A Logistics "Think Piece"

How Far Have We Progressed?

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How far have we progressed in logistics management systems? This article focuses on two key logistics areas: general supplies and ammunition. It is not an academic paper supported with numerous footnotes and extensive research data, the article is replete with my personal experiences and involvement, and discussions with knowledgeable persons. I ask you, the reader, to accept on good faith that all of the historical events noted below in fact happened.

Well-intended, But Do They Work?

My challenge in writing this article was to be creative and provide a logistics think piece. Indeed, I intend to make you think. Comparisons, actually juxtapositions, will be made of logistics operating systems and the realities confronting the logistics operators actually using the systems. The irony, and perhaps humor, is that the systems I will describe in this article were well intended and met all of the checkmarks; but, they just did not work. That is not to say the systems were not good or they failed. What did not work was a combination of things.

A former Commander of the U.S. Army Support Group for Desert Storm stated it best: "The systems were never tested with Pvt. Murphy under conditions of total chaos." I will identify problems, but in fact do not plan to offer solutions. I intend to make you think. I want you to realize and think about well-intended and executed programs that sometimes just do not work. And, if you ever become a program manager, I hope that your

U.S. Army photo

► STEVEDORES AT THE PORT OF JEDDAH, SAUDI ARABIA, POSITION CARGO ROPES BENEATH PALLETIZED SUPPLIES FOR LOADING ABOARD THE USNS SIRIUS (TAFS-8), A NAVAL FLEET AUXILIARY FORCE COMBAT STORES SHIP OF THE MILITARY SEALIFT COMMAND, IN MARCH 1991, FOR OPERATION DESERT STORM.

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thought process would be: "What can I do to at least plan for such unplanned events," rather than, "Boy did they screw that up." I would be willing to bet that the program managers or their equivalents for the systems I will describe in this article were quite sure that they had covered all of the possibilities, and that success was therefore certain.

Rationalization Trap

Requirements provides a rationalization trap that is easy to fall into. If the requirements do not specify the specific operating conditions in effect, then the designers of the system cannot be faulted for its nonperformance. I will not debate the pros and cons of this issue. Personally, however, I believe it is a cop-out.

Let me give an example. This episode illustrates what I call the "was not in my requirements" lament. At the same time, I will provide my first scenario of a well-intended Logistics System that went sour.

▲ A WAREHOUSE AT THE PORT OF JEDDAH, SAUDI ARABIA, CONTAINS SUPPLIES FOR OPERATION DESERT STORM. THE SUPPLIES WERE LOADED ONTO MILITARY SEALIFT COMMAND SHIPS FOR TRANSPORT TO THE THEATER OF OPERATIONS.

◀ SOLDIERS OFF-LOADING SUPPLIES IN SAUDI ARABIA.

The Study That Wasn't

During the Viet Nam War [yes, I am going to tell a war story, so sit back, relax, and think], after three years in Army Logistics, I got a chance to practice practical logistics. I commanded a forward support maintenance and supply company in an infantry division. The C/709th was Charlie Company, 709th Maintenance Battalion, 9th Infantry Division.

During my command, a review team from the continental United States (CONUS) was surveying the combat performance of logistics units. They were specifically interested in "riverine units." Loosely defined, riverine meant that all of the combat operations of the division were centered about a river. Soldiers moved to starting positions by boat, supporting fire came from gunboats and Paddy Platforms, and billets were barges in the river, etc.

The U.S. Army Combat Developments Command (CDC) performed the survey. They were the predecessor of the current Army doctrine agency, Training and Doctrine Command. The team briefed senior division logistics officials: G-4, Division Support Command (DISCOM) Commander, etc., and requested a list of company-sized units they could survey. Their survey was mostly a comprehensive questionnaire:

> *Do you, Unit Commander, have enough of the right kind of assets per the standard Table of Organization and Equipment (TO&E) to do the present assigned job?*

Well, whoever would believe that they'd actually ask a poor slug in the field if enough tools, personnel, etc., were on-hand to do the job? What a marvelous idea! Step right this way folks. I diligently filled out the questionnaire, used up the generous space provided for "additional comments," and sent it forward.

