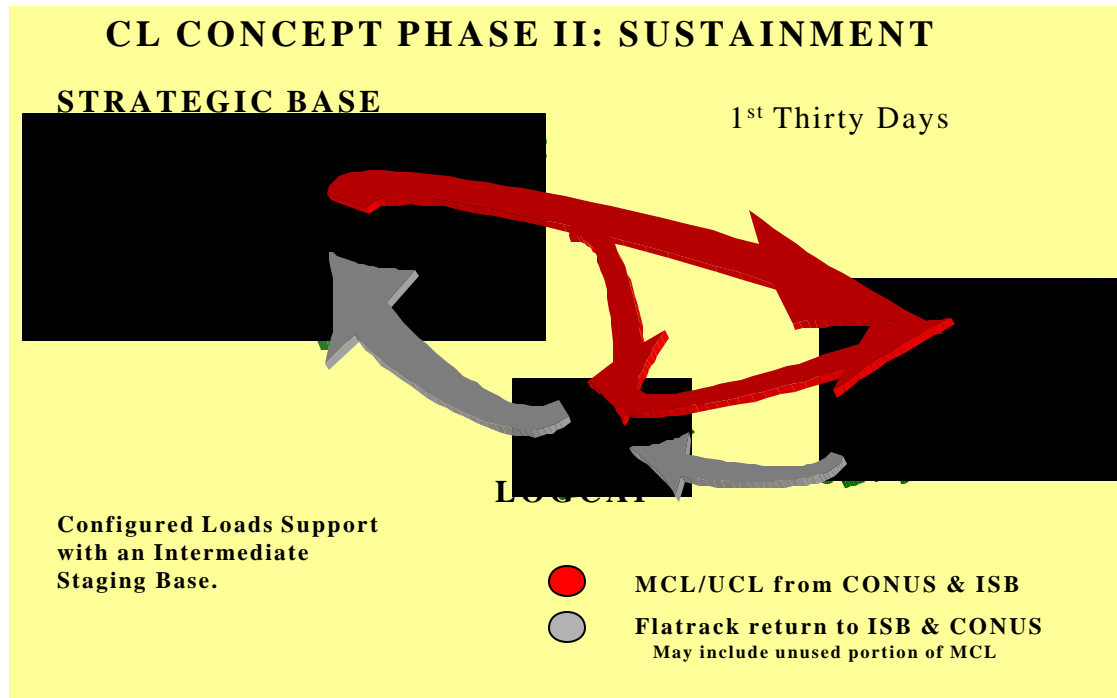


FIGURE 4: CONFIGURED LOADS CONCEPT OF OPERATIONS SUSTAINMENT PHASE¹⁵

As depicted in Figure 4, CLs arrive in the combat zone, either directly or via an ISB. They are throughput as far forward as possible. After flatracks of CLs are unloaded, they must be retrograded to the distribution system. Flatracks could be returned to CONUS for use by national providers, transferred to an ISB and used to configure breakbulk into CLs or reconfigure MCLs into UCLs.

When Corp support elements arrive, retrograded flatracks could be used to configure supplies as described above for ISB. If necessary, MCLs could be reconfigured into mission or unit configured loads by theater or corps support units for delivery to the final user. Unused components of MCLs, once retrograded from the unit locations, could later be used to build other UCLs or MCLs. Initially, the most likely use for MCLs will be to support the theater or corps ammunition points where complete configured loads of class V can be pre-assembled for specific missions in advance of actual operations. But, MCLs could be built for any class of supply.

REQUIREMENTS

Determining the sustainment requirements for the STRYKER Brigade and Interim Division (IDIV) is an evolutionary process where consumption estimates are continually being refined as data becomes available from industry, Program Managers and Battle Labs. Recognizing that at this point in the transformation, all planning factors are fluid and represent a best current effort, this concept uses the latest TRAC-Lee STRYKER Brigade and Force XXI/Interim Division (Force XXI BCT). Planning factors as of 1 May 2001 are reflected in the table below.

