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DEFENSE LOGISTICS 2.0: A NEW RESEARCH AND STRATEGIC ACTION TO IMPROVE THE SUPPLY CHAIN

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A DISSERTATION REPORT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR

MBA (LOGISTIC & SUPPLY CHAIN)

OF

CENTRE FOR CONTINUING EDUCATION

UNIVERSITY OF PETROLEUM & ENERGY STUDIES, DEHRADUN

Acknowledgement

This is to acknowledge with thanks the help, guidance and support that I have received during the Dissertation.

I have no words to express a deep sense of gratitude to the management of University of Petroleum & Energy Studies, Dehradun for giving me an opportunity to pursue my Dissertation, and in particular Col Manish Natu, Commanding Officer of Indian Army for his able guidance and support.

I must also thank Col K K Singh and Risaldar Major Birender Singh of Indian Army for their valuable support.

I also place on record my appreciation of the support provided by Dr. Meeta Joshi) and other staff of Marwadi University.

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Further, I certify that the work is based on the investigation made, data collected and analyzed by him and it has not been submitted in any other University or Institution for award of any degree. In my opinion it is fully adequate, in scope and utility, as a dissertation towards partial fulfilment for the award of degree of MBA.

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Executive Summary/ Abstract

1. In the present information age, knowledge and economic strength will play a more vital role, than the raw military power alone, unlike the past. India today faces several internal and external security challenges. The internal challenges are un-controlled population, persistent illiteracy, severe socio-economic tensions, religious fundamentalism, political instability, erosion of moral values etc. Our external challenges comprise a variety of historical, ideological, geopolitical, economic and technological factors. We have vast stretches of border with adversaries, which are under dispute (besides other issues of conflict), our island territories need to be guarded, economic coercion, technological denials and hegemony of nuclear states and super power are some of the external challenges.

2. Traditionally, the system of logistic support prescribes base depots, and then there are regional depots that cater for frontline establishments. The current system such as Base Areas and the Regional Maintenance Areas etc. are based on the British experience of World War II with some peripheral changes brought about during the last four decades. In our endeavour to place faith in tried and tested method we tend to overlook the fact that these times were different.

3. The dissertation proposes to suggest a new organisation as there is a need to provide separate staff for operational logistics and administration to ensure that both the functions get adequate attention. A co-related finding is the tendency on the part of Commanders to allocate mundane responsibilities to logistics staff. Over a period of time the logistics functionaries have understood that the 'mundane responsibilities' could 'make or mar' careers. As such they have invariably relegated responsibilities of logistics support in preference to tertiary duties.

4. Understanding the past and observing the present allows an extrapolation to what might be in store for logistics future approach in Defense in India in the future. The trend toward increased globalization, free trade, and outsourcing all contribute to a continued and growing interest in logistics.

CHAPTER 1

INTRODUCTION AND METHODOLOGY

"Logisticians are a sad and embittered race of men who are very much in demand in war, and who sink resentfully to obscurity in peace..... They deal only in facts, but must work for men who merchant theories. They emerge during war because war is very much a fact. They disappear in peace because peace is mostly a theory..... " ***Anon***

Strategy is to war is what plot is to play; tactics is represented by the role of the player.

Logistic furnishes the stage management, accessories and maintenance.

Thorpe in "Pure Logistics"

1. The military activity known as logistics is probably as old as war itself. The word logistics is derived from the Greek adjective, "logistics" meaning "skilled in calculating"[1]. Research indicates that the first use of the word with reference to an organized military administrative service was by the French writer Jomini who served as a staff officer in Napoleon's Military. In 1838 he set down logistics as one of the six branches of the military art, the other five being statesmanship in its relationship to war, strategy or art of properly directing masses upon the theatre of war, grand tactics, engineering and minor tactics. He included the phrase 'it is the execution of strategic and tactical enterprises' in his definition of logistics. In short, he devised a theory of war upon the trinity of strategy, ground tactics and logistics. He defined it as "practical art of moving armies".[2]

2. The existing logistics support system inherited by the Indian Armed Forces from The British, has outlived its utility. Although it has been modified from time to time, its compartmentalized and disjointed growth has been able to meet, at best, the short-term requirements whenever the need arose. May be the goods have been delivered satisfactorily so far. The key question now is, "Will the existing system meet the challenges of a battlefield environment in 2025?" The

[1] Art of war, Baron De Jomini, 1863. p252
[2] The Art of War (Philadelphia, 1873), AH Jomini , p225.

available evidence appears to point to the answer "Very Unlikely!" If that were so, it is imperative to pause and clearly think whether the present system should continue or does it merit a replacement by a more efficient and workable system.

3. An Operational commander must realise that a changing operational situation often demands that the material support also alters its focus. Any such changes if they involve major efforts soak up scarce logistic command and control assets and demand extra managerial attention. It seldom realises that in the absence of adequate and appropriate resources and where the logistics do not support operational plans; such plans are bound to fail in any case. To achieve the operational goals commanders will have to associate themselves with the logisticians all through, so that based on professional and expert advice, changes where required, can be made well in time. Commanders must accept that logistic plans are vital, they are ambient and they are all pervasive, so as to be considered to be the common denominator of all plans.

Statement of the Problem

4. To analyze the existing logistics support system for the Indian Military with a view to identify the shortcomings and highlight the possible areas for improvement towards a combat effective and a responsive logistic support system for the year 2025.

Justification for the Study

5. The future battlefield would be characterized by enhanced mobility, increased intensity, non-linearity, NBC threat, operational transparency and deep battles. Operations are likely to be conducted under the condition of nuclear asymmetry, technical parity in weapons and equipment and parity of air power and long-range missile resources. Threat may exist in two forms i.e. the high intensity conflict and the 'sponsored' low intensity conflict. The afore mentioned facts calls for an efficient logistic support system, which has the inherent capability to match the fast pace of future operational requirement.

6. Besides, during my various postings I have come across various challenges; Logistical Challenges first and then having met and marshaled them head on to face the Military Operational Challenges.

7. Given the varied Scope of Work of the Indian Armed Forces and diverse deployments in varied terrains where we operate; we encounter, counter and master the following challenges as Armed Forces Officers :-

(a) Geographically Remote areas warranting **unorthodox / innovative modes of logistical movement.**

(b) Logistical Movement of Highly Confidential Documents / Equipment with Secretly Engineered Codes in the hardware warranting **transport with stealth, speed and minimal ends of the supply chain.**

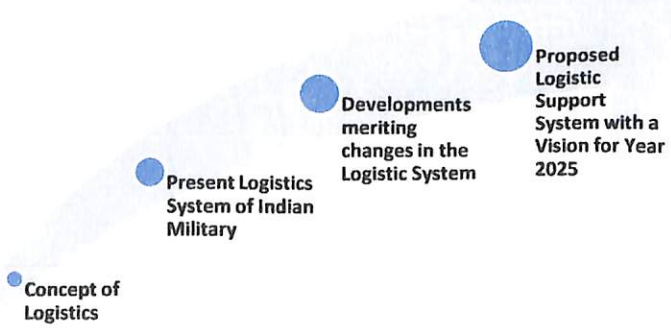
(c) Logistical Movement of heavy &bulky Artillery Guns, Tanks as well as huge movements of scores of troops which cannot be hidden even from satellites yet has to be kept out of the reach even visual contact of unauthorized persons warranting **security of them &heavy duty supply chain.**

(d) Deployment for longer periods with maintenance of low frequency of supply chain elements warranting **estimation of supply requirements, stocking, warehousing and logistical movement in smaller tranches and at irregular; almost emergent notices.**

8. Our logistics challenges in year 2025 will therefore, be to maintain the ability to quickly deploy necessary forces to any part of the country and sustain these forces even in a hostile environment at the end of a long line of communication. These challenges will have to be met within limited budgets. Therefore, we must find ways within an austere budget not only to support several "generations" of equipment but also to modernize the logistics system incorporating the benefits of information technology, so that it can support weapons that today are but ideas on the drawing board.

