

LOGISTICS TRANSFORMATION

We're looking to the business community and asking, "What are you doing? How do you achieve this 'just in time' instead of 'just in case' so we can eliminate some of these storehouses that we have, these warehouses stacked with equipment that may never be used." We want to have the kind of system where we can get something that's needed to the field just in time—the right place, the right time, and the right equipment. We're doing that. We are proceeding into the future with astonishing velocity, so we have to continue tearing down archaic barriers and burdens, and harness the full potential of private industry, and to continue to answer enduring challenges with novel solutions. That's really the spirit behind defense and acquisition reform.

-- William S. Cohen, Former Secretary of Defense, USA

INTRODUCTION

One of the favorite buzz words for the last several years has been the idea of transformation. Transformation is a process by which the military achieves and maintains advantage through changes in operational concepts, organizational structure, and/or technologies that significantly improve its warfighting capabilities or ability to meet the demands of a changing security environment. As one can imagine, the term transformation can have many different meanings, depending on the individual point of view and area of expertise. The logistics transformation initiative provides real-time logistics situational awareness; instills soldiers confidence by optimizing logistics business processes, transitioning to a logistics system open architecture that provides interoperable and actionable logistics information; and finally, enhances logistics response to the joint warfighter. Commercial industry best practices in the areas of supply support and acquisition may be the key to achieving real and lasting logistics transformation.

As we progress through Revolution in Military Affairs (RMA) and reengineer military logistics, the defence logistics community is challenged to do business better, cheaper and faster than ever before. What is being tried to bring about in defence logistics has already been demonstrated in the commercial world. Today, you can log on to the Internet, click on to a commercial resource, choose what you want, place an order, check its availability, purchase it, track its progress from the warehouse to your door, and have greater than 99 percent confidence that it will arrive at the right time. Bottom line is : The soldier wants logistics where he needs it, when he needs it, with the right quality and quantity. . .every time. And we better provide that since this the least the soldier deserves.

It is time to recognize that logistics is now more than ever a force multiplier. An agile, responsive, connected logistics system will enhance combat power and force maneuverability. Logistics is not simply the movement of supplies; it is the entire set of activities that goes from factory to trench and back again.

Lot of work have been done in USA and in advanced countries on military logistics transformation. A close look will have to be taken to see the latest concepts and techniques on logistics transformation and utilize the knowledge to suitably modify our concepts in typical Indian conditions.

INADEQUACIES OF PRESENT SYSTEM

Why am I still throwing billions down this black hole called spares?

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

Historically, military logistics has taken a mass-based approach to satisfying operational needs and has generated “iron mountains” of equipment, commodities and items. Mass may still continue to work where demand is predictable or stable and if the situation permits time to build up logistics where there is little risk of having stockpiled unusable or excess items. Just-in-time logistics was an attempt to apply commercial practices to lean out the inventory and make the logistics system more efficient. Just-in-time works well but creates a very brittle supply chain that is at much higher risk in a dynamic environment due to inflexibility, vulnerability to damage and destruction, and potential inability to service dynamically generated, prioritized needs.

Recent operational experiences by the USA has called for an urgent, compelling and chronic need for improvement in logistics. After Action Reports (AARs) from Operations Enduring Freedom (OEF) and Iraqi Freedom (OIF) indicated the hierarchical stovepipe supply system was too slow and inflexible to adequately support operations. Demand forecasts were determined by an inflexible and outdated requisition process that relied upon World War II-era time and even current peacetime consumption rates. Michael Wynne, then Principal Deputy Under Secretary of Defense responsible for logistics policy, stated, “Whether push or pull, our current logistics are reactive. . . . [We have] an industrial age vendor struggling to satisfy an information age customer. Reactive logistics, the old logistics will never be able to keep up with warfare as we know it.”

When defence services is benchmarked against comparable private sector operations, the limitations of its current system become quite clear. Domestic distribution of goods from defense depots takes an average of 24 days; comparable private sector operations do it in one to three days. Repair cycle time for component systems is 18-25 days for US Department of Defense(DoD) and 3-14 days in the private sector.

Operations and Maintenance [O&M] Costs. Aging equipments cannot be replaced in the near future. Consequently, Operations and Maintenance [O&M] costs continue to

escalate. This results in reduced readiness yet at increasing costs. And, unless the trend is reversed quickly and deliberately, we face a vicious circle. Maintenance of erstwhile Soviet equipments in all the three services is an apt example.