Daily Sustainment Requirements (In Short Tons)				
	STRYKER BDE	Force XXI BCT		
Dry Cargo	20.1	33.5		
Class V	5	55.5		
Water	52	85		
Mail	2.3	2.5		
Total	79 ST	176.5 ST		

TABLE 1: INTERIM FORCE DAILY SUSTAINMENT REQUIREMENTS¹⁶

Using the TRAC-LEE consumption factors along with the weight limitations of 11 ST and 16 ST for the STRYKER Brigade and Force XXI BCT, respectively, the minimum daily and total supply and flatrack requirements can be calculated for both the DOL and National Providers (NP) to support each unit over a D-Day to D+30 timeframe. Tables 2 and 3 outline sustainment and flatrack requirements for the STRYKER Brigade and Force XXI BCT respectively. Additionally, Figures 5 and 6 provide DOL, NP, and cumulative (CUM) flatrack requirements for the STRYKER Brigade and Force XXI BCT, respectively, for the same period of time.

STRYKER Brigade Sustainment and Flatrack Requirements

Timeline	DOL	Sustainment in Short Tons		Number of Flatracks	
		NP	CUM	Flatracks	CUM #
D-Day	79		79	7	7
D+1	79		158	7	14
D+2	79		237	7	21
D+3	79		316	7	28
D+4	79		395	7	35
D+5	79		474	7	42
D+6	79		553	7	49
D+7		79	632	7	56
D+8		79	711	7	63
D+9		79	790	7	70
D+10		79	869	7	77
D+11		79	948	7	84
D+12		79	1027	7	91
D+13		79	1106	7	98
D+14		79	1185	7	105
D+15		79	1264	7	112
D+16		79	1343	7	119
D+17		79	1422	7	126
D+18		79	1501	7	133
D+19		79	1580	7	140
D+20		79	1659	7	147
D+21		79	1738	7	154
D+22		79	1817	7	161
D+23		79	1896	7	168
D+24		79	1975	7	175
D+25		79	2054	7	182
D+26		79	2133	7	189
D+27		79	2212	7	196
D+28		79	2291	7	203
D+29		79	2370	7	210
D+30		79	2449	7	217
Total	553 ST	1896 ST	2449 ST	217	217