Overview

9. The study has concentrated on the critical examination of existing logistic support system of the Indian Military, with an aim to suggest a combat responsive and cost effective logistic support system for the year 2025.During the course of the study the following major aspects are covered.



Method of Data Collection

10. The data and information is collected from the books, periodicals and magazines of Indian Military. The general staff publications of Indian Military and Defence Studieson the subject have also been consulted.Bibliography has been given in the end.

Methodology & Plan

11. Study of the subject in the following manner: -

(a)	Chapter I	-	Introduction and Methodology.
(b)	Chapter II	-	Concept and Planning Considerations of Logistics.
(c)	Chapter III	-	Strategic and Future Combat Scenario in 2025.
(d)	Chapter IV	-	Present Logistics Support System of Indian Military.
(e)	Chapter V	-	Shortcomings in the Present System and Need for Review.
(f)	Chapter VI	-	Proposed Logistics Support System for the Indian Military for 2025.
(g)	Chapter VII	-	Conclusion.

CHAPTER 2

CONCEPT AND PLANNING CONSIDERATIONS OF LOGISTICS

Definition

12. Our manuals have a somewhat restricted definition, in that we have confirmed ourselves to accept that "logistics is the science of planning and carrying out the movement and maintenance of forces"[3]. In today's usage logistics is the function of providing all the material and services that a military force needs in peace or war". One can say that broadly all activities other that strategy and tactics can be covered under the heading of logistics.

13. The US "Joint Chiefs of Staff" committee has defined logistics as: Design and development, acquisition, storage, movement, maintenance and distribution of material. Movement, evaluation and hospitalisation of personnel. Acquisition or construction, maintenance, operation and disposition of facilities. Acquisition or furnishing of services.

14. Whereas the military is concerned, logistics is everything else – art and science of warfare. Logistics include hundreds of possible functions since everything needed to support warfare would form part of this list. Logistics is essentially moving, supplying and maintaining military forces. It is basic to the ability of armies, fleets and air forces to operate – indeed, to exist. Where the logistician is concerned, the basic logistics framework should be such that it is able to support alternate, different and often, bold and innovative strategic and tactical plans.

Elements of a Logistic System

15. All activities that go in preparing a logistics plan base themselves on availability of hand facts and information dealing with industrial, economic, and managerial resources. At the highest level programming is the heart of mobilizing various segments of the system that operate to provide means of resources because a country's logistics capability is directly related to the capability of its economy and industry to absorb military needs. For this to be correctly analysed a large number of inputs will be required. The thought process and activities that go to prepare a logistics plan are: -

(a) **Organisation and Provision of the Basic Concept of a Plan.** This will be done at the highest level of decision making where an outline is defined based on the overall national strategy and goals, relations with neighbouring nations, country's perception of its international standing, tactical situation, material capability (both existing and that

[3]Army's Administration in War, Vol 1, p4

which can be created) and resource availability. The plan will have both longitude term and short-term goals. Based on this plan defence needs will be identified and action initiated to fill the gaps in equipment profile.

(b) **Modifications due to Operational Reasons.** The potential enemy's capability and his limitations, effect of time and space, weather and climate in the area of likely operation will have a direct bearing on the type, duration for which to be held and nature of resources to be held. Special treatment of the equipment depending on these factors will be an important consideration. Strategic dispersion of all warlike stores and ammunition is of vital important. As 'war wastage reserves" comprise a large volume of stores, ammunition and equipment, the stocking policy will be designed to achieve adequate dispersion as well as availability of reserves in close proximity of the fighting forces.

(c) **Evaluate Limitations.** This could be the most critical factor that will give a realistic picture of the whole situation governing logistics. Above aspects do place restrictions and limitations on the strategic and tactical plans. It will pay dividends to realistically ascertain their impact on the degree of "freedom of action" where equipping our military is concerned. There may be a requirement for modification of the strategic and tactical plans both in time and scope in order to ensure that our national strategically aims and goals are economically viable.

Comprehensive Logistics Management in Defence

16. The primary objective of the armed forces is to fight and win a war whenever calledupon to do so. To achieve this, they need to acquire various capabilities, takinginto account the threat and operating environment. However, acquisition of a capability involves much more than just the hardware. Besides the weaponsystem, it also requires associated maintenance infrastructure, together with an assured supply chain and complete infrastructure for training. These are required for sustaining the weapon system at the desired performance level for theentire life cycle and for continuously manning it by fully proficient crews, i.e. whole life management approach. Such an approach at the inception stage itself is what can be termed "Comprehensive Logistics Management".

Historical Perspective

17. At the time of independence, the Indian Armed Forces inherited from British an infrastructure which had been created by the Allied Forces during the Second World War. The Military inherited an array of workshops from field level to base/depot level. The Air Force and Navy inherited Base Repair Depots (BRDs) and dock yards respectively. For logistic

management, there were various echelons of ordnance depots (ODs) for the Military, equipment depots (EDs) for the Air Force and stores for the Navy. After independence, defence public sector undertakings (DPSUs) and ordnance factories (OFs) were established for manufacturing defence equipment under license. They also undertook depot level repair and maintenance of the equipment manufactured by them. However, public sector work culture ensured that there were always time over runs and capacity constraints and the services had to set up elaborate infrastructure for maintenance up to depot level repair and overhaul (ROH) for not only the imported equipment but also for some of the equipment license manufactured at these DPSUs and OFs. Consumables and break down spares also had to be procured by the services themselves, running into hundreds of thousands of lines. Thus huge support cadres had to be created in each service, adversely affecting 'teeth to tail ratio'. Up to 1980s this model suited us because of low industrial base in the country as well as bulk of defence equipment being of the Soviet origin. Only annual indents with a single agency were adequate for complete zip sets to arrive in bulk at the nominated OD/ED from where they could be distributed to forward echelons. However, its folly was discovered soon after the break up of the Soviet Union. Moscow had little control over the newly independent states of USSR where a large number of breakdown spares were produced or repair plants were located. Even when orders were placed on the Russian Agencies for complete zip sets, they were received deficient of a number of breakdown spares. Also, the newly independent states reneged on the contracts already concluded with Soviet Union or arbitrarily hiked the contracted prices. Highly centralized Indian bureaucratic set up (civil as well as military) was just not able to cope with it. Despite sending a number of empowered logistic delegations for each service every year, the serviceability of Soviet origin operational systems plummeted to an all time low. Nothing much has changed since then, the model has largely remained the same and the services continue to suffer low serviceability levels.

Levels of Logistics Planning

18. The process of "planning for logistics" ultimately determines the flexibility and sustainability of the combat forces. It will include details with regard to availability of resources, plan for logistics build up, and identification of those 'base and theatre depots' designed to support a particular operation. Among other things, it involves the details of supply, the build up, the cargo movements and the provision of medical and repair facilities. This also includes industrial capability, both available and that which can be created over a specified period of time. There are three aspects of logistics support to the troops.

19. **The Strategic Level Logistics.** This encompasses the total national capability in terms of men, means of communication, material, industrial and technology; and where the base depots, arsenals, and base repair facility etc are to be located for supporting operational plans. These are very deliberate decisions because creation of these facilities is expensive and once it is virtually impossible to reverse decisions.

20. **The Operational Level Logistics.** This encompasses the support of deployed forces on the scale of anMilitary corps. At the corps level, logistics planning aligns with specific theatre – oriented operational plans using and deploying forces in a well-defined manner. To meet the theatre– based requirements, regional depots, workshops, medical and supply facilities are established more or less on permanent basis. To meet the requirements of the troops, "Operational Logistics" units, and regional depots where certain stores are pre-positioned, are established. In certain cases, and depending on the terrain, these also include the integral logistics units of the formations, even holding those heavier/ bulkier assemblies, which are cumbersome to convey when operations are on or are envisaged. Thus "operational logistics" involve the zone of transition from "wholesale" to "retail" support[4]. All these are time, effort and manpower consuming activities. In so far as operational commander is concerned, managing this transition forms the focus of responsiveness at the operational level.

