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Administrative organization of a container system in a developing country

Ofelia Mendoza

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THE ADMINISTRATIVE ORGANIZATION OF A CONTAINER SYSTEM IN A DEVELOPING COUNTRY

OFELIA MENDOZA MEDINA
THE ADMINISTRATIVE ORGANIZATION
OF A CONTAINER SYSTEM
IN A DEVELOPING COUNTRY

by

Ofelia Mendoza Medina, Eng.

A paper submitted to the World Maritime University as part of the requirement of the course on General Maritime Administration.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the World Maritime University or the International Maritime Organization.

Paper directed by:

Professor Gunnar Stubberud

The World Maritime University

Signature: [Signature]

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INTRODUCTION

The advent of the container has sparked a revolution in cargo transport which has exceeded the expectations of many in the transport industry. This versatile cargo packing unit has made it possible for merchandise to be packed at the manufacturer's warehouse and subsequently be left unopened until the container reaches the wholesaler's door thousands of land and nautical miles later. Containers are visible on board large ocean-going ships, canal barges, railway cars and road trailers, each of which may form a link in the multimodal or intermodal transport chain of a modern container system.

Though the unitized cargo box was in existence as early as the turn of the century, containerization did not begin to flourish until the 1960s. Its expansion since that time, however, has been remarkable. In the phase of greatest growth between 1967 and 1982 the number of containers transported annually grew from 1 million TEU to 42 million TEU.\(^1\) Now a multi-billion dollar business, containerized transport accounts for approximately 85% of the world's liner cargo, only 20 years after the period of initial growth.\(^2\)

The world fleet of vessels capable of transporting more than 100 TEUs is approaching four thousand with a combined slot (space for one TEU) capacity of more than two million.\(^3\) On an annual basis, the world's three and a half million existing containers are handled as part of a worldwide container traffic volume of nearly 50 million TEU. Despite a slowdown in the pace of the growth of containerized traffic volumes in 1981 and 1982, containerization has continued to expand; container builders continue to construct and market their

\(^*\) TEU = Twenty Foot (20') Equivalent Unit
products, container shipbuilders are still filling newbuilding orders, and many container shipping companies, including the leader of the U.S. container industry, Sea-Land, continue to expand their fleets and services.

Much of the worldwide expansion in deep sea services has occurred in developing countries of South America, Africa, the Middle East, Far East and Asia. In fact, in 1981/1982 the container traffic which passed through ports of the developing countries rose 21% as compared to a worldwide port traffic flow increase of 8%. The container revolution has clearly made its mark in worldwide transport, and though many of the developing countries may still rely heavily on conventional cargo handling methods, the container is gradually having an impact on port operations there as well.

The container brings with it possibilities for improving international trade. Consequently more and more developing countries are investigating the possibility of establishing container systems, or taking steps to set up intermodal systems to keep up with the developments in international cargo transport and world trade. As can be seen in Annex I, the majority of Third World maritime nations have seen dramatic growth in containerized traffic through their ports. Container specialists predict that this growth will continue and that container traffic in the developing countries alone will show more than 100% growth by 1990. For further information about statistics of containerized traffic growth in Latin America, South and East Asia, Africa and the Middle East in period from 1970 to 1982, please see Annexes I and II.
Much has been written about the advantages and disadvantages of containerization in general, and more recently and specifically about the benefits and drawbacks for developing countries. Some warn (most visibly Mr. P.C. Shukla of Shipping and Transport Consultancy & Research Services, Delhi, India) that the excessive capital investment needed to establish the appropriate port facilities such as berths, gantry cranes and land operation equipment of a container system is far beyond the financial capacity of developing countries. In addition he and others point out that not all cargo is suited for transport in containers, most notably raw material exports of developing countries. Further concern has been expressed that docks-side chaos will result as an excessive number of containers will enter the port without sufficient export cargo to fill and send them out again. The space needed to accommodate the large number of empty containers is often not available and additional handling costs are incurred in the shifting of containers. Also labor-intensive economies could regard containerization as a threat to the employment possibilities of conventional cargo handling.

In spite of these, concerns containerization has proven in its brief history that it can offer significantly more efficient and effective transport to its comprehensive nature. A container system permits a house to house service being given, which from the industry production site to the wholesaler's store may be an overall distance of 10,000 kilometers. Certainly one of the greatest advantages is that there is no intermediate handling at terminal transshipment points. The elimination of intermediate handling
permits faster transits, a reduced risk of cargo damage, and a much lower risk of cargo pilferage. These advantages permit the cargo to arrive in better condition at its destination than that of un-containerized shipments. In addition ports can obtain substantial labor savings.

Containerization offers shippers considerable savings in time and money because of quicker turnarounds in ports because of faster cargo handling. This and the increased speed capacities of modern ships mean that container ships provide faster service. An example is the U.K./Australia service where the round-trip voyage time has been reduced from twenty weeks (needed by conventional services in the late 1970s) to only ten weeks.

Another clear advantage is that the development of trade is encouraged by the elimination of intermediate handling and the subsequent faster transits. These permit quicker payment of export invoices.