My next assignment was, coincidentally, on the post where the Ordnance CDC field office was located. I always had the suspicion that the survey

Photo by PH2 Milton R. Savage, USNR-R, unless otherwise noted

requirement of a "through-channels endorsement" was a guaranteed mechanism to filter my comments. To my surprise and to the credit of both the DISCOM Commander and the Division G-4, my survey came through untouched except for the required forwarding endorsement.

What was the final result? The CDC threw out the entire questionnaire! Their reason: The requirement for the C/709th was to assess a TO&E logistics unit in a riverine environment. *But,* the C/709th, and in fact the entire 9th Infantry Division, was operating under an approved *modified* TO&E; therefore, we were disqualified. What garbage! The logistics doctrine agency, CDC, set out to evaluate logistics units in combat. But, they disqualified the responses from the units operating *under the very conditions they wished to study*. Why? Because the CDC team determined that those units were not organized under a preconceived and approved *standard* TO&E.

The entire study failed. The planners had to admit there were no standard units to evaluate, and they stood on the requirement that only standard units qualified. The opportunity to learn from the past to plan a better future was lost. You decide; was it a cop-out?

Wait, There's More to the Story

Since we are there [Viet Nam], let's stay awhile. The C/709th operated a 3,000+ line item authorized stockage list for its customers. Customers were a reinforced infantry brigade and all of its assigned and attached units. Principal among the latter was an artillery battalion. The entire receipt, storage, and issue of repair parts was a manual, labor-intensive operation. The single concession to automation was an IBM 026 keypunch for requisitions going forward. Two noncommissioned officers (NCO) and 13 enlisted men operated the warehouse and the records section.

Before I proceed any further, I need to explain the basic supply accounting procedures in those early years. If I said all calculations were automated, you would probably not give it another thought. And, if I said all calculations were manual, you would not have any appreciation for the effort. Let's return for a short course in Technical Supply Procedures 101.

In those days, supply personnel prepared handwritten customer requests or requisitions on preprinted forms. A requisition for an item, independent of quantity desired, was a demand. Three demands for an item in any 90-day period qualified that item for stockage. The amount stocked was calculated using a formula requiring basic arithmetic. This task was normally performed by an individual no higher ranking than grade E4, using an adding machine, a modicum of brainpower, a stubby pencil, and a whole family of preprinted forms.

Basic Operating Parameters

Armed with such modern, labor-saving devices, the NCO was expected to calculate basic operating parameters: the maximum quantity to be stocked (Requisitioning Objective); the inventory level where replenishment was required (Reorder Point); and the level at which stocked items must never go below, which required a priority requisition if reached (Safety Level).

The performance measures were Demand Satisfaction and Demand Accommodation. Accommodation was a simple fraction; requested items divided by items stocked. Satisfaction was equally simple; requests for items stocked and immediately filled (satisfied) divided by requests for items stocked. The goals were 85 percent and 95 percent respectively. All supply transactions were posted daily and manually to the 3,000+ stock record cards. This entire effort was dependent on many things, with receipt of supplies at the top of the list.

"Lost in the Depot"

The depot at Long Binh, my source of supply, was collocated with the theater Inventory Control Center, the 14th ICC. Except for items requiring environmental protection, batteries were refrigerated; all Class VII and IX repair parts were stored outside. Some were on hardstand, and some were covered. Overall, the 14th ICC had passable internal records. That is to say, the ICC was able to account for items shipped to them and received in their storage yard. But, more often than not, they had no idea where in the yard the item was!

Warehouse discipline and the enormous amount of supplies moving in and around the yard contributed to this "lost-in-the-depot" situation. Supplies were off-loaded quickly and placed in a convenient location, probably the first open pad the forklift driver found. In haste to drop this pallet and get the next one, the driver either did not report or incorrectly reported the location of the pallet.

