STRATEGY RESEARCH PROJECT

DIVISIONAL COMBAT SERVICE SUPPORT UNITS IN THE ARMY XXI ENVIRONMENT

BY

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1997 0624 116

USAWC CLASS OF 1997

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AUTHOR: Joseph G. Nesbitt (LTC), USA

TITLE: Divisional Combat Service Support Units In The ARMY XXI

Environment

FORMAT: Strategic Research Project

DATE: 29 April 1997   PAGES: 37 CLASSIFICATION: Unclassified

The Army of the future, as seen in the context of Force XXI, will be rapidly tailorable, rapidly expandable, strategically deployable, and effectively employable in order to achieve decisive results in future war and operations other than war (OOTW) in all operational environments. The combat service support (CSS) units of the future must leverage current and future technologies to provide efficient support. The current divisional CSS organizations contain redundancies that both swells the organizations and therefore limits the support capability they will provide to their supporting combat units in future contingencies. There are many technology enhancements currently under review that will definitely upgrade the CSS unit's ability to provide quality support to the forces. However, there is a need to take a radical view to reorganizing the CSS organizations themselves to further their efficiencies. Current and emerging technologies combined with re-organizing the divisional CSS units will result in efficient, focused, and seamless logistics support to the Army in the twenty-first century.

The time is currently 0300 hours. A buzz begins to emanate from the computer console in the support maintenance team's HMMWV. SSG Johnson stirs and then looks at the flat screen that blinks "Mission, Mission, Mission". He briefly types a string of characters and then nudges SPC Taylor.

"Get up, 1st platoon has a tank that is about to go down for a rear mod".

Taylor stretches and asks, "Sensor kick on again?" SSG Johnson nods in the affirmative.

"What has the crew done?" Taylor asks.

"Don't know, I am calling them now," the NCO says as he types a note on his laptop to the tank commander. He sends it over the battlefield internet and is answered immediately.

"Dang, they saw the sensor go off but haven't been able to isolate the fault yet. Time to call the techies." SSG Johnson types another message and sends it on the internet back to the states. Two minutes later a reply is received. The message is forwarded to the tank commander. Five minutes later, SSG Johnson receives a message from the crew signifying all is well. The procedure worked, the tank's sensors are all in the operational ranges again. Johnson looks at Taylor gives him the thumbs up and goes back to sleep.

THE FRAMEWORK

Sound like some Star Wars adventures? Hardly. As the Army travels into the twenty first century, technology will play a much larger part in the logistics operations of the force. Not only do the weapons systems become more lethal, but they also will be "smarter". As the systems change and improve, so must the Army organizations that support these systems.

The current vision for the Army as stated in TRADOC Pam 525-5, <u>Force XXI Operations</u>, says that "our Army must design organizations and develop capabilities that will allow it to be rapidly tailorable, rapidly expansible,

strategically deployable, and effectively employable as part of a joint and multinational team to achieve decisive results in future war and operations other than war (OOTW) in all operational environments."[1] This especially pertains to the combat service support (CSS) organizations and operations. The current ratio of combat units to combat service support units, "tooth to tail ratio", is much too high. For example, in an air assault or airborne division, there are four CSS battalions, (one Main Support Battalion, three Forward Support Battalions), supporting nine infantry battalions. A similar ratio is found in the armored and infantry divisions

There will always be a need to fuel, sustain, arm, and maintain the force. In most cases, this will require the deployment and footprint of soldiers and their organizations. As technology improves, there are efficiencies, re-engineering, and ultimately re-organization changes that can be induced to cut down the "tooth to tail ratio" and make the force better overall. This paper will examine the current divisional combat service support structure, investigate its current tactics, techniques, and procedures, explore some of the new technologies that are being used, and then look at a proposed structure for divisional combat service support that is now being tested. The focus of this paper will be at the Divisional level within the next 10 to 15 years. To attempt to delve into the combat service support echelons above divisions (EAD) or to proceed farther into the future is beyond the scope of this paper.

ASSUMPTIONS

The following assumptions are made in order to further define this paper:

1. That all divisional units (combat service support, combat, and combat support units) undergo a change in operating tactics, techniques, and procedures.

2. That strategic planning guidance will continue to articulate a power projection strategy, to maintain a limited overseas force presence, and to require U.S. Army participation in major regional contingencies.