Inventory Management. It is a perennial problem. We spend hundreds of crores of rupees on excess supplies because of an "inherent culture...that it was better to overbuy items than to manage with just the amount of stock needed." However, about half of the inventory is beyond what is needed to support war reserve and current operating requirements. The problem is common to all defence services.

Excess Base Capacity. Excessive depot capacities continue to drain operation and maintenance funds. Overall, infrastructure overcapacity continues to divert resources unnecessarily. US Secretary of Defense Rumsfeld continued to push for increased outsourcing, especially in basic administrative services such as information technology, security, and maintenance. "Why is the Defense Department one of the last organizations that still cuts its own checks?" he asked in 2001 in a harbinger of contracting out to come. "When an entire industry exists just to run warehouses efficiently, why do we still own and operate so many of our own? At bases around the world, why do we pick up our own garbage and mop our own floors rather than contracting those services out, as many businesses do? Under the Pentagon's proposal, 33 major bases will be closed, another 22 will be realigned around new missions, and more than 800 smaller installations will take budget and/or personnel cuts. All totaled, more than 200,000 military and civilian employees will move to new locations, while 18,000 will lose their jobs altogether. Alongside the base closings and realignments, the Pentagon also recommended a massive consolidation of the Defense Finance and Accounting Service, which will fold 23 domestic facilities into just three sharp realignment abroad."

LESSONS FROM CORPORATE WORLD

If program managers want their program to survive, they must solve and re solve the riddle of why commercial cycle times are measured in weeks, months or just a few years, while DoD's cycle time is measured in decades.

Vice Adm (Retd.) Arthur Cebrowski, Director,
U.S. Office of Force Transformation

The private sector has had tremendous successes in organizing and managing end-to-end supply chains, increasing both the speed and reliability of transportation and reducing logistics costs. The catalyst for the globalization of commerce was the transformation of supply chain management, also known as logistics. Wal-Mart success was built on an agile, lean and integrated logistics system. Wal-Mart has been characterized as likely to be the first company having one trillion dollars of inventory, yet

owning nothing. They buy products from their suppliers moments after you buy them from Wal-Mart, dramatically reducing inventory costs, thereby freeing resources for investment elsewhere. US DoD, with its millions of people, thousands of aircraft and hundreds of ships, found it difficult to do what United Parcel Service (UPS) does routinely – deliver large volumes of packages over long distances, accurately and on time. These companies have solved the last mile problem that still plagues military logistics. Companies have revolutionized supply production and supply chain management with concepts such as Lean, Six Sigma and Total Asset Visibility.

Direct comparisons to the private sector are dangerous. The Armed Forces are not Wal-Mart. Certain commonalities do exist with the complex sourcing networks, large volumes of materiel and the high dependency on commercial logistics service providers. But, there is no private enterprise that matches the size of the Armed Forces, resulting in the need to not blindly accept business best practices.

Nevertheless, there are many lessons learned by the private sector and techniques it has developed that are applicable to military logistics. However, with challenge comes the opportunity to bring private sector best practices into the solution. Procedures and techniques, pioneered by the private sector, have direct application to the Ministry of Defence. Supply Chain Management, Enterprise Resource Planning, and e-business are more than buzzwords in the commercial world. Armed Forces can tap this talent and technology by partnering to accomplish its own logistics transformation. However, overcoming inefficiency and obsolescence may be even more of a challenge. It is also more important because that is where the true savings are.

While the specific details of final reforms are yet to be thought of, the conclusions are very clear. To achieve its logistics reform goals, the armed forces must undergo revolutionary change in five key areas: **inventory management, outsourcing of non-core functions, defence job transition, rationalizing excess industrial capacity, and mobility (or transportation).**

Supply Chain Management(SCM). Supply chain management describes a wide scope of activities, ranging from how customer orders are processed to how used products are disposed or recycled. These myriad activities are largely focused on three primary objectives:

- Getting the right product to the right place at the lowest cost.
- Keeping inventory low as possible while still offering superior customer service.
- Reducing cycle times.

