

**STRATEGY
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SHRINKING THE LOGISTICS TAIL IN THE COMBAT ZONE

BY

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20020806 217

USAWC STRATEGY RESEARCH PROJECT

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ABSTRACT

AUTHOR: Colonel Larry W. Jameson

TITLE: Shrinking the Logistics Tail in the Combat Zone

FORMAT: Strategy Research Project

DATE: 09 April 2002

PAGES: 29

CLASSIFICATION: Unclassified

It has been widely recognized and long known that logistics is vital to any army; however, it is equally understood that logistics has always been one of the limiting factors of military operations. Today, the U.S. Army stands at a point in time when both the technology and the opportunity to transform are present for consideration in designing a new force. Army leaders envision a highly effective objective force that is capable of being rapidly deployed anywhere on the globe to fight in any environment. This objective force must be designed and fielded in such a manner as to require a minimum amount of logistics support.

This paper addresses the charter requirement to reduce the combat zone combat support (CS) and combat service support (CSS) footprint, or stated another way, this paper addresses the charter to shrink the logistics tail. This paper posits several ways in which such a reduction may be achieved. Areas for potential methods of achieving this charter are described, and include: modifying doctrine, reducing consumption requirements, and inserting CS/CSS enablers.

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SHRINKING THE LOGISTICS TAIL IN THE COMBAT ZONE

We will aggressively reduce the logistics footprint and replenishment demand. This will require us to revolutionize the way in which we transport and sustain people and materiel.

— General Eric K. Shinseki, Chief of Staff, U.S. Army

The relevance of the Army has been under serious scrutiny since at least the moment when many perceived that the Army was too heavy and too cumbersome to be effectively deployed for Task Force Hawk in the Balkans in 1999. This perception comes at a time when a main lesson of recent combat operations in Afghanistan is that small U.S. combat teams on the ground and high-performance aircraft with precision-guided weapons can be coordinated under almost any conditions. This new configuration of forces – a few hundred men scattered in roving teams and a dozen heavy bombers rotating over the country – marks a breakthrough in reducing U.S. reliance on military bases in nearby countries.¹ The issue, then, is the degree of relevance of the Army in future operations if dramatic measures are not taken to significantly reduce the military footprint, especially in the area of logistics support.

An army's success on the battlefield is dependent on movement and sustainment activities, collectively referred to as logistics. It has been widely recognized and long known that logistics is vital to any army; however, it is equally understood that logistics has always been one of the limiting factors of military operations.² This paper addresses the charter requirement to reduce the combat zone combat support (CS) and combat service support (CSS) footprint, or stated another way, this paper addresses the charter to shrink the logistics tail. Army leaders envision a highly effective objective force that is capable of being rapidly deployed anywhere on the globe to fight in any environment. This objective force must be designed and fielded in such a manner as to require a minimum amount of logistics support.³

RECOGNIZING THE NEED TO REDUCE THE LOGISTICS FOOTPRINT

Army leaders fully comprehend the significance of possessing the capability to quickly provide support and being able to rapidly sustain combat operations in any environment.⁴ The DA ODCSLOG (recently renamed the DA G-4) briefing on CS/CSS Transformation states that the Army logistics community is concentrating on the CS/CSS transformation efforts in support of the Army vision. To this end, the CS/CSS Transformation Campaign Plan dovetails with the Army Transformation Plan (ATP) by directly supporting the ATP Line of Operation #9 (Deploy

and Sustain the Objective Force).⁵ The transformation charter for the Department of the Army G-4 is "[to]:

- enhance strategic responsiveness [in order to] meet deployment timelines;
- reduce the combat zone CS/CSS footprint, and;
- reduce the cost of logistics without reducing warfighting capability or readiness."⁶

The endstate of the Army's objective force includes a logistics system that is highly responsive and sustains the warfighting op tempo without the need to have an operational pause caused by logistical constraints.⁷

As outlined in the U.S. Army Logistics Transformation Plan FY 2001-FY 2007, there are specifics actions that must be performed in order to attain the goals prescribed in the Army Vision. We must "re-engineer our logistics processes and redesign our organizations to increase both logistics responsiveness to the warfighter, and logistics efficiencies that will decrease the supplies and organizations required to deploy to the theater of operations."⁸ Specifically, force structure and equipment must be designed in a systemic approach, the number and weight of vehicular platforms must be minimized, we must leverage reach-back capability, and the sustainment doctrine must be transformed.