3. That technology will allow for greater dispersion of operations.

4. That both government civilians and contractors will provide combat service support (CSS) in a theater of operations.

5. That the sum of the Army's logistics capability will be less than the sum of the Army's logistics requirements.

BUSINESS AS USUAL

Ground operations in 2010 are expected to be fully integrated with other services and will most likely include multinational forces and organizations. JOINT VISION 2010, and in turn, ARMY VISION 2010 foresee six patterns that will serve to focus tasks that the Army will be required to operate in. These operational patterns are: project the force, protect the force, shape the battlespace, decisive operations, sustain the force, and gain information dominance.[2] Combat service support organizations will be involved in all of

these operations as either the primary player or in a supporting role. In order to do this successfully, the CSS forces must be both flexible and agile.

How will the Army design CSS units that are both flexible and agile? To answer this it is first necessary to look at how these forces have been organized and operated during the last twenty years. During the Cold War years, the best single word to describe CSS functions was redundant. Regardless of what type of unit (combat, combat support, and combat service support unit), they all possessed their own maintenance capability, transportation assets, food service, and supply activities. In addition, there were direct support and general support maintenance and supply units. Add supply stockpiles of all sorts at each of these levels and the end result was "just in case logistics". A unit may not have the exact repair part or supply item needed at the precise time, but there certainly was a lot of "stuff" on hand. If the needed item was not on hand, it would still be obtained from either a supporting unit or "scrounged" from an adjacent unit. Ultimately, if the item was not available anywhere on the post, camp, or station, it could be requisitioned through the depot supply system and received some twenty to thirty days later.[3] Usually by this time, the item had been obtained through other means, and the ordered item was stored, (in some cases thrown away), to be used at another time. More than likely the item was never used and the cycle began again when the item was needed again.[4]

The above cited cycle gets to the core of a problem that is repeated many times over. In the days of the large Operations and Maintenance-Army (OMA)

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budgets, this was common practice for two reasons. First, there was plenty of money for buying equipment and parts. Second, it was the way we always did it. This philosophy was definitely not the doctrinal method of operating. However, it was the mode of operation at the "workers" level and considered a normal practice. What allowed this to happen or even more precisely, why was it even tolerated? It was caused by a lack of faith, by leaders and soldiers, in the supply system and its inability to get the right items, at the right place, at the right time. As was stated earlier, it could take an average of twenty-five days from the time an item was ordered to the day it was received. Leaders did not want to wait that long.

Equipment maintenance procedures contributed to the overall inefficiencies of the logistics system. There are four levels of maintenance for ground equipment, (unit, direct support (DS), general support (GS), and depot maintenance) and three levels for aviation equipment (aviation unit maintenance (AVUM), aviation intermediate maintenance (AVIM), and depot maintenance).[5] These maintenance levels propagated maintenance sections (unit and AVUM) and maintenance companies (direct support, general support, and AVIM) throughout the active and reserve force structure. Maintenance company personnel strengths range from 96 soldiers for a forward support maintenance Company in an Air Assault Division to over 200 soldiers in an aviation intermediate maintenance company or a general support maintenance company. Each of these organizations have their own specialty and maintenance

parameters. Rarely does one organization do the same repair procedures a

lower maintenance level does though the technical expertise is available in the

unit. The advanced individual training of a GS and DS repairman in a particular

commodity (for example wheeled vehicles) is the same. Again the underlying

thread for maintenance, as supply operations, is redundancy.

Several levels of materiel management for supply and maintenance

activities are resident in a Division's structure. Each forward support battalion

Figure 1 SARSS

and main support battalion have Support Operations sections that coordinate the

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Figure 2 SAMS

day to day maintenance and supply activities within their respective battalions. There is an additional level of management embedded above the support battalions. The Division Materiel Management Center (DMMC) contains supply and maintenance managers as well as organizational property managers. Four automated systems, the Standard Army Maintenance System (SAMS); the Standard Army Retail Supply System (SARSS); the Standard Property Book System Revised (SPBS-R); and the Standard Army Ammunition System (SAAS), are the main automated management systems used by the DMMC managers. The SAMS system tracks direct support maintenance actions throughout the Division. SARRS tracks supply transactions throughout the Division. SPBS-R tracks property accountability for the Division's equipment. SAAS tracks ammunition requirements and transactions throughout the Division. SAAS and SARSS both link to similar systems at the Corps level supply and ammunition units. Each of the four systems are proprietary. However, SAMS does interface with SARSS for repair parts requisitioning. SAAS and SPBS-R are in the DMMC. At the unit level, maintenance and repair parts management is done on the Unit Level Logistics System (ULLS). To input work orders and repair parts requisitions, the unit must provide input separately to its support battalion's SAMS and SARSS sites. Figure One depicts SARSS in the Division. Figure Two depicts SAMS in the Division. The division's logistical information management systems are stovepiped, far from efficient, and non-user friendly whether in a garrison or field environment. Additionally, these systems have not