Companies employing best-in-class supply chain management practices are outperforming their competitors. Should the Defence Services try to emulate the best the private sector has to offer in inventory management practices? Leading companies have been able to achieve astonishing economies in supplier chain operations by employing an integrated approach known as **enterprise management**. The technique, made possible by advances in computer workstation technology, has enabled powerful

software to be combined into complete process management applications. However, we need not always look west for solutions. In innovations we are second to none. In Mumbai the “dabbawalas” while providing dabbas to the officegoing people from their residences to offices have attained sigma six reliability, the ultimate in supply chain management

In today’s business environment, an organization’s desire to manage all facets of the operation runs counter to its desire to be fast and flexible. In the enterprise wide model, collaborative partnering replaces the old hierarchy of a senior management controlling all aspects of a diversified organization. Information flows throughout the organization, as opposed to the old system of top-down, where information flows between headquarters and the field. New software technologies permit the seamless flow of information and materials between different units of a larger business. Enterprise management software generally falls into one of two categories—Enterprise Resource Planning (ERP) applications from companies and planning engine applications from software vendors, which integrate transaction based processes such as shop floor control, shipping, traffic, logistics, and inventory management. The acceptance of these techniques is becoming near universal in the second half of the 1990s investing heavily in enterprise management solutions.

Another commercial best practice is taking on new possibilities with the advent of SCM and ERP. **Outsourcing** non-core operations in order to tap providers who are world class in their own fields has been gaining ground with service providers. In the service and support industry, outsourcing followed the general private sector pattern. The efficiencies and savings brought on by implementing supply chain management techniques had the concomitant effect of creating a subtier of reliable, stable suppliers that eventually became outsourcing partners. Those successes enabled corporate chiefs to further focus on core business lines and look outside their companies for help in replacing traditional line operating functions. The same principles can be very well applied in defence logistics.

INFORMATION AGE, NETWORK CENTRIC WARFARE AND SENSE AND RESPONSE LOGISTICS

Be nice to your mother but love your logisticians and communicators.
Gen Charles A. Horner, USAF

Primary Characteristics of the Emerging Way of War. Although the concept of what the future force will look like and how it will conduct military operations is still evolving, two salient characteristics seem to stand out. It will be a joint, network-centric force and it will be capable of executing Effects Based Operations (EBO), enabled by Network-

centric warfare (NCW). Already, the combination of modern technology and new operational concepts has enabled networked units and individual platforms to operate together in ways not considered possible just a few years ago. Network-centric warfare is characterized by the ability of geographically dispersed forces to attain a high level of shared battlespace awareness that is exploited to achieve strategic, operational, and tactical objectives in accordance with the commander's intent. This linking of people, platforms, weapons, sensors, and decision aids into a single network creates a whole that is clearly greater than the sum of its parts. The result is networked forces that operate with increased speed and synchronization and are capable of achieving massed effects, in many situations without the physical massing of forces required in the past.

Sense and Response Logistics. The Office of Force Transformation(OFT) of the US DoD has taken initiative regarding a new concept called "Sense and Respond Logistics." The sense and respond concept is focused on achieving a network-centric environment where information technology provides superior and relatively seamless connectivity of data, information, and awareness. The concept seeks to develop an adaptive logistics system that enables units to draw support from a number of supply nodes that are distributed dynamically across the battlefield as operations dictate. Robust and flexible transportation networks, enabled by situational awareness of requirements, demand, and location of forces, mitigate risk and uncertainty. This concept mirrors and borrows liberally from recently successful civilian industrial logistics models. The underpinning theory of Logistics Transformation and Focused Logistics is based on ensuring that the right commodity is delivered to the right place, in the right quantity and configuration, and at the right time with the minimal logistics footprint forward in the area of operations. Whether termed inventory in motion, just-in-time logistics, distribution-based logistics, precision logistics, or sense and respond logistics, the concept seeks to leverage select technologies, primarily digital communications and network systems, to reduce the necessity to stockpile resources to meet demands. The goal is to keep large quantities of supplies and the forces needed to manage them away from the area of operations and still be able to get it rapidly to the requesting unit when required.



SOME CAUTIONARY THOUGHTS

A real knowledge of supply and movement factors must be the basis of every leader's plan; only then can he know how and when to take risks with those factors, and battles are won only by taking risks.

Field Marshal A P Wavell

Network Centric Warfare(NCW) advocates stated, "Across broad sectors of economy, dominant capabilities such as Dell Computers, Cisco Systems, Charles Schwab, Wal Mart and Amazon.com are successfully employing information based strategies to create a competitive advantage in their respective domain" [David S Alberts, John J Gratska and Frederick P Stein, NCW: Developing and Leveraging Information Superiority, Washington DC: CCRP Publication, 1999. P35.] Yet little consideration has been given to what is now obvious, that many companies which were once models of revolutionary change have come to grief: Enron, WorldCom, Vivendi, AOL Time Warner, Qwest, Global Crossing, Sunbeam, British Telecom, Marconi, Tyco, and AT&T. The list goes on and raises basic questions because all these firms underwent radical transformation and were either total disasters (Enron) or badly damaged (AT&T).