There are several areas that the Army should concentrate on in its pursuit to shrink the logistics tail in the combat zone. In order to reduce this footprint, logistics consumption and demand must be balanced against:

- a re-engineered acquisition system;
- new logistics structure;
- transformed sustainment doctrine;
- inclusion of host nation support;
- employment of contracted logistics support, and;
- an effective logistics information management system.⁹

TRANSFORMING THE ARMY ACQUISITION PROCESS

The Army acquisition process has several major shortcomings that must be overcome as we transform to an objective force. We should immediately transition to a systems approach to weapons and equipment design and pursue methods of reducing consumption replenishment.

DESIGNING AND FIELDING EQUIPMENT IN A SYSTEMS APPROACH

The Army acquisition process requires re-engineering to achieve a system that incorporates lifecycle considerations of: design life, contracted logistics support, technology

insertion, modular design, periodic upgrades, embedded training, onboard diagnostics and prognostics, special tools, test equipment, and deployability. Re-engineering the acquisition and fielding of enablers can minimize the size of assets in the combat zone or eliminate the physical requirement to support from within the combat zone.¹⁰

If based on a systems-approach, intelligent acquisition can lead to increased efficiency, reliability, lethality, survivability, and transportability. Additionally, an intelligent acquisition system can lead to technology that enhances performance and reduces weight and logistics consumption demands of fielded systems.¹¹

AGGRESSIVELY PURSUING METHODS TO REDUCE CONSUMPTION REPLENISHMENT DEMAND AT THE EQUIPMENT ACQUISITION PHASE

The Army must reduce platform consumption, which is sometimes referred to as "equipment appetite". From a logistics standpoint, the three most difficult commodities to sustain a force are: water, fuel, and ammunition.¹² Collectively, water and fuel makes up 88 percent of the tonnage of typical sustainment requirements.¹³ Therefore, the Army should focus its research and development efforts on these areas.

For U.S. Army operations, water makes up 47 percent of the tonnage of typical sustainment requirements, the single largest sustainment commodity (by weight).¹⁴ Producing water at the point of consumption is a stated requirement of the objective force.¹⁵ Because of the great significance that water holds, the Army must determine methods of improving the procedures for acquiring and distributing water to soldiers in a combat zone. One example of improving the water issue is the fielding of new purification systems such as the 1500 gallon-per-hour tactical water purification system that will replace the reverse osmosis water purification unit that has a capacity of 600 gallons per hour.¹⁶ In addition to increasing production and output capability, the new tactical water purification system will require fewer soldiers to operate it, and there will be fewer maintenance requirements.¹⁷

Meanwhile, the Defense Advanced Research Projects Agency (DARPA) sponsored a team-forming workshop in December 2001 for a new initiative in water harvesting technologies. The goal of this initiative, according to a DARPA special notice, is to:

"Develop and field innovative, energy-efficient water generation and purification/desalination technologies with the objective of eliminating more than 50 percent of the minimum daily water supply requirement (7 quarts per day per soldier) for both small and large groups of warfighters. Special emphasis is placed on the development of technologies that efficiently extract water on demand from non-traditional sources for two to

12 warfighters by harvesting water, for example from atmospheric moisture, the soldier's breath, combusted hydrocarbon fuels and wet earth and mud of various soil compositions."¹⁸

While the aforementioned DARPA initiative is focused on non-traditional water sources, traditional water sources may be present within the area of operations and purifying that water may be required. DARPA is seeking additional innovative technologies "that produce potable water from traditional, non-brackish and brackish sweet water sources, such as puddles, ponds, streams and rivers as well from seawater by highly efficient purification/desalination techniques."¹⁹

Once water is obtained, the next major challenge for water is its battlefield distribution. The Army needs to conduct research and development to produce a water distribution system that efficiently and effectively distributes water from the water source to the individual fighting position.²⁰