When this error was discovered, it was far too late to ask the driver to recall the exact location of the pallet of widgets. In fact, before the day was over, it was too late to ask any warehouseman or forklift driver the exact location of a particular pallet of goods. The important point is that the item manager knew 1,000 widgets were just delivered, and now the backorders for widgets could be released. But, nobody had a correct location for the 1,000 widgets.

If supplies are essentially lost in the depot, the item manager cannot release any customer requisitions for the lost items. After a few material release denials, the internal audit section of the depot goes into action. Under more normal conditions, this would be as simple as going to the reported location and confirming whether or not the assets were in fact there. After this initial look, a local Standard Operating Procedure to find the missing supplies would usually be successful. But, item managers were overwhelmed by the number of denials; they could not even begin to research and correct each one.

If this had occurred under conditions much less hectic, a 100-percent, wall-to-wall inventory would be done to establish a correct baseline. However, closing the depot for a 100-percent inventory was out of the question. Even if a good location survey and count were done, the mechanism that caused the problem was not fixed. The first day of yard operations would start the error cycle anew. This sounds too ludicrous to have any semblance of truth – but it happened.

The Solution — Symbiosis and Greed

The immediate solution, at least for the 14th ICC customer, was a combination of symbiosis and greed. The solution - an earlier-era MRE [not meals ready to eat, but Materiel Release Expediters]. I and the other customer units were granted permission to allow highly qualified individuals free access to the depot storage area, with the single caveat that they remove nothing. The MREs were maintenance and supply NCOs who knew what the outer package of a widget looked like. They found items solely by recognition of the box.

Now enters the greed and symbiosis. The MRE team wrote down the exact location and quantity of the "found goods"; then the senior NCO had a short talk with the item manager.

> **Sergeant**: When are you going to release my requisition for 10 generator engines.
>
> **Supply NCO**: I've cut a dozen releases for those engines and all of them came back denied. My record says there are over 100 in the depot, but the warehouse foreman can't find one!
>
> **Sergeant**: Well, if I tell you where all 100 are, will you give me my 10 up front?
>
> **Supply NCO**: Sergeant, you know that I have to issue all requisitions based on priority and age, and I can't just give you 10 up front for the C/709th.
>
> **Sergeant**: Well, seems to me if I don't get my 10, you may never find the 100, and a whole lot of customers will be unhappy. But, if I get my 10, you get to release 90 against your due-outs, and it seems to me that those customers would be most grateful to you."

Containers did not identify what was inside! Generally, the last item stuffed was used for transportation movement purposes, and no other external data noted what was inside.

After the first few rounds of this quid-pro-quid routine, the item managers quickly saw that they were the victim of friendly blackmail, which in reality had no real victim. It was better to capitulate rather than argue the impropriety. To legitimatize the event, the MRE team got to carry a walk-through release for the 10 items. Simultaneously, the item manager obtained a correct location for the lost assets and promptly cut releases for the remaining 90, which miraculously were released rather than denied.

If the day was successful, my MRE team would have a truck full of supplies on the road at first light the next day. My investment was generally three senior supply or maintenance technicians, one jeep for their use, and two trucks with drivers on a round-robin circuit. My Return on Investment was satisfactory supply performance.

But What's Inside?

One more illustration in this time period, and then we will move on. Its importance will become obvious later. Supplies coming into the theater were universally identified as "X 60-foot containers with Z short tons of general supplies." When a specific container was shipped to the 14th ICC, the contents were a mystery. If a shipping document was outside the container, it merely identified one of the items inside and listed total tons. If one was lucky, a complete printout of contents was inside the container. If the container went to a break-bulk issue point, this procedure was even more aggravating since the items inside were for many customers versus a single customer, and every package had to be read to see who got it.