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kept pace with technological advancements in data processing and computer hardware systems.

One divisional logistics area where there is little redundancy is transportation, (specifically transportation assets required to move personnel or supplies around the battlefield). All units have trucks of various sizes organic to their organizations. In most cases, however, they are not available in sufficient numbers to move all of a unit's assets in one lift. The unit must be augmented by transportation assets from the Main Support Battalion's Transportation Motor Truck (TMT) Company. The TMT company has several different types of vehicles including 5 ton cargo trucks, 5 ton tractors with stake and platform semi-trailers, and heavy equipment transporters (HET). The cargo trucks are normally used to transport personnel and bulk cargo. The HETs and tractor/trailors are used to transport containers, track vehicles, and other types of out-sized equipment. For large unit moves, (a battalion lift), the TMT company does not have enough vehicles to move each subordinate unit's personnel and equipment in one lift. It must make multiple sorties. The divisional TMT company may be further augmented with corps transportation assets when available. The division's transportation assets are always in high demand to move soldiers, units, and supplies. When tasked and dispatched in numerous small convoys, knowledge of the trucks whereabouts becomes paramount. Due to a lack of communications equipment in the TMT company, it is at times impossible to contact a convoy until it reaches its final destination. The ability to re-route,

update, or just locate convoys is hard to accomplish and, in the end, wastes valuable time, assets and could result in battle casualties.

TECHNOLOGICAL ENABLERS

To ensure quality combat service support to divisional units, the logisticians must provide smarter and better support. "Supporting throughout the battlefield will continue, but to perform in the Force XXI environment, the CSS forces must become totally mobile and modular."[6] An important toolbox for logisticians to assure "smarter support" is digitization. General Reimer, the current Army Chief of Staff, believes that through digitization the army may be able to "...finally modernize its cumbersome and expensive Cold War-era logistics and supply systems. The Army is aiming to move away from supply-based logistics in which it has aimed to give every unit all the supplies it would need for a period of time."[7] Also through digitization, other benefits could be realized such as reducing manpower requirements in some specialties thereby making possible future force reductions.[8]

Two of the digitization concepts currently being tested are Total Asset Visibility (TAV) and In-transit Visibility (ITV). Total Asset Visibility provides the capability to locate material from the factory to the foxhole, determine its condition, owner, and status either in-transit, storage, or in process. The In-Transit Visibility initiative uses radio frequency tags, fixed and hand held interrogators, computer system links with satellites to track movements of

supplies through the distribution system. These two initiatives provide a complete picture of the supply activities in the distribution system. When completely fielded, these two programs will allow for real time information of the location and status of supplies. In conjunction with a battlefield internet system, soldiers at any level will be able to collect information on what is inbound, where it is currently located, and when it will arrive. Much of the mystery of supply distribution will be eliminated.

Another product of digitization is electronic technical manuals. This will reduce the paper burden on the soldier in the field. Electronic displays, using CD-ROM digitized data and interactive technology will replace the bulky paper manuals and books. The key benefits of this initiative are lighter deployment loads, eliminating the change sheets to technical manuals, and enhanced interactive troubleshooting and repair. Further improvements envisioned would include updates electronically downloaded through a battlefield network.[9]

Telemaintenance is another project currently in development. One project, Virtual Repairman, will allow interactive training for equipment repairers. It will provide tactile sensations inherent in accessing and repairing component parts of the equipment. This system will provide a live video and audio feed from the point of repair to a maintenance station further in the rear. Additionally, there will be a capability to get video assistance from a repair activity or even from the materiel developer.[10] This system will allow for the on site repairer to obtain real time assistance from a subject matter expert located anywhere in the world. This

will significantly enhance the readiness posture for forces by minimizing the time required to repair equipment.[11]

The Standard Army Management Information Systems (STAMIS) found in the Divisional CSS units provide automated logistics information (SAMS, SARSS, and SAAS). These systems were designed to provide the information needed by the commodity managers of the Materiel Management staffs and functional operators. The data produced by these systems were not in the formats that met the commander's requirements.[12] In order to coordinate the operations of the future Army's CSS operations, the ability to command and control the organizations is substantial. The CSS forces of the future will be as dependent, if not more so, on situational awareness as other divisional units.