21. **The Tactical Level Logistics.** This is at divisional and lower levels. Since all units of the formation need this level of retail support, tactical logistics must take place throughout the divisional theatre of responsibility. Tactical logistics are also the "first and second line" resources of the combat units. There is always a tendency to carry every item authorised in the "equipment tables" for 'just in case situations'. Very often this creates avoidable dead weight, particularly when a unit is heavily committed in an operationally fluid situation and finds its mobility restricted because of material in hand. A detailed plan, if made, to ensure that only bare necessities are carried in the first instance can higher the load considerably. Better knowledge of how support works and how material needs, both seen and unforeseen, can be met will provide greater confidence to the troops.

[4]Administration Journal Aug 1993, p48

CHAPTER 3

STATEGIC AND FUTURE COMBAT SCENARIO IN 2025

General

22. In the emerging world order, strength of economy and political stability of states along with the cohesiveness of regional groupings, to enhance security and economic development is the order of the day. Hence in the present information age, knowledge and economic strength will play a more vital role, than the raw military power along, unlike the past. India today faces several internal and external security challenges. The internal challenges are un-controlled population, persistent illiteracy, severe socio-economic tensions, religious fundamentalism, political instability, erosion of moral values etc. Our external challenges comprise a variety of historical, ideological, geopolitical, economic and technological factors. We have vast stretches of border with China and Pakistan, which are under dispute (besides other issues of conflict), our island territories need to be guarded, economic coercion, technological denials and hegemony of nuclear states and super power are some the external challenges.

23. India's recent nuclear tests are clearly aimed at assertion of its strength, deterrence in its perceived national security concerns and for growth sustenance. This has changed the asymmetry with China and Pakistan and is likely to lead to restraint and stability in the region. However India's future will be determined more by indigenous than external threats.[5]

24. **Short Term Threat Perceptions**

In view of China passing through a phase of economic and industrial growth and consolidation, which she intends continuing at least for the next ten to fifteen years, after which it shall begin to assert itself as a super power, the short term threat perception is greater from Pakistan than China. Hence in the short term, it is imperative that we remain Pakistan-Centric. Militarily Pak Military is better prepared for war than it was in 1965 or 1971.[6] Therefore, there is a need to be prepared for a war along the entire Western borders, with capability to fight in mountains (J&K), in the plains, semi-desert sectors while retaining the ability to contain any adventure on the Eastern front.

25. **Longitude Term Threat Perceptions**

In the longitude term, in addition to Pakistan, our focus would have to comprise the economic threats from the super powers with vested interests in the South Eastern region and the military threat from China, which may achieve its economic developmental goals and assert as a super power. The status with Pakistan may or may not crystallize by then and hence the need would be to be prepared to meet threats along the Eastern borders as well.

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[5] A Look at South Asia Sea Changes, Thomas P Thorton, edited by Nicholas X Rizopoulor, Council of Foreign Relations Press, NY. p 59

[6] Report in Times of India dated 10 Nov 1992, quoting the latest issue of Jane's Defence Weekly.

26. **Perceived Changes in the Future Battle Field**

For reasons obvious, the future military confrontations will be of short durations and restricted in depth. The objectives will have to be achieved in a short time frame by in situation forces, with minimum accretions and short mobilization periods. The military operations would have to aim at total psychological paralysis of enemy's political and military capabilities with the help of effective cyber and information warfare, force multiplier capabilities and with ability to fight deep battle together. The strategy of direct approach being prohibitive in terms of high cost and loss of human lives, the strategy of indirect approach would be more relevant. Such a strategy warrants peak operational preparedness of holding formations and synergised efforts of holding and strike formations. Nuclear threshold being politico-strategic, field commanders would not be critically much affected in their operational planning and execution.

27. **Global Practices and Imperatives for Change**

Last two decades have witnessed industry all over the world employing innovativemethods for cost cutting and increasing efficiencies. One such measure has beento concentrate only on their core activities and to outsource non core activities.Their Armed forces too are not far behind. They too have aggressively outsourced various non core activities. To give you an example, UK MOD has outsourced flying training of the RAF. The US DOD has outsourced the bulk of supply chainmanagement. In the US Navy, contractor's personnel are based on the aircraft carriers for maintenance/repair of aircraft and other systems. The contractsfor these services follow the norms of performance based logistics. These measures have resulted in major savings and efficiencies for them. However, inIndia we have only paid lip service to outsourcing, only very few minor activities like conservancy, Civil Hired Transport (CHT), low technical level repairs, etc have been outsourced. It is universally recognized that a uniformed technician is far more expensive than a civilian. Requirement of rotation or short tenures hasoften resulted in him being posted out just as he was becoming proficient in his job. However, inefficiencies attached with the Government employees nullify any advantage of civilian work force in departmentally run workshops or factories. So, what is the solution? Well, thanks to the large scale economic reforms in the last two decades, India's industrial base has gone up significantly. Today, India's IT and automotive component sectors are world beaters. Communication, general engineering, metallurgy, space, pharmaceutical, etc. are not far behind. Indian Armed Forces need to take advantage of this and start outsourcing much larger number of non core activities to the private sector and bring in significant economies and efficiencies. In fact this has become an imperative in the light of the Government having accepted the recommendations of the Thirteenth FinanceCommission for progressively reducing budgetary allocations to defence to 1.76% of GDP by 2014-15 from 2.3% in 2009-10.

28. **Impact on Force Structure**.

In spite of the nuclear standoff the need for conventional superiority is imperative. The role of armed forces would need to be focused onto inter-state warfare vis-à-vis intra-state warfare. A small, technologically, superior, hard hitting force would achieve better results, with information and communications being the key success factors.Our future force structure most confines to one-front scenario, which should be a high probability calculated risk. At present 88 percent of Military budget is spent on manpower related costs, which leaves only 12 percent for capital expenditure and of which only 4% is available for modernization. Hence there is a need of reduce manpower and achieve a desirable mix of 70:30(Manpower: Capital expenditure). On this analogy, 2,50,000 troops need to be reduced. Further, the short and longitude term threats dictate the type of operations and the consequent force profiles which would exist along our Western and Eastern fronts.

29. **Implications for the Logistics Support System**[7]

Given the current economic scenario and the projected developments for the any significant rise. Therefore, it is imperative that resources for modernization would have to be generated from within, by way of manpower reductions, technological exploitation, teeth to tail ration being balanced and simultaneously other economic measures being enforced.Although nuclear deterrence limits conventional war, threat perceptions demand well prepared countervailing forces along both fronts, at all times.Short mobilization periods and strategy of indirect approach, necessitate fighting formations to be fully prepared for certain minimum essential period, at all times and strategic reserves being catered for, to augment the subsequent periods.

The threat perceptions suggest priorities of logistic infrastructure development from west (a short term) towards East (longitude term).The operational imperatives and nuclear fall outsuggests that logistic formations would have to cater for smaller, composite, highly mobile and dispersed forces. Hence tailor-made, integrated logistic units with command, control and communications would be needed.Market forces will affect regional/global alliances and the security syndrome, hence quality products will flood the market at competitive rates to give us substitution options and utilization of direct services to reduces in house activities. However, we shall have to ensure self-dependence and sustainability in critical inventories.Technology adoption and Information network is the key to reduce mass with velocity management i.e. providing when knowing what, where, when and How much.