Apparently, this situation was never corrected. It fell into the "That can't be so" syndrome. It was commonly assumed that CONUS depots and ports knew what they shipped. But, in fact they were never certain what ship carried what goods. At an Ordnance Corps dinner at Aberdeen Proving Ground, a former Commanding General of the First Logistics Command stated that this situation of unidentified short tons of cargo was one of the most aggravating problems during his [Viet Nam] tour. The shippers, for their part, were only concerned about hazardous cargo, cube, and weight; the "eaches" and "whatsits" never concerned them.

Now Let's Go to Saudi Arabia

Let's make a quantum leap to an area support group assigned to the U.S. Army Support Group (USASG) in Saudi Arabia during Desert Shield/Storm. The USASG was the only theater general support supply

and maintenance activity. Its subordinate units had modern computers to do all of the necessary supply accounting procedures associated with receipt, storage, and issue. The computer was wonderful (I don't know what it was called, and the name is not important for this paper). The clerk entered information at the keyboard, pushed enter or some other function key, and the computer did its thing. Among other things, the output was used to release repair parts to customers and forward requisitions to either sister units who stock items not on-hand, or to the group headquarters for replenishment.

Enter the "Sneaker Net"

There was, however, a single monumental problem: the logistics units could not interconnect the computers to take advantage of their collective ability as a network. Someone forgot about it! Presumably, goes the story, such units would only be deployed to an established theater where a communications infrastructure would be in-place. They either were not expected or not supposed to go into an area that was completely devoid of any military communications infrastructure.

To his indomitable credit, Pvt. Murphy solved the communications problem; enter the "sneaker net." When enough data are processed to fit on a floppy disk, you stop processing, save, download to a floppy, put on your sneakers, and run the disk to the next computer. It works! But, you do this at least once a day. How many times did a disk get trashed in-transit? I did not ask, but I bet it was more than zero.

Another problem was transaction volume. The computer systems were quickly saturated with the volume of transactions they were expected to run. Am I telling the same story but only changing the playbill? No! I assure you this is a new story!

Volume was a little harder to solve. A solution was implemented, but its reliability was not always what was desired. Burst technology was its name. Basically an entire data run was compressed, and a burst of data was dumped to the disk. Then the sneaker net transported this burst disk to the next computer, and the disk and new computer did a reverse burst. This was expensive and not 100-percent reliable.

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That Old Bugaboo Resurfaces - What's Inside?

One final aggravation hampered supply discipline for Desert Storm. Containers did not identify what was inside! Generally, the last item stuffed was used for transportation movement purposes, and no other external data noted what was inside. The war ended too soon to correct this. The logisticians who were there after the 100 hours' conflict spent the next 12 months opening containers, inventorying the contents, and picking the assets up on accountable records.

Prior to and during the 100 hours' conflict, this "no-identity" problem was not a problem. Why? For every one item needed, multiple priority 02 requisitions were submitted. Supply discipline did not exist. So, the chances of just stumbling across a needed item were high, given the multiple requisitioning.

Ammunition - A Whole New Ball of Wax

It is generally accepted that food, water, and ammunition are absolute necessities for combat. When all three are available, we can hold out for some time; and if not available, we are down to a few days of survival. So, we must be able to account for ammunition. When Desert Shield started, the Army was implementing a controversial headquarters decision; the accountable record for all Army ammunition would be at Headquarters, Army Materiel Command (AMC). Only ammunition in a soldier's possession was dropped from the record. The AMC owned all of the rest. A theater commander might have physical custody of war reserve assets, but Army owned it through their agent, AMC.

For Desert Shield/Storm, ammunition movement anywhere inside the lower 48 states was highly accurate. We knew exactly what was in each truck on the highway. We knew when it departed, who was driving, and when it should arrive. We knew exactly where the truck was on the highway; most were tracked by satellite. Those not on the satellite called in at least every 24 hours. We planned what truck would be at what port and what ship would transport the ammunition to the theater. But, asset visibility at the port of embarkation began to break down.