TABLE 2: STRYKER BRIGADE SUSTAINMENT AND FLATRACK REQUIREMENTS¹⁷

STRYKER BDE Flatrack Requirements

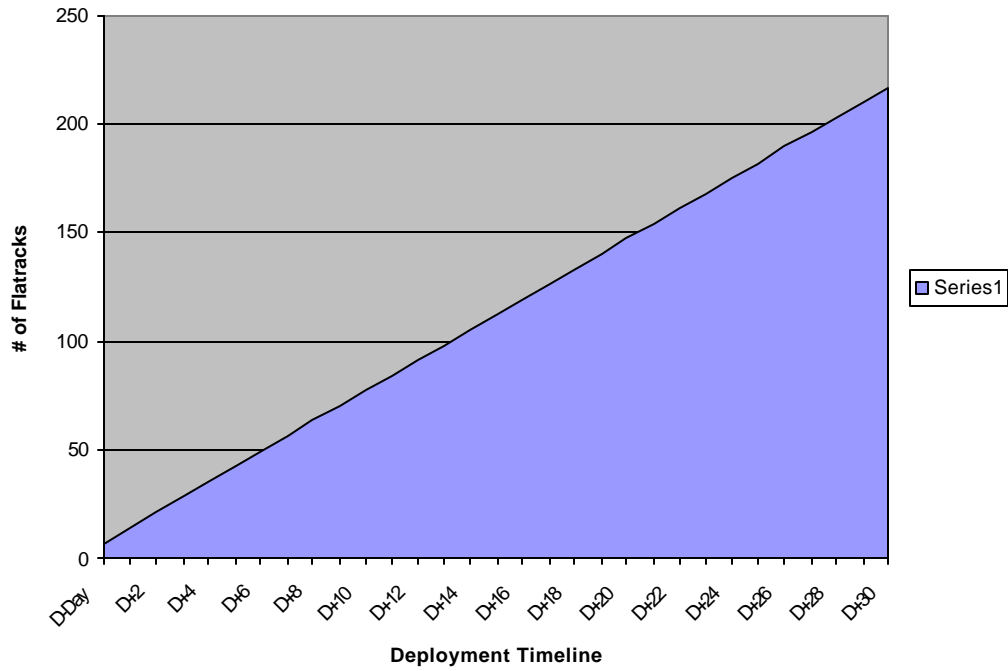


FIGURE 5: STRYKER BRIGADE CUMULATIVE FLATRACK REQUIREMENTS¹⁸

STRYKER Brigade Summary

Installations would be required to store a minimum of 553 ST of supplies on 49 flatracks to support the deployment of each STRYKER Brigade. The National Providers would be required to use a minimum of 168 flatracks to build and ship CLs containing 1896 ST of supplies for the period D+7 to D+30.

Force XXI BCT Sustainment & Flatrack Requirements

Timeline	Sustainment in Short Tons			Number of Flatracks	
	DOL	NP	CUM	Flatracks	CUM
D-Day	176.5		176.5	11	11
D+1	176.5		176.5	11	22
D+2	176.5		176.5	11	33
D+3	176.5		176.5	11	44
D+4	176.5		176.5	11	55
D+5	176.5		176.5	11	66
D+6	176.5		176.5	11	77
D+7		176.5	176.5	11	88
D+8		176.5	176.5	11	99
D+9		176.5	176.5	11	110
D+10		176.5	176.5	11	121
D+11		176.5	176.5	11	132
D+12		176.5	176.5	11	143
D+13		176.5	176.5	11	154
D+14		176.5	176.5	11	165
D+15		176.5	176.5	11	176
D+16		176.5	176.5	11	187
D+17		176.5	176.5	11	198
D+18		176.5	176.5	11	209
D+19		176.5	176.5	11	220
D+20		176.5	176.5	11	231
D+21		176.5	176.5	11	242
D+22		176.5	176.5	11	253
D+23		176.5	176.5	11	264
D+24		176.5	176.5	11	275
D+25		176.5	176.5	11	286
D+26		176.5	176.5	11	297
D+27		176.5	176.5	11	308
D+28		176.5	176.5	11	319
D+29		176.5	176.5	11	330
D+30		176.5	176.5	11	341
Total	1235.5	4236	5471.5	341	341