[7] Logistics Support System for Indian Army: Force 2025, Army Training Paper, p6

CHAPTER 4

PRESENT LOGISTIC SUPPORT SYSTEM OF INDIAN MILITARY

Present Support System

30. Traditionally, the system of logistic support prescribes base depots, which are well into the rear, and then there are regional depots that cater for a corps zone and units internal to a division. The current system[8] such as Base Areas, Military Areas and the Corps Maintenance Areas etc. are based on the British experience of World War II with some peripheral changes brought about during the last four decades. In our endeavour to place faith in tried and tested method we tend to overlook the fact that these times were different. The means of communication was restricted; the country hardly had any industry and the British having rather uncomfortable memories of 1857 were not particularly keep on encouraging any project that could eventually adversely affect the empire. War–like materials were, therefore, always almost brought from the sources the rulers had their faith in. Except for the fact that during the Second World War when some kind of defence oriented industry was, perforce, established based on environmental factors existing at that time. This led to the concept of "Base System" etc. But the situation has altered considerably ever since, and the methodology with regard to logistics supply has altered considerably since the Second World War.

31. Holding stocks at the unit, direct support, and intermediate levels are characterized by vertical requisitioning and a myopic focus on each supply mode. Little, if any, consideration has been given to the expansion, mobility enhancement and technological changes that are required for a well equipped Military in any given situation in so far as logistics support is concerned. The need for a more responsive and vibrant system has always been felt. Consequently, there have been some experiments in the right direction. No tangible gains, however, seem to have surfaced; primarily due to our reluctance to change from what could be described as a time-tested system.

Logistics Functions

32. Functions of logistics can be broken up into five main groups, i.e. Supply, Transportation and Movement; Maintenance and Repair; Medical; and the smaller functions like post, catering and labor. A logistics system, which is required to material needs of the troops, is generally designed on the following lines[9]: -

(a) **Base support system.** Military strategic depots and national industrial bases form the core of the logistic support. The 'lines of communications' link them all. 'Up' the line of communications flow reinforcements and suppliers. 'Down' them flow the casualties and empty supply vehicles. Thus, the lines of communications see a continuous two-way traffic along which the men and material move.

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[8] The Maintenance System, Administration and Morale Precis, p52

[9] Sarin. P, op. cit., p 244.

(b) **Intermediate Support System.** This support is provided in the form of 'Regional Depots', workshops, hospitals and certain other ancillaries. These units are sited out of range of the 'depth fire' artillery of the enemy. Assets are widely dispersed and depending on the role of supported formations the units could also be 'truck mounted'. This provides adequate mobility to the supported commander in fructifying his operational plans.

(c) **Direct Support System.** We have the "Divisional" support units with their limited range of stores and prescribed manpower. These units are normally tailor-made for 'mountain, plains, deserts', and any specific role that has already been identified. These units do not have sufficient flexibility to undertake a "diversified role" or additional responsibility. For a "Direct Support System" to be economical, effective and efficient we need to consider the following: -

(i) Higher availability.
(ii) Shorter lead-time.
(iii) Accurate Management Information System
(iv) Should preferably be a 'single window system'
(v) Regulations are flexible.
(vi) Needs to be capable of responding to 'operational needs'
(vii) Soldier technicians or dual trade needs to be adopted as a norm.

33. In so far as field formations are concerned there primarily are two system of logistics support being practiced in most of the development countries. These can be put into two categories[10]: -

(a) **Pull system.** In this, combat supplies are sent to the front only receipt of a request from the fighting units for their specified need. Stores are usually held in an acceptable turn around time frame. Largely, spares, accessories, ammunition items, defence stores, additional rations and fuel from part of items that can be on demand. First and second line store are carried by the unit themselves.

(b) **Push system.** In this, the planned quantities of supplies are sent to the forward troops at a regular interval. These quantities are based on the impending operations and likely daily expenditure. It is neither feasible nor desirable to design our logistics support system de novo. Where fixed assets already exist on the ground these be suitably modified to conform to the chosen pattern. A mix of pull and push system of replenishments can give a greater level of assurance to the supported troops.

[10]Pre Staff Precis on Administration and Morale, Eastern Command, p315.

CHAPTER 5

SHORT COMING IN THE PRESENT SYSTEM ANDTHE NEED FOR REVIEW

General

34. Whereas war is a national effort, presently there is no agency at national level for higher directions on integrating defence needs into the overall framework of national development. Although at the Ministry of Defence level, there are number of agencies dealing with various facets of logistic support for the three services, there is no central agency for strategic key decision making, corporate level planning, rationalization of tri-service resources towards perceived war efforts and for overall economy.

35. Since World War II, the system of central procurement and stocking, overhaul at base workshop and production in ordnance factories has remained the same. Bulk of the indigenous equipment comes from the ordnance factories and Power Supply Units and Military seems to be a captive customer to these production units with absolutely no say in the utilization of its already limited budget.

Military Headquarters Level

36. Main logistic functions have been placed under the control of the two independent Principal Staff Officers (PSO) i.e. the Logistics General (LG) and Master Logistic Ordnance (MLO). The rationale behind allocating different services to these Principal Staff Officers and in some cases bifurcating interlinks responsibilities and placing them under more than one Principal Staff Officer lacks nay-logical justification.

37. There is an absence of a competent, qualified 'single overall agency' responsible for the central planning, policy making and commanding officer-ordination of all logistic functions. Presently, various Principal Staff Officers and services heads are reporting directly to the already overburdened Chief of the Military Staff on logistic aspects thereby diluting the importance and quality of decision making in this field of immense importance.

38. The Additional Directorate General of Logistics (ADGL) that was created for the purpose of providing an effective link between the General Staff and the perspective and contemporary operational logistics has not been able to bridge this gap.

39. Land, works and accommodation are being dealt by the Logistics General; Chief Engineer branch and the Director General Defence Estates, with traditional boundaries leading to sub-optimal utilization of land resources, frequent cost over-runs of projects and other allied conflicts.

40. Different agencies viz. Principal Staff Officers and Services heads are procuring stores/equipment (including those for Moth-Balling) independently thus alluding total asset visibility, transit visibility and battle field distribution for want of a centralized procurement agency. There is no agency responsible for formulation of a comprehensive, vibrant and dynamic procurement strategy to include economics of warehousing, distribution and maintenance aspects.

41. The depth and range of inventory is large with outdated and dead items in stock and further central purchasing of general items/stores is being resorted to which can be done regionally and locally on as required basis. For example paints, stationary, spares for common vehicles and allied can be procured locally and economically.

42. The present logistic infrastructure/organization is reactive in that for example, non-availability of tyres for vehicles is brought to notice of Master Logistic Ordnance (MLO) by Logistics General, who then takes remedial measures for provisioning. The retreading of tyres, which is possible locally, could snowball into a crisis.

Below Military Headquarter Level

43. There is no single integrated management structure encompassing all the separate logistics functions at any level below Military Headquarter. The current logistic organization has too many Headquarters and a heavy command and administrative structure, occupying large estate leading to avoidable excessive overhead costs. This has resulted in increased workload as also unplanned, uncoordinated and reactive executions at lower levels.

44. The Service Support which is the sum total of separate logistic functions/capabilities is reaching the users as independent entities. The whole system is complex and inter dependent with permeating responsibilities.

45. Modern management techniques and information technology developments are yet to be incorporated thus the decision-making is blurred, information and communications are scanty and management of resources cost prohibitive.

Logistic Support to Field Formation

46. The logistic support to field formation, which was essentially designed for widely, spread theater of operations, for a longitude duration war is not relevant in the existing environment. In view of vast developments having taken place in communications, creation of facilities closer to operational areas and possible short duration conflicts, a relook at our multi echelon system of logistic support and also parallel static logistic support system in necessitated[11].

47. The extensive utilization of military resources during peace time and increases peacetime bills. This needs balancing through prudent utilization policy, exploiting civil resources during peacetime to affect savings in overhead costs.

48. The integration and coordination between the Services units themselves is negligible. The only coordination that is achieved is through the overworked Staff at all levels.

Need for Logistic Review[12]

49. **Changes in Security Perceptions and Future Battle Field.** The logistic built up has to be aligned with short term and longitude term threat perceptions, in the nuclear backdrop and to match the perceived force structure, operational plans, equipment profiles and resources availability of formations in each theater.