Some enthusiasts claim that the challenge is making the services give up their bureaucratic ways to embrace the new organization. But this attitude fails to appreciate that the business landscape is littered with the carcasses of companies that were transformed. Who would argue today that the defence services should conduct

business like Enron, to take the most extreme example of a networked, asset-light organization?

If the Armed Forces is going to borrow from business experience it must examine both sides, in particular how many corporate transformations once held up as examples have since proven to be catastrophes. Ignoring the disasters is as big a mistake as concluding that military transformation is not needed at all or that large organizations are impossible to change. Sense and Response Logistics has worked in practice; although primarily in civilian sector commercial industry or in extremely small-scale military contingencies. The real debate should be about why it has failed to work in operations like OEF and OIF, what is the risk when it fails to work and how it can be mitigated. Is it valid in its ability to meet the needs of the military in its current form or a new or hybrid concept should be developed. Given this reality, an adjustment must be made to the concept. The first parameter must be effectiveness. The system has to work effectively or it will be of no value; efficiency is of lesser importance. The context and conditions in which military logistics is conducted are radically different and much more complex. However, the desire to parallel "Wal-Mart like" efficiencies runs quietly under the surface. Maximizing efficiency, or even optimizing it, may not provide the necessary effectiveness. The heretofore traditional method of logistics, where the footprint was large and stocks equating to many days of supply were established, was an effective method, but it clearly lacked efficiencies. Distribution-based logistics offers efficiencies, but it cannot seek these at the expense of the ultimate bottom line, which is effective support. Achieving efficiencies, especially at the strategic level where money is big and the perspective is broad, that do not contribute to effectiveness at the operational and tactical level ultimately risk the lives of soldiers, failure of missions, and the loss of a war.

Modern deep battle doctrine stresses the need to strike at the enemy's rear areas, where he is vulnerable and his supply system is located. If we are fighting a reasonable competent and technologically sophisticated opponent then we can assume that he will be looking to do the same to us, that is, dislocate our fighting forces from our supply line. This issue has not been addressed yet. Even an asymmetric opponent will be out to try and make sure that 'just in time' become 'just too late'.

There are risks in becoming too dependent on corporate outsourcing in that the military may cease to be an 'intelligent customer'. In our exuberance for outsourcing we should not lose some of our core competencies for ever.

We must match the logistic capability with our warfighting capability. This is actually pretty diverse with high intensity conventional warfare at one extreme and peacetime training at the other, with many other types of conflict in-between including proxy war and Counter Insurgency (CI) operations. The logistic requirements of these scenarios are quite different. It may seem that the best solution would be to have a system that could cope with the worst case scenario - a conventional war. But that may incur additional costs in peacetime with significant capability going unused.

INDIAN CONTEXT

The Indian Ministry of Defence is one of the largest spenders, employers, industrial complexes and scientific experts in the world.Somehow paradoxically, although the number and rank of the people involved have also expanded, there has not been really innovative or even significant change in the way, that problems are analysed or handled and the concept of "tradition" has been used to circumvent the obvious need for change.

--- Arun Singh, Former Minister of State for Defence

What Ails Our Logistics System

The problems of our logistics support facilities have been discussed threadbare in National Security Seminar held in United Service Institution of India (USI) in 1999 and published by USI in 2000. The issues of privatization of logistics support facilities, use of private sector and outsourcing, restructuring of ordnance factories, relevance of public sector undertakings, role of Defence Research and Development Organisation (DRDO) and technology management are not discussed here. A bottoms up approach also is needed. Problem at Micro level from the users view point are highlighted below.