Fuel, the second largest sustainment commodity (by weight), makes up 41 percent of the tonnage of typical sustainment requirements.²¹ Reducing the footprint created by fuel demands will involve the conversion to more fuel-efficient engines; and the single most significant solution to reducing the fuel burden is to reduce the weight of the vehicles fielded by the Army.²² Since it appears that the Army's legacy and interim vehicles (if not the objective force vehicles, as well) will remain inefficient fossil-fuel consumers, it is imperative that efficient fuel distribution methods are achieved. Given the Army's Title 10 responsibility for inland fuel distribution for all services, it would be prudent for the Army to research and develop efforts to achieve a more efficient fuel distribution system.²³

In the acquisition of ammunition, we must transition to precise targeting based on high-fidelity geo-location and "sensor-to-shooter" capability. The goal of having "one-shot, one kill" ammunition lethality must not only be achieved but must also be credible to the warfighter before the footprint created by the ammunition burden can be reduced.²⁴

ACHIEVING MODULARITY AND COMMONALITY OF PLATFORMS

An imperative to achieving logistics reductions is through attainment of common platforms, common chassis and standard caliber.²⁵ It is important to understand the efficiency that modular equipment design can offer and the Army must take advantage of the technological concept of modularity in designing its equipment. Objective force systems will incorporate a high degree of technology and the manner that components are integrated will be significant. Systems engineers must ensure that objective systems are designed in such a

manner that modular plug in and out can be easily performed.²⁶ As described in an article written on modularity:

"The combined effects of the enhanced capabilities associated with modularity will result in increased efficiency, the hallmark of a modular system. Efficiencies will be seen in time saved, reduced manpower requirements, increased output, and reduced costs. For example, modular weapon systems will give future commanders the capability to customize an individual piece of equipment, or groups of equipment, to meet the needs of a particular contingency. . . . Incorporating modularity in the transformed Army will take the responsibility for component repair out of the hands of the military and place it back in the hands of the manufacturer. By reducing or eliminating repair functions through modular replacement, the Army can realize efficiencies at every level. Most importantly, modular systems will enable the Army to get on with the business of fighting the enemy by enhancing the throughput of combat power. . . . Modular equipment design will enable military leaders to do more with less: diminished repair equipment requirements, fewer people, and less money."²⁷

Thus, the benefits to be gained from improved component integration will diminish the logistics tail in major respects.

DEVELOPING NEW LOGISTICS FORCE STRUCTURE

Future CSS force structure will be based on the concepts of unity of command, agility, and greater velocity. This CSS force structure will be designed to allow for split-based operations, will be to provide an information system that offers situational understanding, and to include a centralized logistics operator at each echelon. This logistics operator will be capable of emplacing a distribution-based logistics system that could optimally throughput forces and sustainment.²⁸

A description of how new logistics units are being developed to support the previously listed concepts is provided in an Army Logistician article:

"Forward support companies have been created in the forward support battalions to provide all of the maneuver battalion logistics support while maintaining a surge capability. The main support battalion will be replaced by the division support battalion, which will provide support to all units operating in the division rear. Direct support and general support maintenance personnel will be combined to form one unit that will focus on replacing components forward and repairing them in the rear. Above the division, a theater support command replaces the theater Army area command. This new unit will create a

multifunctional and tailored support system that will enter the theater early to control and support deploying forces and sustainment. Organizations will evolve and new organizations will be created that will be tailored to manage distribution-based logistics. These new units will exploit the doctrinal principles of maximizing throughput, bypassing intermediate support nodes, minimizing materials handling, increasing distribution velocity, and anticipating CSS requirements in an effort to get the optimum sustainment possible in the distribution pipeline to best support the force."²⁹

While force structure changes are underway, it is clear that more logistics force structure changes will be necessary as the objective force is further developed.

TRANSFORMING ARMY SUSTAINMENT DOCTRINE

In general, the fundamental logistics functions of providing support to soldiers and operations will remain the same. It is the procedures and equipment employed to perform those logistics functions that will be transformed.³⁰ This transformation will include doctrinal, organizational, and materiel changes in distribution of water, fuel and all other commodities; optimizing throughput by bounding over echelons; and equipment designed to perform logistics functions optimally.³¹ The DA G-4 position is that sustainment operations must change from "supply based, operational synchronization" to "distribution-based, strategic synchronization."³² Distribution-based logistics is a concept in which the logistics system relies on velocity management and precision instead of redundant stockpiles to provide responsive support to the warfighter. It reduces the stockpiles required to compensate for uncertainties of conflict by reducing the uncertainty.