TABLE 3: FORCE XXI BCT SUSTAINMENT AND FLATRACK REQUIREMENTS¹⁹

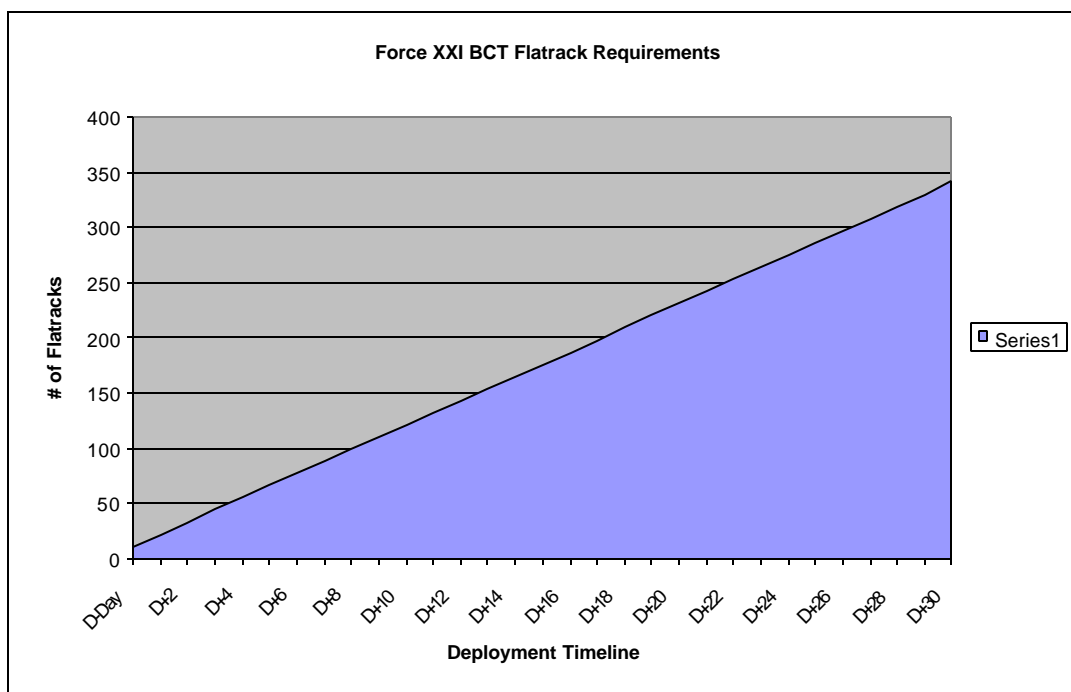


FIGURE 6: FORCE XXI BCT CUMULATIVE FLATRACK REQUIREMENTS²⁰

Force XXI BCT Summary

Installations would be required to store a minimum of 1235.5 ST of supplies on 77 flatracks to support the deployment of each Force XXI BCT. The National Providers would be required to use a minimum of 264 flatracks to build and ship CLs containing 4236 ST of supplies for the period D+7 to D+30.

Flatracks

The current inventory is adequate for known CL requirements. The CL concept is dependent upon, and compatible, with all flatracks currently in the Army inventory. Flatracks equipped with RF-tags, or some other AIT device for intransit visibility form the foundation of the CL concept. Their availability, is critical to the successful implementation of the concept. The following is a description of what is in the current inventory:

- “M1077 Flatrack is compatible with HEMTT-LHS and PLS and capable of carrying a 20’ ISO container. At the time of the AMSAA Technical Report, there were approximately 10,000 in the inventory.”²¹ The M3/M3A1 (CROP) flatrack will replace the M1077.

- “The M1 Flatrack is compatible with HEMTT-LHS and PLS. There were approximately 5,000 in inventory at the time of AMSAA report.”²² The M3/M3A1 (CROP) flatrack will replace the M1.
- “M3/M3A1 (CROP) Flatrack M3/3A1 is HEMTT-LHS and PLS compatible and is capable of being secured inside a standard 20’ ISO container. There are approximately 12,400 currently in the inventory, but most are dedicated to class V with approximately 3,300 committed to the conversion of APS-3 ammunition stocks. M3/M3A1 flatracks are limited to 16.5 short tons of cargo, regardless of MHE.”²³ Materiel may be secured on a M3/M3A1 flatrack and placed in a 20’ container and placed on a M1077 flatrack for shipment. However, the Defense Logistics Agency (DLA) uses 40’ containers for shipment of large quantities of items such as MREs, which may have applicability as MCLs for legacy forces via sealift but are incompatible with limited materiel handling capabilities of the STRYKER Brigade and Force XXI BCT.



FIGURE 7: HEMTT-LHS WITH PLS TRAILER.

HEMTT-LHS represents the primary lifting and transportation assets of the STRYKER Brigade. It can lift a flatrack weighting up to 11 ST. HEMTT-LHS is C130 transportable



FIGURE 8: PLS

Palletized Loading System (PLS) represents the primary lifting and transportation assets of the Force XXI units. The PLS is capable of lifting a flatrack weighing up to 16 ST. The PLS is not C-130 Transportable.



FIGURE 9: PLS WITH CONTAINER HANDLING UNIT (CHU)

Container Handling Unit (CHU) (figure 9) adapting assembly enables PLS to handle 20' ISO containers. With the CHU configuration, the PLS can interface with ISO containers without the use of flatracks. "Deployed in both the Force XXI Division Support Battalion (DSB), and within each of the FSB's ammunition transfer point (ATP) section, the CHU provides the capability to handle containerized loads well forward in the combat zone."²⁴ The current distribution of CHU impacts on where CROP flatracks must be extracted from 20' containers. Since neither the PLS nor HEMTT-LHS can load/unload 20' containers without an adaptor, CROP must be extracted at the point of the last available CHU or other appropriate Container Handling Equipment (CHE).

RELATIONSHIP TO OTHER ENABLERS AND IMPLEMENTATION IMPACT

The use of CLs is a key enabler of the Army's transformation effort and RML initiatives. It can contribute to overall force agility by maximizing throughput of supplies directly to the end user thereby reducing personnel and materiel requirements in the area of operations and at intermediate support locations. When coupled with In-Transit Asset Visibility (ITAV), Movement Tracking System (MTS), and Transportation Coordinator-Automated Information for Movement System (TC-AIMS), the use of CLs will improve movement of supplies in the pipeline (velocity management). This will provide commanders at all levels visibility of the logistics situation and the ability to adjust the flow of materiel to more accurately support the operational intent of the commander on the ground.