Culture Change First and foremost, there is an immediate need of cultural change in the attitude of service units towards the users. All over the world, the customer is the king sans Indian Army soldier. All Rules and Regulations are against the poor soldier and the unit. If a particular item from Ordnance has been demanded and the Ordnance has not been able to provide it within a year, the unit has to demand it again. If for some reason the unit has not done it, it has to get the demand countersigned by the formation commander to show that its procedures are not up to the mark. Nobody, repeat nobody ever questions why ordnance failed to provide an item within a year. A soldier goes to collect ration from Supply Depot, the moment he comes out of Supply Depot gate he forfeits any right to complaint. Whether Military Engineer Services(MES), Electrical and Mechanical Engineering(EME) or others, the list is endless. That the fighting soldier is the ultimate and the endeavour of all service support units should be to support him so that he does not have to look back have to be emphasized again and again. Commanders at all level have a major role to play.

Responsibility There is no central agency responsible for logistics in Indian Army. Major agencies are Master General of Ordnance(MGO)Branch with EME and Ordnance under its wing. Others are Quarter Master General (QMG) and Operational Logistics (OL) Branch. MGO is also a part of General Staff (GS) Branch. ASC and MES come under QMG Branch for staff support. Director General of Armed Forces Medical Services(DGAFMS) a joint services organization, the army component of which comes under Adjutant General(AG)'s Branch. Overall command and control of complete

logistics set up is not clear. Provisioning of Ammunition is Ordnance responsibility under MGO Branch. Transportation of ammunition is ASC responsibility. Inter command movement of ammunition by vehicles in operational conditions may pose command and control related problems. Add to it the Defence Logistics Agency for jointness and the confusion is complete. UK MoD has a four star General as head of defence logistics agency.

Army Service Corps(ASC). It is responsible for supplies (Ration), FOL, Transport, Ammunition Transportation, Animal Transport (AT) and Air Maintenance. User aspirations have to be met. For example in Mumbai, Navy gets Amul Butter but Army does not. If the consumer wants, it is the responsibility of the service provider to procure. If Controller of Defence Accounts(CDA) is to be convinced/overruled, be it. The formation commanders have to be assertive at all appropriate levels and utilize their financial powers. Ask any soldier about his opinion about our Animal Transport(AT)vis-à-vis Civil Pony. Local ponies carry more load with no administrative liability. Our AT is counter productive beyond a few days as it carries only its own administrative load. Its upkeep is only to pose a threat to civil ponies in case of emergencies. Captive pool of local ponies can be created in various sectors.

Army Ordnance Corps(AOC) It is responsible for General Stores and Clothing, Technical Stores, Armament, Mechanical Transport, Ammunition, Salvage Store, Special Clothing and Expandable Stores. It has an inventory of 4.69 lakh items worth Rs 50,000 Crores managed by 152 Depots. All the softwares for USA and Europe are being made in our country, all the latest management practices are being followed in the private sector here making them globally competitive and what practice are we following in our provisioning system of stores? If a unit has to be issued a tyre, it is procured by Central Ordnance Depot(COD), Mumbai, transported to concerned Field Ordnance Depots (FOD)/Advance Base Ordnance Depot(ABOD) and then again sent to the concerned Divisional Ordnance Depot. The same tyre can be issued directly by the manufacturer to the Divisional Ordnance Depot, if not the unit. It needs no management skill to understand which process is more costly.

Today the user unit is at the mercy of the provider. When the demand is placed, no receipt is given to the unit. Nobody is responsible if the demand is lost, unit is told to put up the demand again. The unit is never told why Control Number is given late, when is the likely availability of stores and there is no transparency of availability of stores. Computerised Inventory Control Project (CICP) Phase – II is under progress. CODs are being modernized. Nobody will deny the tremendous efforts put in by the Ordnance Corps for automation and use of IT. However, time has come now for a realty check. After all IT is here with Army for last 10 years. They hasn't been any dearth of funds. Hardware is available, where is the software ? All approaches are top down.. We need to have simultaneous bottoms up approach also. How do the units place demands on line or by CD at least? When the units move from one sector to another why cannot their demands be transferred on line to the dependent depots. If nothing else, the same paper works of canceling of demand and subsequent demand in next location can be given in a CD to the unit costing less than Rs 10/-. Ordnance should not wait for communication network to reach to the lowest unit everywhere. In

many places sufficient communication infrastructure is available. The software modules should be made now, tested, reiterated and modified to suit user requirements.

Ammunition Management. Normally in Armed Forces authority goes with responsibility. Life of costly and difficult to procure munitions/missiles are extended routinely without any concern for its effect on storage and usage by Directorate General of Quality Assurance(DGQA) which has no responsibility for storage of ammunition. No wonder there were serious fire accidents in many Ammunition Depots. In spite of terrorist, subversion and pilferage threats large scale routine ammunition transportation have been incident free - a tribute to the system being followed.