Beyond velocity management, distribution-based logistics requires a broad revision of how Army logisticians manage the entire sustainment process. This revision will require warfighters and logisticians to coordinate both the scope and timing of support, allowing for free and unhampered collaboration at the "action officer" level. An information system providing situational understanding would support this direct interaction to solve basic logistics problems.

The key to making distribution-based logistics work is intensive, real-time distribution management. Distribution managers will ensure a constant and seamless intermodal link between the commercial and military distribution systems. This improved distribution system must incorporate: an increased use of aerial sustainment to overcome time/distance challenges; intermodal platforms, and; formed packaging to gain speed and momentum. By efficiently managing the distribution system, commanders will be able to enhance responsiveness of support and reduce the logistics footprint simultaneously.³³

TRANSFORMING DOCTRINE FOR FUELING THE FORCE

As prescribed by the DA G-4, doctrine for fueling the force must change from "echelon delivery" to "throughput, reduced stocks".³⁴ Fuel distribution for the objective force will have to be very different from the distribution operations performed by petroleum units today. Doctrine for fuel distribution will have to take into consideration those tenets of throughput distribution, velocity management and time-definite delivery. In addition to incorporating distribution tenets, challenges associated with storage, pipeline, and transportation operations must be met with enhanced doctrine that employs lighter weight hoses and bladders and improved lightweight pumps.³⁵

TRANSFORMING DOCTRINE FOR MOVING THE FORCE

The current state of the Army Transportation Corps is not postured to provide optimal transportation support for a transformed Army. To remain the relevant combat multiplier that the Army Transportation Corps is today, a transformation of Army transportation operations must occur concurrently with the overall Army transformation.

One of the CS/CSS transformation objectives is to not stock in the battlespace what can be delivered via battlefield distribution.³⁶ The objective of movement doctrine must be to increase the speed and ease of deployment and resupply while decreasing both the personnel and equipment that it takes to perform transportation operations effectively.³⁷ Therefore, we must control the number of vehicles deemed necessary to be deployed within the battlespace. One method of achieving this is to field and deploy more vehicles that are capable of organic upload and download. By employing this method, we reduce the need to deploy separate forklifts and other materiel handling equipment within the combat zone. To illustrate this point, one can turn to the palletized loading system which was designed and fielded for ammunition distribution but, like many new technologies, was expanded and employed to perform distribution of much more than just ammunition.³⁸

Enhancing and maintaining effective distribution operations will require reliance on the advances in enabling technologies and, probably just as important, the proper integration of those technologies. We must focus our efforts on ensuring that future vehicles are designed for high speed delivery and efficient distribution of supplies.³⁹

A major enabler for distribution enhancement is improved situational understanding provided by real-time information systems that provide total asset visibility. This enabling technology will provide distribution managers with the information they need to monitor the logistics pipeline all the way down to the requisitioner and consumer. Continued fielding of a

system to track and control transportation assets is critical for achieving real-time intransit visibility. Achieving real-time intransit visibility is directly related to being able to flow logistics at the right volume and pace, thus avoiding unnecessary stockpiling.⁴⁰

In addition to other improvements, the Army is enhancing the Time Phased Force Deployment Data System. For instance, the Transportation Coordinator's Automated Information Management System II (TC-AIMS II) is more user-friendly than its predecessor and will assist commanders in building the task organization to be deployed.⁴¹ Commanders can and must challenge the quantities of vehicles, etc., that subordinate units identify as required for deployment.

Another major facet of transportation transformation that must occur involves the consolidation of battalions that conduct transportation mode operations (truck battalions) with battalions that conduct movement control operations (movement control battalions). Greater transportation efficiency and effectiveness will result from the merger of these two transportation organizations into battalions that execute both functions of transportation operations. This transformation of Army transportation will provide the warfighting CINCs a more seamless transportation system that will be more responsive, more effective, and capable of meeting the enhanced requirements of the Army's objective force.