50. **Changes in Dynamic Environment.** The developments in socio, political, economic and technological fronts dictate re-look at out logistic functioning. Vast strides have taken place in human resources development, management techniques, infrastructure development, communications, regional abundances, technological upgrades, equipment varieties and availabilities. Today human resources are vital and the development of their potential and multi-skill capabilities is of paramount importance. Latest management techniques using operational research can forecast the probability of almost anything. Hence, we can predict our resources requirement and demarcate reserves more effectively. Further, decision-making is easier by use of management techniques. Further, decision-making is easier by use of management techniques. The electronic communications have improved and Wide Area Networks and Internet enhance information exchange. Technology has undergone revolution in last decade and today very sophisticated, multi-function, modular, equipments and vehicles are available which lends to higher efficiencies and greater standardization.

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[11] Pre Staff Precis on Administration and Morale, p312.
[12] Logistics Support System for Indian Military, Military Logistics Paper.

51. **Globalization, Liberalization and Privatization** The recent policy of government in this regard has led to entry of multi-national cooperation in Indian markets and has ushered a new era of market competitiveness, high product qualities, varieties and vast distribution and servicing networks. Services vis-à-vis products have taken lead and today private organizations are willing to render services, may be on financing, marketing, medical, management etc. on very professional and competitive rates. The accountability of PSUs is being questioned and their captivity is being diluted by privatization, profit orientation and facing policy of Liberalization. Thus in developing nation of ours, today, the survival of organizations is subject to their worth and their viability is based on their performance and cost effectiveness. There is a need to adapt and set pace in such professional and performance oriented era.

52. **Financial Crunch Vs. Effectiveness.** The financial allocations are under severe crunch and this situation may aggravate under the present circumstances. So we have to be effective first (i.e. to do right things) and then achieve efficiency (doing things right), simultaneously. Reduction of manpower for savings in manpower related expenditure is one approach and the associated alternative is accruing savings in logistic expenditure. It is amazing to note that equipment and maintenance costs are immense (5202.05 crores for stores in 1997-98 budget) and there is a scope to affect savings in this arena through changes in structure, system, style, staff and skills.

53. **Requirement of an Optional System.** Every system has some shortcomings and these needs to be reviewed for eradicating. The system must be integrated vis-à-vis interfaced and reactiveness. Accountability and responsibility towards performance and cost effectiveness is the essence.

CHAPTER 6

PROPOSED LOGISTIC SUPPORT SYSTEM FOR THE INDIAN MILITARY FOR 2025

National Logistics Grid

54. Whenever in the world defence needs have been integrated with the country's 'civil end' requirements, the overall progress has been fast and phenomenal because it allowed participation of willing investors. By making military needs as the basis of our technological and industrial advancement we can have competent defence along with development. This can be done if we create a "national logistics grid".[13]

The Features of the New Logistic System

55. The proposed logistic system should have following features: -

(a) **Integration with National Economy.** The national industrial base must be oriented to defence logistic needs, with guaranteed commitment of resources to economize defence logistic expenditure.

(b) **Logistic as An Entity.** The entire logistic organization should be one entity from top to bottom for perspective planning, policy formulation, decision-making, budgetary management, procurement, provisioning, maintenance and final disposal.

(c) **Peacetime Visual Signaling Operational Logistic.** To be strictly cost effective the logistic support must cater for the critical requirements one by itself. In doing so it should be structured to meet the needs of the operational formations vis-à-vis the current model, providing logistic support to over million strong Military. Peacetime logistic bills must be cut-down by all means to save for war, hence thrust will be on operational logistic.

(d) **Tailor Made Logistics.** The geographic, demographic and climatic characteristics of our country and the availability of communications and resources along our borders result in varied operational plans, force levels equipment and weapon profiles. Hence, the logistic support setup must vary regionally, within each command and should be tailor made to match operational formations characteristics.

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[13] Sarin. P, ibid, p373.

(e) **Integrated Logistics.**The logistic functions may be separate at higher levels, but must be fully integrated at formations levels. 'Single windows', 'single logistic commander' concept must be in vogue.

(f) **Reserves and Stocking.** Adoption of 'Just in time logistic' by holding varying reserves at strategic, operational and tactical levels, the system should result in a 'Controlled, Non Stop Logistic' concepts, creating a seamless flow of support from rear to front.

(g) **Budgetary and Financial Decentralization.** The budgetary allocation would flow down till unit level with associated realistic financial powers to meet varying requirements. This would dilute delays of procedural channels, meet immediate requirements of the troops and lend to the system desired levels of autonomy and flexibility to enable direct procurement from the 'point of sales.

(h) **Maintenance Echelons.** The main echelons must be minimum, self-contained for certain specific periods, composite and match the operations plans. Air maintenance planning, with palletized composite loads need to be catered, for the sustenance of the troops in fluid, mobile an intense operations.

(j) **Service vis-à-vis Product.** The logistic infrastructure or system must have greater role of providing services (i.e. to liaise, coordinate and monitor) vis-à-vis supplying products or items themselves. This would be through: -

(i) Outsourcing and contractorisation.

(ii) Exploiting National/State/Corporate sector and Power Supply Units, viz. IOC, Fire Control Instruments, Original Equipment Suppliers (OES), Milk, Fruit and Vegetable co-operatives, transportation unions/agencies etc.

(k) **Communications and Automation.** Better communications and informatics will be exploited to bring about significant qualitative improvement in decision-making through an effective information management system

(l) **Enabling Technologies**. The adoption of new emerging technologies would lead to enabling technologies, which are like force multipliers for e.g. Telemedicine or E-mail is an enabling technology of computer networking which is basically a fast computing machine.

(m) **Logistic Infrastructure Development**. Our logistic infrastructure development requirements must be dovetailed with national/state development plans, for e.g. construction of highways, rail-lines, bridges etc.

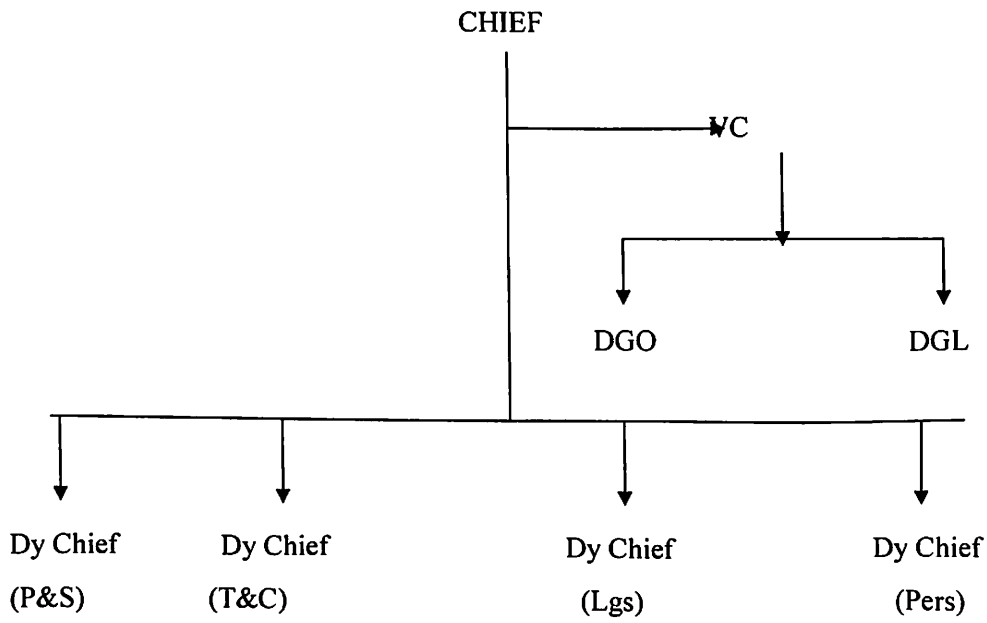
(n) **Global/Regional Cooperation's for Logistic Needs.** Logistic cooperation contracts with regional/global countries would fill the vacuums/shortfalls in strategic longitude term logistic needs and result in savings in high cost produce.