NEW BUSINESS PROCESSES

"CLs are fundamental to the successful implementation of the DBL system which is predicated on the in-transit visibility of CLs built on flatracks in CONUS and expedited through the APOD to the end user unit, with little or no reconfiguration en route."²⁵ A broad based adoption of CLs as a support concept could result in an increase in flatrack requirements as well as an increase in the strategic airlift requirement to support a theater. Implementation of DBL systems and the CLs concept will precipitate the need for process and policy changes at organizations such as DLA, Army Materiel Command (AMC) and U.S. Transportation Command (USTRANSCOM). New policies supporting pre-built loads must be developed, as well as changes to policies and procedures relating to these loads, especially ammunition on USAF aircraft. Additionally, national providers and organizations processing CL at intermediate locations may require additional personnel to handle increased workloads as support responsibilities transfer from the area of operations to CONUS or the ISB.

Army supply, maintenance, and financial policies must incorporate CL concepts as alternate methods of supporting customers. Further, these policies must be synchronized and coordinated with DLA to ensure compatibility with its Business System Modernization (BSM) initiative, and other associated business practices and policies. In order to effectively support deployed forces, the entire army logistics enterprise must either use the GCSS-A (TIER I and II) system/product, or interface with it. Additional funding could be required for development of the CLs functionality necessary for Army specific applications being developed as part of TIER II. All transportation platforms used to haul CLs must have AIT enablers to ensure ITV and TAV.

The Logistics Civilian Augmentation Program (LOGCAP) should be considered when defining logistical support operations. It is recognized that their utilization needs analysis based on operational circumstances. However, it is envisioned that LOGCAP resources should be positioned at intermediate support locations where they could configure or reconfigure loads. LOGCAP implementation at an ISB could be expanded as the Army shifts sustainment functions rearward to the ISB and CONUS.

The business rules for SSF management will require modification to accommodate the unique characteristics of CLs. The Army must coordinate with DLA to ensure implementation of appropriate business process changes. Supply and maintenance policies must be adjusted to account for differences in the ownership and management of CLs in both the SSF and working capital fund business environments. Accountability, custody and ownership policies must support the creation of mixed load CLs containing supplies managed by multiple sources of supply, to include the Army, DLA and the general services administration (GSA).

Defense Working Capital Fund (DWCF) and SSF business rules and associated billing procedures, regarding the point at which supplies are purchased from the national provider and become unit property, must be modified to provide the responsiveness and flexibility envisioned with CLs. For example, if national providers required separate loads of supplies based on wholesale level ownership, there could be a need for additional transportation platforms and, correspondingly, an enlarged logistics footprint. If CLs are diverted during transit, then the wrong unit could be billed for the supplies. Policy changes are required to provide the ability to assemble and maintain limited amounts of pre-built loads from sustainment stocks, especially for use by rapid deployment forces. Funding impacts are anticipated if supplies used to assemble CL must be moved from one location to another (i.e. inter-depot transfer within AMC and similar costs), or if stocks are decapitalized from one inventory, such as the DWCF, and recapitalized into another inventory, such as the Army Working Capital Fund- Supply Management Army (AWCF-SMA).

Additional funding impacts for ancillary costs like software changes and travel should be anticipated when establishing joint DLA/Army procedures for implementing configured loads under SSF. Additionally, there should be a significant decrease in customer wait time (cwt) upon the implementation of CLs. By pre-configuring loads as far to the rear as possible, loads can be throughput to units with minimal handling. Little or no reconfiguration will be required when transloading supplies. This will significantly enhance the distribution of supplies from the wholesale base to the consumer.