TRANSFORMING DOCTRINE FOR FIXING THE FORCE

As prescribed by the DA G-4, maintenance operations doctrine must change from "fix forward/repair rear multi-level maintenance" to "replace forward/fix rear/multi-capable".⁴² A major characteristic of the objective maintenance doctrine is anticipatory maintenance operations rather than the current strategy of reactive maintenance. With anticipatory maintenance, a fault is identified and repaired before the equipment actually fails. The enabling technology that will provide this capability is prognostics, which is more inclusive than concerns of how to maintain equipment in the combat zone. Prognostics is part of an integrated approach to systems fielding that includes the vehicle design, reengineering of maintenance procedures and takes into account the soldiers who will operate and maintain the vehicle. Key to this process is obtaining data from sensor diagnostic devices embedded on the vehicle or weapons platform. These source data, received directly from the embedded devices, will be free from possible data entry error because there is no human intervention. Once maintenance information processing becomes this automated, Army maintenance operations could be truly transformed.⁴³

To maximize prognostic maintenance capabilities, the Army must incorporate the combined efforts of vehicle and weapon platform developers, logistics information system developers, and the logistics organizations involved in maintenance operations. We should field all objective force vehicles and weapon systems with embedded prognostics and diagnostics that identify potential faults before the systems break and indicate exactly what is wrong when they do break. This will allow for a smaller logistics footprint by reducing repair part stocks and requiring fewer mechanics.⁴⁴

Moreover, the Army should embed diagnostics and data transmitters and employ telemetry technologies that not only monitor engine status but track cargoes and operator behaviors. The goal is an environment in which vehicles equipped with sensors will notify maintenance personnel what part will fail and when it is likely to fail. The part information can be automatically provided to logistics automation systems that are designed to requisition replacement parts and give recommended actions to take to prevent vehicular failure.⁴⁵ In a "replace forward/fix rear/multi-capable" environment, a replacement vehicle or weapon system can be brought forward into the battle space and the equipment diagnosed for repair can be sent to the rear.

The palletized load system and the Bradley fighting vehicle already have embedded diagnostics devices developed for their use. These diagnostic devices should not only save on current maintenance costs but will be important in the future development of diagnostic technology.⁴⁶

Overall, diagnostics and prognostics offer the opportunity to anticipate logistics requirements sooner. Interconnecting the data from embedded diagnostics devices to supply automation provides the opportunity to achieve a logistics system that is anticipatory by design, a desired characteristic of all logistics systems.⁴⁷

TRANSFORMING MEDICAL SUPPORT

One could make a case for reducing the size and cost of military health care by consolidating into a Defense health system that could result, for example, in only one surgeon general for all services (and perhaps even the Veteran's Administration). At this "strategic level" of health care, eliminating redundancy among the services appears logical. However, peacetime health care structure does not directly impact the footprint in the combat zone and this author believes that separate "tactical" medical systems are required to ensure the right support is provided in the battlespace. This opinion is based on the significantly different warfighting environments of the services for which medical personnel must be trained in order to be most effective. The challenge, then, is to consolidate the "strategic-level" medical research,

development, and acquisition, and then, optimally integrate the medical capability of all services in the combat zone. In order to optimize military medical support, the armed services must avoid redundancy with each other. This includes training together in realistic exercises so that military medics of all services can learn to work efficiently with new technologies and procedures shared by medical experts from various services.

The U.S. Army is one of the few armies in the world that has dedicated ground and air evacuation platforms designed solely for moving patients and medical assets.⁴⁸ Even the prevailing U.S. naval concept for medical support does not include dedicated evacuation assets.⁴⁹ Army future combat system ambulances (ground and air), properly included in Army doctrine, must be held to the same overall Army transformation objective of common platforms based on modularity. This will contribute to a theater-wide reduction in repair part stockage and overall maintenance footprint.

Rapid deployment of medical assets must include the efficient use of strategic airlift to ensure that critical medical supplies and assistance are delivered where it is needed. Large field hospitals may not be what is needed or desired so it is imperative that light, mobile medical teams can provide modular, “tiered and tailored” responses. In this manner, tailored medical support can be established for each mission that will minimize the medical footprint.⁵⁰

The ongoing Army Medical Reengineering Initiative identifies smaller, more modular organizations as a key enabler.⁵¹ The Army should assess the Air Force medical initiatives that led to the mindset of deploying a five-person, backpack portable surgical team instead of deploying an air-transportable hospital that requires the lift of eight C-130 aircraft. These surgical teams are provided with revolutionary medical equipment that is significantly lighter than previously used.⁵²

The Army must leverage technology to reduce manning and equipment requirements. Now that necessary medical equipment such as patient monitoring equipment can be rapidly deployed, it can be said that optimal medical readiness has been achieved. Improvements such as this will allow a small medical team with hand-carried equipment to provide impressive medical care in the combat zone anywhere in the world. Military medical research and development must continue to provide medical materiel solutions to lighten the medical footprint.⁵³

Telemedicine systems offer improved patient care with a reduced forward medical footprint. Telemedicine is a remarkable success story that offers tremendous reach-back capability. With telemedicine, diagnoses can be made from outside the combat zone and enable minimally trained soldiers to perform life-saving procedures.