Structure

56. **Logistic Structure.** Structure has two components i.e. superstructure and infrastructure. Superstructure is commonly depicted by the organization chart and is designed in accordance with needs of strategy. Superstructure of an organization indicates how differentiated it is or to what extent the activities of the organization are specialized or the ways in which tasks are integrated or coordinated. Infrastructure is lesser visible aspect of an organization i.e. network of information and controls, rules and procedures, decision making mechanism, authority relationships etc. It allows an organization to undertake diverse tasks and coordinate efforts for goals achievement. At present superstructure for logistic support to a solider is depicted in succeeding paragraphs (from Military Headquarter to Unit Level).

Reorganisation at Military HQ

57. There is a need to integrate operations with logistics and separate the functions of provision and procurement. This will be achieved by the creation of Director General Logistics (DGL) at par with Director General Operation (DGO) under the Vice Chief (VC) at the apex. The reorganized structure at Military HQ is as under.

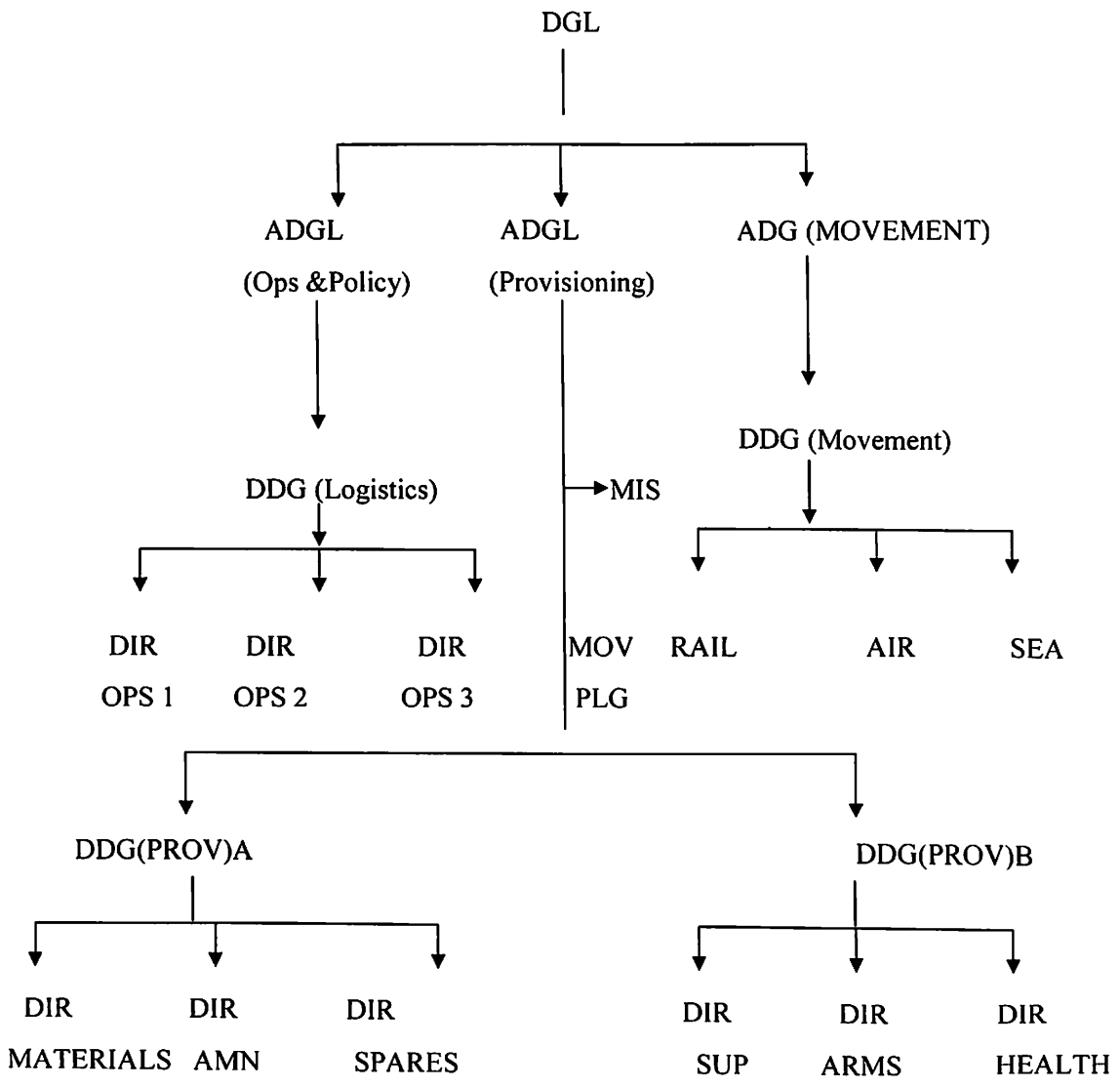


58. Logistics General (LG) will get redesignated as the DGL and the existing Coordination Section of Logistic Branch shall be the section of DGL. The Deputy Logistics General shall be offset against the appointment of Major General Operational Logistic (MGOL) in an Operational Command. The remaining Directorates of LG Branch would either be fully or partially offset in the Organisation of DGL, Dy Chief (Logistics) and HQ Logistic Command.

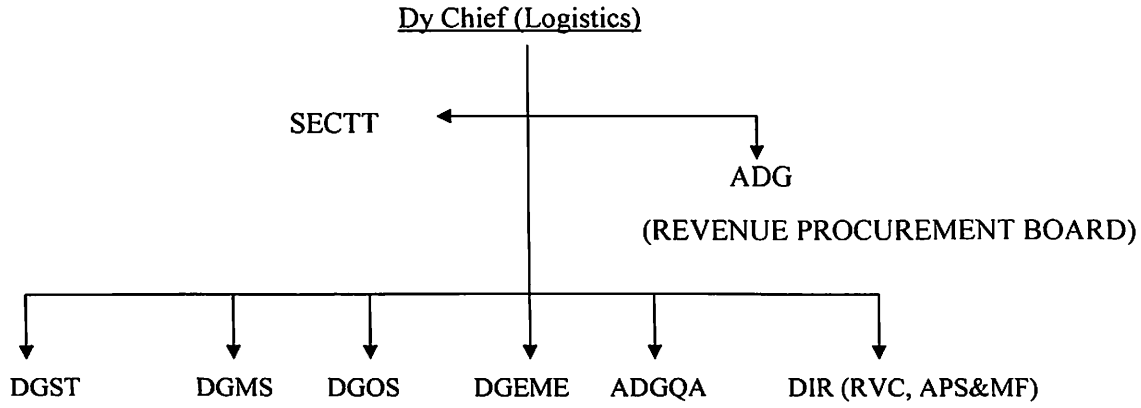
59. Master Logistics Ordnance (MLO) shall get redesignated as the Dy Chief (Logistics), and the existing Coordination Section of MLO Branch would be the section of Dy Chief (Logistics). The Deputy MLO would be offset against the appointment of Additional Director General Logistics (ADGL) (Provisioning under DGL). The remaining Directorates of MLO Branch would either be fully or partially offset in the Organisation of DGL, Dy Chief (Logistics) and HQ Logistics Command.

60. DGL. The DGL would be responsible for formulation of logistics policy, provisioning and operational logistics. He would be under the Vice Chief along with DGO. This will ensure that the logistic philosophy and concepts flow out of operational philosophy and concepts. He will also plan mobilization and control various movement agencies. The provisioning function will be performed by ADGL (Provisioning) who will have representatives of all services to assist him in his duties.