INFORMATION SYSTEMS AND DOCTRINE

Effective and efficient Command, Control, Communications, Computer, and Information (C4I) operations are essential for the implementation of CLs. The communications network must be capable of facilitating streamlined planning to execution processes. Automation information systems (AIS) must support such enablers as Global Combat Support System – Army (GCSS-A), Force XXI Battle Command Brigade and Below (FBCB2), Movement Tracking System (MTS), Total Asset Visibility (TAV) and Intransit Visibility (ITV). An automated information technology (AIT) interface between platforms and GCSS-A architecture will be necessary, as will additional training. New, possibly unit-specific, supply management and decision-making software will be required as configured loads are developed.

Implementation of CLs will have a direct impact on the development and implementation of logistics automation systems. New software applications must include the capability to manage an integrated supply chain supporting CLs shipments. Supply management policies will have to be updated to reflect requirements associated with ordering and managing supplies as CLs. Additionally, doctrine for wholesale supply management will need to reflect the added flexibility and functionality being fielded under Wholesale Logistics Modernization Program (WLMP), especially the capability to manage data. Eventually, the user must be able to order an item individually, when appropriate, or as part of a CL.

New doctrine for CL management and ordering procedures at all levels of the army must be developed. Planning factors must be updated, to include the impact of CLs, as historical data becomes available. New doctrine will also need to be developed to account for Army/DLA/contractor national providers network interface with GCSS-A. GCSS-A is the Army logistics information hub for sharing data with authorized users. This will require new screens and templates in most of the functional modules currently being developed as well as new algorithms (which account for the efficiencies of CLs) for the GCSS-A and Combat Service Support Control System (CSSCS) decision-making applications.

Doctrine for tactical logistics planning and execution must be standardized to take into account these new capabilities. The logistics estimates process and unit SOPs will be affected. Doctrine must be developed and taught throughout the Army based on enabling capabilities of automated systems supporting a distribution-based, predictive and proactive logistics system, which CLs will be an integral part. Doctrine relating to the organization, control and responsibility of DOL for power projection and initial sustainment operations must also be reviewed and coordinated. Policies for incorporating national provider stocks in CL built and shipped from the warfighter's home installations must also be reviewed.

Policies for developing, approving, building, stocking, and rotating CL components will have to be developed to take advantage of the integrated database inherent in GCSS-A. Army policy changes that result from implementation of CL must be reflected in DLA policies to ensure mutually supportable business systems. New policies must minimize reporting requirements for units, while maximizing the utilization of information available from GCSS-A and BSM.

The CL concept fully utilizes the capabilities of ITV and TAV, and should be reflected in materiel requirements. TAV data bases must have the ability to reflect CL assets on hand or in transit in order to compute asset balances and facilitate potential in-transit re-routing or reconfiguration of CLs. The automation management system must be able to differentiate between UCLs, MCLs, and break-bulk loads.

CONCLUSION

This paper has defined CLs, and validated the fundamental need, value, and criticality of the CL concept to efficiently and effectively support the Legacy, Interim, Force XXI and Objective Force. The CL concept is consistent with overall goals and objectives of major on-going Army efforts such as the ATCP, ALSP, CSSCS, SSF, GCSS-A and WLMP. There are two recommendations to senior leaders that are critical to the implementation and development of the CL concept. First, vigorous action must be taken to standardize and institutionalize the CL concept throughout the Army. Principal actions required for the implementation of this recommendation must be developed and identified in a CL Action Plan. Second, identify a focal CL organization responsible for the overall management, integration, institutionalization and implementation of the CL concept. This organization should have responsibility for the overall CL institutionalization planning, coordination, and implementation.

The utilization of CLs throughout the distribution network will significantly reduce manpower and materiel handling equipment (MHE) requirements. Currently, personnel and MHE are required each time materiel and equipment are reconfigured to satisfy the needs of the using unit. Additionally, storage space, blocking and bracing materiel, and security are required. All of this translates into people, time, and inventory. Speed and accuracy are of the essence of DBL, and CLs will significantly contribute to this effort. Forward deployed CSS units will

increasingly rely on CLs as a means of compensating for reduction in personnel, organic transportation and materiel handling assets. There will be less reliance on large stockpiles of supplies forward and more emphasis on pipeline resupply resulting in our warfighters receiving the right materiel and equipment at the right time and greatly reducing the logistics footprint in the combat zone.

WORD COUNT = 6518

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