Medical supplies constitute only 0.2 percent of the total sustainment requirements that are identified in the logistics footprint.⁵⁴ It is not the magnitude of medical supplies that is a significant consideration as much as the method in which these supplies are distributed. Distribution of medical supplies in a separate, parallel distribution system which has been in practice in AORs like USAREUR is a procedure that must be eliminated to reduce the assets entering and exiting the combat zone.

TRANSFORMING THE CSS PERSONNEL SYSTEM

New logistics concepts and structures that must operate in a completely new environment may be best accomplished if the functional logistics branches are combined into a Logistics Corps. A training, education and development system should be established to produce truly multifunctional logisticians who are best prepared to lead in the logistics environment that will exist in a transformed Army. In this new military environment, logisticians will need to understand and appreciate, more than ever before, a distribution-based logistics system where information systems will provide situational understanding.

All logisticians should begin their formal training in a consolidated basic course designed to train students in the principles of Army logistics in the complex, joint environment of the transformed Army. Throughout their careers, logisticians would be educated on all facets of the logistics field, thus ensuring that the holistic aspects of repair, supply and transportation are mastered. Having graduated from the logistics basic and advanced courses, a logistician should be properly educated in a specialized course integrated in the Command and General Staff College that is commensurate in scope for the logistician as the tactics courses are today for the tactician. Besides the obvious resource savings of having one Logistics Corps (such as consolidated school funding and a decreased instructor pool), a Logistics Corps will strengthen our ability to provide logistics to a transformed Army. While tearing down stovepiped systems and methodologies, logisticians can improve our effectiveness while reducing the manning requirements in the combat zone through integrated processes and management.⁵⁵

Regarding enlisted personnel, more consolidation of military occupational specialties (MOSs) must occur. Recent success stories reveal the benefits of specialty consolidation. In September 2000, the Army produced the first graduates of an advanced individual training class that incorporated training for Abrams tank mechanics and Bradley fighting vehicle mechanics. This new mechanic, with military occupational specialty 63A, now graduates with the qualifications of five previously separate military occupational skills – 45E (M-1 Abrams tank turret mechanic), 63E (M-1 Abrams tank system mechanic), 63M (Bradley fighting vehicle

mechanic), 45K (armament repairer) and 63H (track vehicle repairer).⁵⁶ Once the Army moves to common platforms and modular equipment, the thought process related to military occupational specialties must be revolutionized accordingly.

Another example of specialty consolidation involves the combat medic. In October 2001, the Army medical community began transitioning MOS 91B (combat medic) and MOS 91C (licensed practical nurse) into the single MOS 91W (health care specialist). This action will result in significantly enhanced skills in trauma and patient stabilization and will reduce the manning requirement in the battlespace.⁵⁷

Continued MOS consolidation will result in improved soldier technical skills and reduced manpower in the combat zone. It is imperative that MOS consolidation planning is projected forward to ensure that objective systems (materiel and doctrinal) are incorporated.

DEVELOPING AND FIELDING AN EFFECTIVE LOGISTICS INFORMATION MANAGEMENT SYSTEM

The Army has made significant progress in the area of total asset visibility and intransit visibility since Operation Desert Storm, when 25,000 of the 40,000 containers deployed to the Gulf region had to be opened to determine the contents. Continued improvements in logistics information management systems will provide the Army with logistics awareness and can result in managers forwarding only essential materiel to a joint task force, an action that will substantially reduce the logistics footprint.⁵⁸ Logistics information, coupled with precision transportation, will allow the Army to reduce its logistics footprint that will, in turn, reduce the requirement to deploy assets to secure the logistics tail.⁵⁹

If the goal of managing the distribution pipeline with improved visibility, capacity, and control is achieved, logisticians will possess a seamless logistics system with communications connectivity. This connectivity must be able to link all components of the logistics community into one network of shared situational understanding.