The Division's Army Tactical Command and Control System (ATCCS) is being designed to meet the command and control support decision making tool. ATCCS includes five systems to support the key command and control functions: maneuver, fire support, air defense, intelligence, and combat service support. The Combat Service Support Control System (CSSCS), one of the sub-systems of ATCCS will aid logistics units in this linkage. CSSCS will provide a picture of unit requirements and support capabilities by collecting, processing, and displaying information on key items of supplies, services, and personnel management that commanders require for the success of an operation. Its key function is to support decisions on the employment of the resources and to communicate the decisions to support elements. CSSCS will not replace the

management functions performed by ULLS, SAMS and SARSS. As currently planned, CSSCS will be located down to brigade level for combat and combat support units and down to battalion level for combat service support units.[13]

An added development that is being tested is Appliqué. Appliqués are integrated hardware and software systems that allows soldiers to directly input messages and/or data into pre-formatted documents. Appliqués are being designed to be connected through either a Local Area Network (LAN) or combat net radio.[14] Appliqués will allow for the rapid dissemination of information anywhere on the battlefield. The ability for a soldier to link the appliqué into the growing telecommunications suites available (i.e. Mobile Subscriber Equipment, portable satellite communications) will allow for the transmission and receipt of real time data; be it operations orders, graphics, or requisitions.

Whatever information system is developed, the interface should be simple enough for the operators to readily understand the capabilities after a minimal amount of training. Recent experience with the Experimental Force (EXFOR) testing Force XXI designs have shown that ATCCS is not a user friendly interface. Computer operators must undergo 100 hours of training to develop minimum proficiency on most of the systems.[15] Additionally, the STAMIS's should be configured to integrate all their functions. Each node, be it a maintenance, supply, or ammunition point, should have the capability to provide the management information for its particular commodity and also have the

ability to process the information management of another commodity in the event of either computer failure or split location operations.

Another equipment enhancement that will greatly aid the logistician is the Palletized Loading System Enhancement (PLS-E). The original PLS was developed to improve the efficiency of the Army's ammunition distribution system. It consisted of a self loading flatrack that can secure a 20 foot container on both the truck and trailer. With its excellent battlefield mobility and load carrying ability, it was a natural choice for additional missions. Various enhancements were developed to the basic flatrack to allow the PLS to carry specific types of cargo other than ammunition. The additional items include liquid, containerized, and breakbulk.[16] Two additional enhancements include the Movement Tracking System (MTS) and the Driver Vision Enhancer (DVE). The MTS combines the global positioning system with a commercial satellite communications system. This will allow the tracking of individual vehicles and cargo throughout the battlefield. It will also let drivers ask questions and report incidents to the trucks headquarters.[17] The DVE is a thermal imaging system capable of operation in degraded visibility conditions such as fog, dust, smoke, and darkness. Neither of these two systems will be peculiar to the PLS-E. They will give the PLS additional capabilities needed by the logisticians to better support combat forces throughout the battlefield.

An aspect of growing importance as systems and equipment are modernized is the reliance on civilian contractors and technicians. In some

cases these civilians are Department of the Army Civilians (DAC) employed by the Army Materiel Command (AMC). They are located at the divisional level in the Logistics Assistance Office (LAO). They provide assistance to the units and repairers along commodity lines. For example, there are representatives from the Tank-Automotive Command (TACOM), Communications - Electronics Command (CECOM), Missile Command (MICOM), and Aviation Troop Support Command (ATCOM). These technical representatives are the technical expert links from the field to the manufacturers. There are also representatives from various companies supplying equipment that provide technical expertise for their equipment. For instance, Hughes Aircraft provides contract maintenance for components of the APACHE Attack helicopter. These contractors and DA civilians are another means of support available to the logistician to use.