Ordnance Factory Board(OFB). Performance of Ordnance Equipment Group of Factories, which are entrusted with manufacturing of clothing items of combat uniforms, parachutes, blankets etc for defence services disclosed significant underperformance (Para 8.2 of CAG Report No 6 of 2005). Attitude of some of the OFB factories have to change. For example, DG EME kept on raising the issue of defect investigation of ALS and 2.5 ton Tata vehicles during warranty period in very high level meeting as these were invariably closed without joint investigation by representatives of Vehicle Factory Jabalpur (VFJ). The response of VFJ was of nonchalance as they are assured of captive market.

EME. It is responsible for repairs to MT, armament and technical equipment and recovery and backloading of unserviceable vehicles. An user sends any equipment say Radio Set for repairs. Dependent workshop says spare is Not Available (NA). After some specific months the workshop declares the Radio Set Beyond Economic Repairs (BER) and orders backloading. What does Poor Bloody Infantry (PBI) or the Signals do facing the Hobson's choice? The equipment is their lifeline in combat. By backloading they don't get new Radio Set as the same is in short supply. Keeping off road equipment draws sharp rebuke from formation commander. We cannot be so dispassionate or impersonal about these issues. After all it affects adversely the operational readiness of the units. We must now try to put BEL or ITI who are Original Equipment Manufacturers(OEM) of signal equipment into the loop by making them responsible for repair of these equipment including provision of spares. Let them organize one workshop in each command as a trial measure and see their efficiency. Most of the telecommunication equipments are modular based and changing of modules would not be much of a problem.

Comptroller and Auditor General (C&AG) Report (Para 3.1 of Report No 6 of 2005) states that Performance Audit of eight Army Base Workshops(ABW) disclosed significant under performance with reference to the targets for overhaul. They missed the targets of overhaul by 40 to 68 percent during 1999 – 2004. The inefficient performance left the army with accumulation of large number of repairable tasks, combat vehicles and guns, which could affect their battle readiness. However, EME will certainly come out with ISO specifications of their ABWs. The dilemma has to be resolved.

MES. MES provides the utilities for electricity, water, furniture, building, roads and sewers. Many of them are old and need significant repairs. It is not uncommon to hear that two third of funds allotted gets expanded in catering for pay and allowances of MES employees and considerable less fund is available for procurement of stores for repair and maintenance. Large number of Married Accommodation Projects (MAP) are coming up. As a test case maintenance of these assets may be outsourced where this facility is available. Cost benefit analysis and customer satisfaction should be carried out after appropriate time and then a decision be taken to outsource MES services.

Medical Army Medical Corps(AMC) is responsible for health, advice and treatment and evacuation. The existing medical infrastructure is over stretched across the board. All of us will become Ex-servicemen (ESM) sometimes and ESMs must be provided with all facilities. However, when people in uniform and ESM are vying for the same critical resource, one likes it or not, the soldier in uniform has to get the priority. To obviate this problem a brilliant scheme called Ex-servicemen Contributory Health Scheme(ECHS) has been launched. There will be teething problems due to change in concept and change management. Efforts should be made by all concerned to overcome all the problems and make this scheme a grand success. The behaviour of some of the nursing staff towards men and their families has to improve.

Postal. One of the most efficient systems which carry out their tasks with minimum of fuss and manpower. A trial can be conducted to see the performance of courier companies for delivery of mails.

Military Farm(MF). It was on the verge of disbandment. With the availability of Central/State owned and Co-operative milk manufacturers the need of MF should be reviewed. Fodder can always be procured Ex-market.

Training Institutes. Every service has its own engineering colleges for training. Within the services also there are different engineering colleges for different branches. For example army has three engineering colleges for its engineer, signals and EME Corps. Is there a case for a central engineering college or university and close all the others? Can we afford such huge infrastructure separately?

Closure of Depots. Is there a case of realignment of various depots and make them modern efficient warehouses following latest supply chain management techniques? USA is doing it in a big way.

Wargames and Logistics. During the wargames logistics does not get the importance it deserves. The syndrome of G branch and "Hanjee" branch has to change. The complete logistics process is required to be rehearsed. Let the ammunition specially artillery and missile ammunition be drawn during Exercises with troops in real battle conditions with likely simulated confusion thrown in. Today with introduction of large scale electronic equipments and plethora of radio sets power management in terms of battery packs is a big problem area. For example, let the complete requirement of batteries category wise with its likely attrition rare be calculated in a conventional war

scenario and procured in real time. The same can then be redistributed throughout the army after the exercise.