Following are three of the intermediate objectives that are integrated into the Army transformation plan:

- Accelerate progress in implementing customer-wait-time performance measurement.⁶⁰ The aim of velocity management, as stated by the RAND Corporation, is “to substitute velocity and accuracy for mass in the logistics system.”⁶¹ The focus of the Army’s customer-wait-time effort is providing a capability for both measuring and improving customer wait time or, in other words, reducing the time between when a customer submits his requirement for a part and when he receives that part. The overall goal of the custom-wait-time

performance effort is higher readiness rates, increased customer confidence through inventory velocity, and a reduced logistics footprint.⁶²

- Achieve accurate total asset visibility.⁶³ The Army Logistics Transformation Plan states that: "Visibility is being expanded to include in-transit materiel and to capitalize on AIT capability. [The] Army will fully integrate ATAV with emerging and modernized Army standard systems. In support of the OSD-directed Lateral Redistribution and Procurement Offset Initiative, ATAV provides asset data to all military services and the Defense Logistics Agency (DLA). Army Total Asset Visibility was and continues to be the basis for the Joint Total Asset Visibility capability for which DLA has executive agent responsibility. Interoperability and confidence in support to and from other services should enhance future reductions in overall DOD logistics footprint in all theaters."⁶⁴

- Field a web-based, seamless, real-time logistics information system.⁶⁵ As stated in the Army Logistics Transformation Plan, the intent of the Army's web-based logistics initiative is "to use global inter/intranet technology to make the Army's logistics business process more effective and efficient and to reduce organizational and process costs by using a single enterprise database. The current development strategy is to enter the intranet using the Army Knowledge Online capability. The intranet gives the Army both secure and unsecure capabilities."⁶⁶

Significantly improved operational effectiveness and efficiency attained through focused logistics will reduce sustainment requirements and the overall logistics footprint. This reduction in requirements and overall footprint will be further enhanced as the warfighter gains greater confidence in these new capabilities.⁶⁷

FULLY EXPLOITING SPLIT-BASED AND REACH-BACK OPERATIONS CAPABILITY

One of the objectives of the CS/CSS transformation is to not perform in the battlespace what can be accomplished with split-based/reach-back capability.⁶⁸ The concept of split-based operations supports the goal of having only the required number of people and equipment forward. Split-based operations/reach-back can be successfully employed for logistics support (including industrial base support) to the warfighter in the combat zone. Logistics units can deploy fewer soldiers and less equipment and still effectively complete their mission by relying on satellite communications and air and sea lines of communication.⁶⁹

An expanded communications capability also allows for reach-back. This allows the joint task force commander to take more combat troops into a theater of operations while leaving some of the administrative and support capabilities behind. For example, reach-back would

allow commanders in the field to model and simulate war plans with intelligence and analysis personnel in the United States before committing to them in a conflict.⁷⁰

A major objective of the logistics community is to avoid performing in the battlespace what can be performed at an intermediate staging/support base.⁷¹ According to Combined Armed Support Command personnel:

"The Army is redefining intermediate staging/support base operations. The intermediate staging base of past deployments may become the intermediate support base in the future, where applicable. It will be an area somewhere in the theater of operations but out of direct-fire range where stocks can be built up without having to be moved constantly as the battle campaign progresses and where theater or general support medical, maintenance, supply, and administrative functions can be performed. The goal is to be able to bring an ISB up to operating capability quickly in case of a contingency or major theater war."⁷²

In another effort to exploit split-based and reach-back capability, designers intend for tele-maintenance to make coordination easier among CONUS-based technicians, LARs, and soldiers in the field and to lessen the time it takes to troubleshoot and repair systems. Personnel at Tobyhanna Army Depot, Pennsylvania, successfully demonstrated a prototype tele-maintenance system that allows logistics assistance representatives (LARs) to communicate with each other and with Tobyhanna personnel. A tele-maintenance system like the one prototyped at Tobyhanna Army Depot will enable technicians in CONUS to examine equipment located in the battlespace.⁷³ By enabling a technician to examine the equipment in place, the number of pieces of serviceable equipment that would be retrograded for repair will be minimized. This will also allow the technician to give guidance for on-site repairs. While LARs usually conduct repairs on site, a LAR's specialty may not pertain to the particular system he is attempting to repair. However, a tele-maintenance communication system will enable a LAR to seek assistance from another LAR who has specialized knowledge of the system under repair. If they cannot solve the problem, a CONUS-based technician can be contacted.⁷⁴