The addition of the above mentioned equipment and system enhancers will make the logistician's task easier for the command and control aspect and will also enable logisticians to plan for and support the conduct of all operations regardless of the type or tempo of operation. However, to tie it all together, the CSS organization is the ends to achieve the efficiency garnered by the equipment and methods. As stated earlier, the current CSS organization is bloated and in need of review.

PROPOSED ORGANIZATONS

LTG John G. Coburn, the Army Deputy Chief of Staff for Logistics

(DCSLOG), said that "future CSS organizations will be modular, mobile and

multifunctional. Logistics support will be centralized at the brigade level with

multifunctional forward support companies dedicated to maneuver battalions."[18]

An example of such a proposed logistics organization is the Force XXI Division

Redesign for mechanized and armor divisions. This planned organization retains

the Division Support Command (DISCOM) for its CSS command and control

element. It is composed of a Headquarters and

Headquarters company, three Forward Support Battalions, and a Division

Support Battalion.[19]

The DISCOM headquarters contains the HHC, command section, and a

DIVISION SUPPORT COMMAND
(REDESIGN)

Figure 3 DISCOM REDESIGN

new Support Operations Section. This support operations section contains the

material managers, transportation coordinators, and operations planning

personnel to plan and conduct the support operations for the division. Support

Operations is the focal point for all horizontal and vertical logistics coordination

within the division and will provide overall guidance for all aspects of logistics.[20]

This section combines functions of the Division Materiel Management Center

(DMMC) and the Support Operations Section of the current DISCOM

organization. This new organization is shown at Figure 3.

The proposed Forward Support Battalion (FSB) provides all logistics

support to the maneuver brigade. It includes the direct support maintenance and

supply functions found in the current Forward Support Battalions, as well as the

organizational maintenance and medical support. The core of these support

functions are located in the Forward Support Company (FSC). The FSC

provides multifunctional CSS directly to a maneuver battalion task force. It

provides support for all classes of supply, organizational and direct support

maintenance, as well as medical support to the maneuver battalion. Additionally,

food service operations are consolidated at the FSC for its

FORWARD SUPPORT BATTALION

| SPT |

| HQs | MED | BASE | FWD SPT MECH | FWD SPT ARMOR |

Figure 4 FSB REDESIGN

supported maneuver battalion and in the FSB's Base Support Company for

units located in the Brigade Rear.[21] The FSB proposed structure is portrayed in

Figure 4.

The Division Support Battalion (DSB) is designed to provide support

DIVISION SUPPORT BATTALION

| SPT |

| HQs | QM | TMT | MAINT | MED | AVIM |

Figure 5 DSB REDESIGN

similar to the contemporary Main Support Battalion. It provides logistical support

to division troops not attached to a forward brigade. It additionally provides

reinforcing Class III (bulk fuel) support to the forward support battalions and area

support to units located in the Division Support Area.[22] Unlike the FSB's, the

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Division Support Battalion only provides organizational maintenance to itself and the DISCOM's Headquarters and Headquarters Company. Those units normally located in the division rear (the division signal battalion, air defense artillery battalion, military intelligence battalion, etc) maintain their own organizational maintenance and food service capabilities. The DSB proposed structure is shown in figure 5.

There are many innovations in the division's CSS organizations as exhibited in the Force XXI Division Redesign. The creation of the Forward Support Companies dedicated to support maneuver battalions will ease the combat battalion's burden for logistics planning and execution. The centralization of CSS operations will also allow for the FSC to become an efficient end of the supply pipeline as a dedicated "ship to address" for supplies.[23] The Forward Support Battalion will be robust enough to provide exclusive support to its brigade. Augmentation will still be required for selective Corps plugs (Mortuary Affairs and arid water storage detachments) when needed. The DSB will provide reinforcing bulk fuel support to the FSB and its subordinate units. Both the Division and Forward Support Battalions are organized to provide modular support teams throughout their respective areas regardless of the type of operations or environment. The addition of information technologies such as In Transit Visibility (ITV) and Total Asset Visibility (TAV) coupled with CSSCS and selected appliqués will allow the leveraging of these

technologies to provide timely, efficient, and quality logistical planning and support to the Division.

ANOTHER REDESIGN PROPOSAL

The DISCOM depicted in the Force XXI Redesign is not much different from the current DISCOM organization. Though there are many efficiencies added to the division's CSS operation, there remain many redundancies that can be eliminated to further streamline the division's CSS structure. The addition of the forward support company in each forward support battalion and the elimination of the materièl management center (MMC) are the only organizational changes. There is still room for consolidation of more functions and elimination of others.