61. This Directorate would broadly be structured as follows.



62. Dy Chief (Logistics). The Dy Chief (Logistics) would be responsible for the procurement of all logistics necessities. He would be the single point contact of all Logistics Services. He will also coordinate the functioning of all the services. It is also proposed to put DGMS (Military) under him for provisioning of medical services. The proposed structure is: -



Notes:

(a) *DGST - Director General Supply & Transport*
(b) *DGOS - Director General Ordnance Services.*
(c) *DG EME - Director General Electrical & Mechanical Engineers*
(d) *DG MS – Medical Services*
(e) ADGQA – Additional Director General Quality Assurance
(f) DIR (RVC, APS&MF) – Director (Remount & Veterinary Corps, Army Postal Services & Military Farms)

63. Military Revenue Procurement Board. There is a requirement to set an Military Revenue Procurement Board on the lines of Defence Procurement Board. This should be a single point procurement agency for all procurements from the Revenue Budget. It should deal with all revenue procurements beyond the delegated powers of PSOs at Military Headquarters.

Military Logistics Command

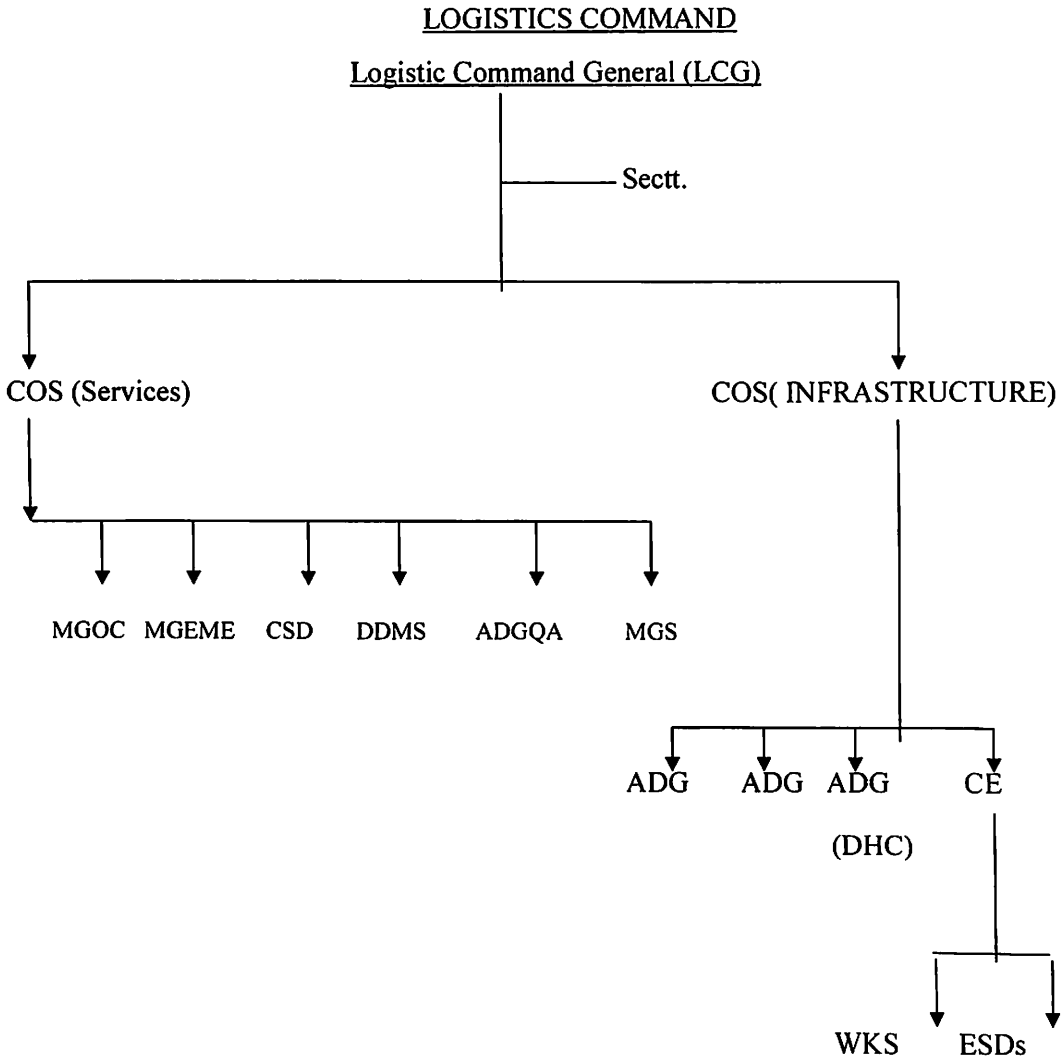
64. It is recommended that HQ Central Command be reconstituted to form an Military Logistics Command under Logistic Command General. It should be an all India command with no geographical boundaries. The Logistics Command should get organized as under:-

(a) Chief of Staff (COS) Services. He would coordinate, execute and monitor logistics functions to include R&D, product improvement, indigenization, production testing cum evaluation, material handling, storage, maintenance, disposal, transportation, development of scientific and technical intelligence capability and Quality Assurance. He will assist the GOC-in-C in the control of Central Ordnance Depots, Central Ammunition Depots, Base Workshops, Central Stores Depot and Ex-Servicemen Medical Support Services. He will also monitor post contract activities pertaining to procurement, induction and repairs of equipments. He will also provide the much-needed interface with the Industry and the Academia for product improvement and indigenization.

(b) Chief of Staff (COS) Infrastructure. To avoid Regional bias in infrastructure development arriving due to local needs and short-term goals of Regional Commands, the Logistics Command will undertake infrastructure development. The Chief of Staff infrastructure will assist the GOC-in-C in the planning of Major Works Programme (MWP) of the Military through MG Works and Environment, which was being done by ADG (LWE) earlier. He will also execute all centrally funded projects of the MGO, and also those pertaining to Category A establishments, under the aegis of the Chief Engineer. The Chief Engineer will also be responsible for Engineer Sub Depots. The Regional Commands will continue to plan and execute their own works.

65. With the change of role of Central Command, its current responsibilities of operations and training need to be divested. These will have to be shared between operational Commands after due deliberation.

66. The Areas and Sub Areas will be re-designated as Logistics Areas and Sub Areas and will continue to function as hither-to-fore.



Note:

- *(a) MGOC – Major General Ordnance Corps*
- *(b) MGEME - Major General Electrical & Mechanical Engineers*
- *(c) CSD – Canteen Stores Department*
- *(d) DDMS – Deputy Director Medical Services*
- *(e) ADGQA - Additional Director General Quality Assurance*
- *(f) MGS - Major General Supply*
- *(g) DHC-Defence Housing Corporation.*
- *(h) ESD-Engineer Sub Depots.*

Reorganisation at Formations

67. **HQ Commands.**

(a) There would be no major change in the structure of Operational Commands, since the Administrative and Logistics functions are already separated.

(b) The duties of the Major General Administration (MG Adm) would get bifurcated between MG OL (new appt) and existing MG Adm. (The 4x2 Star appointments (new) would be 3 from HQ Central Command (MGGS, MG Arty and CSO), and Dy QMG.

(c) Brigadier (Pers & Adm) would be redesignated as Brigadier Admin and Brigadier Logistics.

68. **Logistics Areas and Sub Areas**. The existing Areas and Sub Areas to be redesignated as Logistic Areas and Logistics Sub Areas and to be placed under Regional Commands/Corps respectively. Selective relocation needs to be done for efficient logistics support for future.

Advantages of the Proposed Model

69. **Organization for Higher Directions on Logistics.** National Logistic Grid would direct dovetailing of national resources in defence services logistic efforts. It would be the central agency (combination of civilian staff and representatives from three defence services) for all procurement coordination. Strategic or corporate planning and key decision-making will be effective at this level for allocation of resources in defence expenditure.