As stated earlier, ships are cube and tonnage devices. We wanted container XJR to go on ship L, but that container was 9th in line, and the ship only needed two more containers. So the first two in line went aboard. Container XJR went on ship Q on the other side of the pier. Unfortunately, the accountable record did not get this last-minute change. When ships were unloaded at the port of debarkation, all asset visibility was lost. We only knew that X tons of bullets were shipped and off-loaded.

What was the magnitude of this? The theater commander was not amused. He wanted exact locations of exact types of ammunition, especially tank ammunition. According to official records, 878,000 tons of DoD ammunition were shipped! This equates to 14,630 railroad cars; 43,900 trailers; or 135 ships. And, when it was all over, what did we know or learn? We knew it did not work as planned. We knew what was shipped and off-loaded; shipped and turned around in mid-ocean (war ended, not needed, or broken ship); and what was retrograded. The simple arithmetic difference is logistics losses for Operation Desert Storm. Combat consumption is a sub-element of these losses.

Well, do good systems always work? If not, is it or was it the fault of the system? I do not have an answer; I've been writing not thinking. But you have been thinking. I have a final item for those thoughts. Three of the above systems were designed to effectively do receipt, storage, and issue. They span 25 years of logistics, from adding machines and stubby pencils to modern computers. Each depended on intelligent input. But, none received intelligent input on incoming supplies. Did they and are we putting emphasis on the wrong controlling factor? How could we have repeated the same errors made in Viet Nam 25 years earlier, 25 years later in Saudi Arabia? Have we progressed at all? You decide.

A Word From the Author: The Desert Storm and Viet Nam experiences described in the preceding article were my own personal experiences. I was actively engaged in the situations noted. For brevity's sake, I shortened much of the situations recounted and left out many of the details. The data related to the U.S. Army Support Group came from Col. W. Martinous, U.S. Army (Retired), a former Commander of the Group and good friend. Comments by the Commanding General of the First Logistics Command were given at a dinner speech to my class, by Lt. Gen. Heiser, U.S. Army, in 1970.

WELCOME TO APMC 96-1

ON JANUARY 23, 1996, THE DEFENSE SYSTEMS MANAGEMENT COLLEGE WELCOMED OVER 400 STUDENTS TO ITS ADVANCED PROGRAM MANAGEMENT COURSE (APMC 96-1). AUTOMATED BADGING EQUIPMENT LINKED TO REGISTRAR DATABASE INFORMATION ALLOWED THE COLLEGE INPROCESSING TEAM TO REGISTER AND BADGE OVER 400 STUDENTS IN UNDER TWO HOURS. FROM LEFT: YEOMAN 1ST CLASS NILSA SWIFT, NAVY LIAISON; EARL FREDDIE, DEPARTMENT OF NAVY, APMC 96-1; CAPT. DALE JACKMAN, USAF, APMC 96-1; CAPT WILLIAM L. SHUTT, USN, APMC 96-1; LT. COL THOMAS V. DEMARS, JR., APMC 96-1; JANET VINCENT, COURSE ADMINISTRATOR, APMC 96-1.

ON HAND TO GREET THE STUDENTS AND CONDUCT THE CLASS CONVOCATION FOR APMC 96-1 WERE FROM LEFT: BRIG. GEN. CLAUDE M. BOLTON, JR., USAF, DSMC COMMANDANT; MAJ. BRAD SHAFFER, USA, TRAINING AND DOCTRINE COMMAND, FORT MONROE, VA. (STUDENT); MRS. COLLEEN PRESTON, DEPUTY UNDER SECRETARY OF DEFENSE (ACQUISITION REFORM); MR. ROBERT FREDRICH, ISAC STUDENT; AND MAJ. NELL STINE, USAF, FORT MEADE, MD. (STUDENT).

Photos by Richard Mattox