The main mission for the DISCOM is to command and control the total organic and attached CSS elements in the Division.[24] Three of the division support command's subordinate battalions will normally be attached to its supported brigade during any deployment. This leaves the DISCOM with only the division support battalion under its direct command. A solution would be to permanently attach the forward support battalions to their brigades. The division support battalion would then be a separate battalion, similar to the Division's signal battalion or military intelligence battalion.

A counter argument to eliminating the DISCOM is the need for materiel management and movement control capabilities included in the DISCOM's

support operations section. Each of the support battalions, division and forward, have support operations sections with identical maintenance and supply STAMISs. With the advent of CSSCS and appliqués, the support battalions would be able to receive real time information from both their own subordinate units, from corps CSS units, and higher sources of support. Therefore, the support battalions would not need the DISCOM's Support Operations materiel management section. Logistics planning data needed by the Division's staff would be available from the CSSCS data base server. With the elimination of the DISCOM there would be an additional burden placed on the Division Support Battalion for the planning of future CSS operations but these too could be overcome by the leveraging of automated decision tools built into the CSSCS and the ready access to it.

The concept of "fix forward" will remain the same. With the consolidation of maintenance functions at the Forward Support Battalion, the scheduling of preventive maintenance operations as well as the need for any unscheduled maintenance actions will be the responsibility of the supported battalion's forward support company. The need for assimilating civilian contractors and DA civilians into the operation will be critical for a total quality effort. As was mentioned earlier, the expertise the civilians bring to the maintenance effort is crucial for system and equipment maintenance especially in the areas of aviation and communications - electronics systems. Positions within the organization for

these technicians must be designed and planned for. These positions should be manned during peacetime as well as war.

The proposed method for unit supply and re-supply considered for the Division Redesign CSS operations consists of a combination of throughput from a variety of sources. Re-supply may come from the supporting unit, forward support battalion, corps and theater units, and directly from the manufacturer. The goal is to get away from the reliance on stockpiles of supplies throughout the battlefield.[25] The techniques and procedures in the form of TAV, ITV, and the Movement Tracking System (MTS) will allow this to occur. The main effort should be to move the needed supplies to the requesting unit (unit distribution) as opposed to the unit going after the supplies (supply point distribution). A key to this will be the unit, regardless of size, making known its needs. The days of pushing what is thought to be needed instead of what is actually needed are a thing of the past. Using appliqué to make a unit's requirements known will enable the supporting unit to acquire the needed items and have it delivered to the requesting unit when it is actually needed.

CONCLUSIONS

The rapid progressions that have been made in technology and especially in the area of information systems gives the Army an outstanding opportunity to re-engineer the current combat service support operational mode. Throwing new systems and technology at the current CSS structure though is not the answer.

On the other hand, to let technology pass us by because it is too expensive, too complicated, or just too uncomfortable to change is not the correct answer. It is now time to make Intransit Visibility and Total Asset Visibility an operational system as opposed to a motto. The efficiencies realized by just these two operations will significantly enable the organizational changes described above to happen. The integration of appliqué and assured telecommunications throughout the division's CSS structure (and the division as a whole) will guarantee "real time" situational knowledge all through the battlefield. There is a critical need for logisticians to demonstrate this new paradigm to battalion and brigade commanders. This will be the key to acceptance. The natural hedge of having a stockpile of repair parts and supplies "just in case" there may be a need for them must be broken with proof that the logistician can deliver the items at the right place, at the right time, and the right quantity. Failure to do this will doom any attempted improvements or enhancements the logisticians may try .to accomplish for efficiencies. There must be a total integration of these units in regards to training as well as an understanding of the capabilities that are inherent in the supporting unit.

There are many attributes logisticians and their units brings to the battlefield. The ability to read minds is not one of them. The supported units need to make their requirements known. Once that is accomplished, the CSS organization can provide the needed services and supplies. This does not eliminate the need for logisticians to maintain close liaison with their units. To be

successful on the battlefield, supporting and supported units must be capable of close coordination. This coordination, supplemented with current and emerging technology and the resulting change in support paradigm, will maintain the Army's preeminence through the initial decade of the next century.

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