70. **Streamlined Functional Organisation of Military Logistic Staff.** Secondary policies for logistic support would emanate from AHQ under aegis of Vice Chief (Logistics). The user formations will clearly discern the organization and associated responsibilities and approach them accordingly. Budgets and financial powers can be delegated through replicas down the chain. The service heads can formulate their functional policies effectively in consonance with their organisation role. Human Resource Development (HRD) efforts would be more focused and effective, for now a multi-skilled service support or equipment support or medical support personnel can be developed. Each function will have qualified professionals dealing with their related subjects. For e.g. service support personnel would be experts in management techniques, equipment support personnel experts as Electrical, Mechanical and Electronic engineers for equipment support and Civil engineers under DGLWA, experts in works and accommodation matters.

71. **Assured Combat Support.** The logistic support is integral to divisions with tailor-made organizations, geared for at least few days support. With additional budgetary allocations to formations and unit routing general nature stores sanitation/Hygiene, stationary, training stores, some vehicle fast moving spares, paint etc, units can buy themselves. A soldier, if given kit maintenance allowance in salary can buy his own clothes and kit himself.

72. **Peace Time Logistic.** Skeletal units, coordinating and monitoring logistic support through station headquarters would reduce peacetime bills. Units/formations in peace tenure need to hold only minimum of weapon, equipment, vehicles and ammunition, and would rest, recoup and train while being fed locally via contracting by logistic cells of station headquarters.

73. **Reserves.** Reserves will be held at unit/divisional logistic support units level, at command/corps/divisions as operational level reserves and at base level i.e. as pipeline bulges, base depots or contracts, as strategic reserves. The essence being, while there is a basic abinitio requirement by formations, the command/corps must hold operational reserves to switch them to a combat area where the resources are actually required for expenditure. This provides flexibility and economy but the key factor is speed of delivery. The strategic reserves can be applied to any theatre and lend immense flexibility and economy.

74. **Echelons of Maintain.** These have been recommended to be only three i.e. 1st line with unit, 2nd line with Area/ Sub Area logistic unit and lastly base echelons i.e. original equipment suppliers, base workshops or the trade.

75. **Communications and Automation.** It is the most vital factor for information management and affecting economy. A communications and automation cell has been included at all levels for information management because decision-making is only possible if information is available.

76. **Logistic Functions as an Entity.** The organization structure is based on functions related to each service in a way that logistic which is sum total of annual l functions reaches the soldier as one composite entity, i.e. service support, equipment, medical support and quartering support. There should be one logistic commander at each level.

77. **Accruing Savings.** The savings will be affected due to the following: -

(a) **Planning at various Levels**. Catering for impact of future environment would itself accrue savings as wasteful expenditures will be avoided and priorities established. Participation by formations in planning would ensure inclusion of each user specific requirement.

(b) **Reductions in Manpower.** Peacetime logistic organisation reductions, planning and employment of civilian force, Territorial Military/reservists and overall manpower reductions due to concept of contracting, outsourcing and dependence on trade and local vendors for manpower substitution will accrue savings.

(c) **Reduction in Infrastructure.** Overhead costs will reduce (i.e. buildings, water, electricity, transportation, paper work, medical, education, administration etc.) when the service functions are integrated.

(d) **Reserves.** Holding of reserves as strategic, operational and at tactical level will reduce tendency of holding of reserves at all levels. This will result both in flexibility & economy.

(e) **Standardization and Reduction of Inventories in Range and Depth.** Standardization of equipment like one class of vehicles for multi purpose usage will reduce maintenance cost, cost of variety spares, tool, test equipment, literature, training etc. The inventories will reduce by deleting obsoletes and allowing direct procurements from point of sale. Each service function will hold their relevant inventories and would know their assets.

(f) **Reducing Maintain Echelons.** Will affect transportation costs, multiple handlings, labour, transit loses and associated costs of management assets.

(g) **Informatics.** Availability of information will reduce logistic mass holdings and substitute it with velocity management. It will assist in focused logistic i.e. combining logistic function with information and transportation, for speedy delivery and overall economy. This will reduce the warehousing time and expenses related to stocking of transit stores.

(h) **Efficient and Effective Logistic System.** Military logistic support, which is not a commercial, profit-oriented organization, would achieve greatest economy by evolving an efficient and effective logistic support system. Hence, having such an optimized, proactive system itself has connotation of savings in cost effects where in wasteful expenditures are avoided.

CHAPTER 7

CONCLUSION

78. Since independence we have fought four wars. In all these we have done well, though the results have not been very decisive. In all these we employed only part of our resources. We have not really fought any large-scale war, as such the total reserves of the country never had to be mobilised. The entire population was never affected. This implies that we have never been able to test our real capabilities with total commitment of our resources. Even in training, serious mistakes and shortcomings are covered up to glorify achievements in exercises. It is, therefore, time to ponder and evaluate our present logistic system in the Indian Military. An analysis of the various aspects discussed, so far, brings us to a conclusion, that as a poor third world nation India needs to: -

(a) Emphasise on integration of several facets of military logistics into a system that takes into account both the civil and the military requirements before deciding on a policy with regard to provision of goods and services.

(b) Emphasise on systematic Analysis Defence Logistics is not a requirement that exists in isolation or can be met without considerations that affect the nation as a whole. An analysis for the design of distribution systems will be called for so that man made shortages are not created, particularly when there is either a war or a national calamity. For every major national resource we should identify pure defence needs and civil needs. The proposed national grid should decide the levels of reserves to be held. Also, the availability must be reviewed from time to time.

(c) **Make Common Contingency Plans**. As it is our military has always been called in to assist the civil administration whenever there has been a major disaster, natural or manmade. It will pay rich dividends if our emergency plans with regard to disaster relief and procedures are also totally integrated with the country's defence needs.

(d) **Emphasise Systematic Management** of the military logistics so as to integrate it into the overall goals of the country's security requirements, needs aspirations of its citizens and industrial growth. Then only can we have a total national participation in providing a viable and economically sound defence – preparedness. For, logistics is not just the supplies of war materials that armies have on hand. It is also the ability of a national infrastructure and manufacturing base to support armed forces at war.

(e) **Emphasise on Indigenisation**. Any power that lags significantly in military technology, no matter how large is its military budget or how efficiently it allocates

resources, is likely to be at the mercy of a more progressive enemy. With our present level of technological growth it should be possible to keep enhancing the degree of our self-reliance in a planned manner. In this we should in the first instance take those items and equipments, which have, potential for civil end wage. The government should provide requisite encouragement and even necessary subsidy.

(f) **Emphasise on Technological Integration**. The facilities and technological sophistication that are available in the non-military sector should be functionally integrated with the defence sector. This is on the premise that whereas force deployment plans and other related subjects are the defence secrets, the planning of production and supplies is not treated so anywhere in the world. It has been established that functioning of defence units in isolation has largely been responsible for production delays and escalating costs leading to situations where we had to resort to imports when our production units already were working in the civil sector and had spare capacity to undertake defence requirements as well.

79. The benefits of a total involvement and perspective are tremendous. Creation of a national logistics grid will be a step that can assure better military preparation and an improved quality of life. To sum up we should quickly undertake the following: -

(a) Identification of the capabilities and limitations of the national industrial base with regard to its ability to meet the entire range of technological demands of the Military.

(b) Active exploitation of indigenously available Research And Development and technology for in house development and production of 'state of the art' weapons and other military equipment.

(c) Formalise a development plan in various fields of those critical technologies that help both the military and industry.

(d) Prepare a blue print to build up progressively the technical manpower, particularly in those fields that have been identified as critical.

80. As the country rushes towards the twenty first century, the Indian Military confronts difficult challenges and exciting opportunities. Advancement of technology and induction of latest equipments in the three services is envisaged. The processes of rapid technological substitutions will not only lead to enhanced capabilities but may also gradually turn our military into a technocracy where combat to support personnel may decline. Howe the support services transform themselves to meet these challenges and size opportunities will determine the character of the 'Logistics Support System'.

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