INCORPORATING CIVILIAN CONTRACTING TO THE GREATEST EXTENT FEASIBLE

An additional objective of the CS/CSS transformation is to not use military personnel to perform tasks in the battlespace that can be contracted or can be performed by echelons-above-corps units at an ISB.⁷⁵ In addition to potentially reducing overall support costs, contracted logistics can be an important force multiplier in certain environments.⁷⁶ Civilian contracted logistics support provides the flexibility to adjust the size of the support up and down when the operational mission is constantly changing.⁷⁷

Other advantages of contracting logistics support include the use of special capabilities the Army does not have or prevents the continuous deployment of low density/high demand units. What is important to plan accurately, though, is the proper mix of Army logisticians and contractor support that will vary with every deployment scenario. The adequate size of the logistics footprint is dependent not only on situational understanding and velocity but involves balance and blend as well.⁷⁸

It is generally accepted that contractors will be present, in some capacity, in the battlespace of every future conflict. Logistics services performed by contractors can provide a significantly reduced military footprint even in a volatile, uncertain, complex and ambiguous environment.⁷⁹ In contingency operations in the Balkans, civilian-contracted logistics support has enabled the footprint of U.S. forces to consist primarily of combat units. Based on an examination of contracted logistics support in Bosnia, a study conducted by the Logistics Management Institute estimated that it would have taken 8900 support troops to provide the same services that Brown & Root Services provided with approximately 6700 employees for operations in Bosnia. Many of these 6700 employees were local nationals, a situation that led to less logistics support required to provide for the very personnel conducting logistics support to the deployed force.⁸⁰

MAXIMIZING MULTINATIONAL LOGISTICS SUPPORT IN FUTURE OPERATIONS

The Army must be prepared to deploy and sustain forces as part of multinational and coalition operations in nearly every future conflict. By incorporating multinational logistics in a coalition operation, there exists a strong potential for reduction of the U.S. Army logistics footprint as well as a coalition's overall logistics footprint. We must leverage our coalition partners' expertise and specialization and encourage role specialist nation support and lead nation support.⁸¹ Army leaders will have to determine the extent to which we are willing to prepare for and incorporate coalition logistics.

CONCLUSION

Today, the U.S. Army stands at a point in time when both the technology and the opportunity to transform are present for consideration in designing a new force. Given these conditions and coupled with the identified requirements of an objective force and anticipated future threats, the Army is compelled to fully consider the logistics implications in designing an objective force.⁸²

Army leaders envision a highly effective objective force that is capable of being rapidly deployed anywhere on the globe to fight in any environment. This objective force must be designed and fielded in such a manner as to require a minimum amount of logistics support.⁸³

The charter to reduce the tail in the combat zone is deemed critical to the success of the overall Army transformation, and to the degree of relevance of the Army in future operations. It is important, however, to make a distinction between the need to reduce the footprint in the area referred to as the combat zone and the issue of reducing the level of logistics support necessary to prosecute war. Army leaders must ensure that the effectiveness of the warfighter is not degraded because of a lack of logistics support when and where he may need it. We must reduce Army theater logistics requirements while enabling effective, sustained operations and remain mindful that there comes a point where further reductions in logistics support will adversely impact the warfighter's flexibility.⁸⁴ The challenge is to strike the right balance.

The proportion of CSS soldiers to combat arms soldiers should not be used as an indicator of an army's efficiency because the aim of a military organization is not to make do with the smallest number of supporting troops but to produce the greatest possible fighting power.⁸⁵ The ultimate goal for the Army of the 21st century is an appropriately configured --and highly responsive -- logistics team, which sustains operational tempo without operational pause, and has the CINC's complete confidence.⁸⁶

The relevance of the Army in future operations will be diminished if dramatic measures are not taken to significantly reduce the military footprint, especially in the area of logistics support.⁸⁷ An adequately reduced logistics footprint (logistics tail) can be achieved if the CS/CSS transformation is realized in a holistic approach.

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