Logistics for CI Operations and Proxy War. No major organizational change has been undertaken for logistics units actively involved in CI operations and proxy war where logistics requirements are much higher and time critical. For example an ASC unit of a division responsible for CI and Line of Control (LC) operations in the Valley has much more responsibilities than a divisional ASC Battalion in the plains. Absence of Supply Depots, additional troop dependency including Rashtriya Rifles troops, responsibilities of Advanced Winter Stocking, movement of supply, stores, transients and units round the year make the unit stretched to the maximum. The situation is similar for other logistics units also. The inherent flexibility in the organization is carrying them through. But it is time these units are reorganizes as per their roles.

Action Taken

Group of Ministers on Reforming the National Security System in February 2001 has made certain specific recommendations for reforming the defence logistics systems at macro level. It found the present system governing Defence Acquisitions suffer from a lack of integrated planning; weaknesses in linkages between Plans and Budgets; cumbersome administrative, technical and financial evaluation procedures; and an absence of a dedicated, professionally equipped procurement structure within the MoD. Some of the recommendations are given below.

Defence Procurement Board . The existing structure for procurement has led to sub-optimal utilisation of funds, long delays in acquisition and has not been conducive to the modernisation of the Services. The creation of a separate and dedicated institutional structure to undertake the entire gamut of procurement functions is expected to facilitate a higher degree of professionalism and cost-effectiveness in the process. Such a structure would also enable an institutional memory to be built up and taken advantage of to obtain the best value for the money spent by the Government. In the MOD a transparent and fair procurement procedure has been further strengthened in the form of Defence Procurement Procedure (DPP) 2005.

DGQA/DGAQA. There is considerable room for improvement in the present system of Quality Assurance prevalent in the MoD.

Standardisation of Contracts and Information Management. A large quantity of equipment is procured by the MoD from diverse sources every year. However, the terms and conditions of contracts entered into by the MoD vary and there is a need for standardization of the formats for different types of contracts. Such a standardised format may lay down the detailed structure, as well as the basic terms and conditions of the contracts. Although efforts should be made to conclude contracts in the standardised format, the need for flexibility - based on the country of origin, type of

supply, length of contract and urgency of requirement - would need to be duly catered for.

CONCLUSION

The line between disorder and order lies in logistics.
- Sun Tzu

The diversity of terrain and the armed forces' operational roles pose enormous logistic challenges; these require a dynamic, new approach to logistic support. The vision for the future is to develop a logistic system which is highly effective, responsive and provides the operational commander the freedom and ability to execute his mission successfully. The 'footprint' of logistics should ensure a seamless and fully networked system that provides information and situation awareness to enable asset visibility and enhanced velocity of logistic support. Concurrently, there is a need to reduce inventories significantly and rely on predictive and real-time information, coupled with rapid transportation, to meet user demands.

Harnessing advanced information technology, use of sensors and reliance on decision support systems will improve logistic efficiency and enhance operational readiness and, thus, reduce the number of personnel involved in the supply chain management. These advancements will significantly impact our operational and logistic philosophy for which future commanders must prepare and ensure a smooth change in logistic management

Individual services has taken initiative in upgrading their logistics systems. The Air Force has Integrated Material Management On Line System(IMMOLS), Navy its Integrated Logistics Management System(ILMS) and the army is also modernizing its logistics setup. However, the business processes and logistics techniques in outside world are changing fast for better efficiency and value for money. Our rate of change should not be so slow that we become totally irrelevant dinosaurs age organizations. Field Marshal Montgomery once said, "Tradition is a good thing, but it should not be a bar to progress." Inter or intra service rivalry, turf war, resistance to change in the garb of tradition, et al are part of every armed forces in the world. Bigger the organization tougher is the challenge. Army, the fourth largest in the world, will have more problems than Navy because of its size. The point is where are we in the present scenario? We should not forget logistics cost money. The logistics transformation challenge is extremely complex in our country. The problem has to be addressed in the national level as the issues of national security, defence Public Sector Undertakings, Ordnance Factories, DRDO, labour policies etc are involved. No one service individually can do it. It has to be a joint effort with the backing of the leadership at the national level.

ENDNOTES

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