Containerization has made it possible to rationalize a fleet. On the average, one container vessel, which is generally much larger and faster, can replace as many as six 'tween deck vessels on deep-sea services. This development has been made possible by the faster turn-about.9

Clearly the advantages of containerization outweigh the disadvantages. In our opinion, containerization is the most comprehensive and efficient cargo transport system available serving the world today.

The principal objective of this report is to give a general
idea of how to establish a container system in a developing country. We will address the following questions: what are the essential conditions required? what specific aspects of these conditions should be analyzed? And, most importantly, what is the organizational structure which will allow a container system to be practicable, efficient and profitable?
CHAPTER 1

Essential Conditions for the Establishment
of a Container System

As a developing country faces the decision of whether or not and how to establish a container system, it will soon become apparent that there are a number of factors which influence the decision-making process. In 1978 UNCTAD published a handbook for planners in developing countries designed to aid in the systematic analysis and planning of port policy and development. The paramount importance of a far-sighted port development policy does not appear to have been fully appreciated in the past by many governments. As a result, ports have often been unable to keep up with the rate of expansion of a country's overseas and coastal trade. This emphasis on the importance of advance planning is especially true of a container system.

Before a system can be developed it is essential that various factors be studied in depth. In the chapter we propose to discuss the necessary preliminary analysis, of 1) existing trade, 2) physical resources, 3) financial resources, and 4) computer.

1.1.- Analysis of Existing Trade.

Before a country can embark on the planning of a container system it is important to carry out a thorough study and analysis of the characteristics of the nation's trade. It is clear that the nature and type of the cargo will determine the mode of transport to be used, but certainly one must take advantage of the advances of science and technology and learn from both good and bad experiences of those countries which initiated containerization, namely

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the developed countries.

In analyzing existing trade it is important to evaluate in detail each type of imported cargo and its particular treatment in terms of its inherent characteristics, composition, weight, volume, requirements for packing, requirements for land and sea transport, requirements for stowage, and possible classification as a dangerous good. At the same time it is necessary to analyze the demand of this product in the home market in terms of quantity and frequency. Also to be considered is the question of the principal sources of the different products.

This same analysis must be carried out for export products as well. In the case of exports, though, one must take into consideration the principal zones of production of the export products and the principal areas or countries of destination. After completing such an analysis one can more readily identify the type and quantity of the product which can be containerized.

It should be noted that the above-mentioned study should be undertaken with an optimistic spirit regarding the development of one's country. The analysis could possibly bring to light a trade imbalance with imports exceeding exports or vice versa. This imbalance, however, should not be used as justification for becoming discouraged and perhaps even halting plans to establish a container system; one should instead undertake a further analysis of different ways in which the acquisition of products which could aid in the industrial development of the country or the society; another means is to reduce the acquisition of those goods which are not absolutely
essential, i.e. luxury goods; still another solution to the problem of a trade imbalance would be to open more markets.

After determining the feasibility of establishing a container system, it is essential to review the different types of internationally approved containers and determine which types are most appropriate for the cargo in question. There are different types of containers varying in size and specific function. The container of greatest use and popularity worldwide is the container of 40 and 20 feet; these dimensions were internationally standardized by the International Standard Organization in 1961. In addition to the 40 and 20-foot standard container, there are containers with particular functions, for example, the 40 and 20-foot refrigerated container with integral refrigeration capabilities, the 40 and 20-foot flat rack for large awkward items such as trucks, aircraft engines, etc., and the 40 and 20-foot half-height container for heavy loads such as pipes and tubes.

It is very important to consider carefully the container types and their use to the country's trade system, so that investments are made wisely and that the containers are employed to their full capacity. Also a decision can be reached with regard to the percentage of containers to be leased and the percentage to be purchased.

1.2.- Essential Physical Conditions and Resources.

The next stage of the preliminary analysis which must be undertaken is of the essential physical conditions for the facilities needed for a container system in a developing country.
First it is necessary to carry out an in-depth study of the existing ports, analyzing their geographical position, their capacity of receiving and sending merchandise, their level of mechanization, their cost of operating, etc. Once this investigation has been completed it will be possible to determine if it is feasible for one or more of these ports to be expanded to include container operations, or alternatively, if it is necessary to plan the construction of a new port.

When considering the construction of a new berth or the adaptation of an existing one for container transport purposes, it is important to ensure that the wharf is long enough and the water deep enough to accommodate large container ships. The pier should be designed to support heavy cargo, cranes and handling equipment. Nearby there should be a large open area of land for container stacking. The dimensions of each berth, the size of the land area, the kind of equipment required, and the method of stacking can vary considerably depending not only on the volume of traffic, but also on the physical conditions of the proposed site. Clearly, the type and magnitude of expected cargo traffic will contribute to the determination of the general dimensions of a container berth and of a dockside terminal. Nonetheless, it is important to keep in mind the future development of the container system.

If an existing berth is to be enlarged or a new berth is to be constructed, the investment will be considerable and it is therefore advisable to make the structure suitable for ships of considerable size, and capable of receiving a large quantity of containers.
The reconstruction of a berth at a later date to accommodate larger container-carrying ships could incur great costs and may in fact be totally impracticable.

Before executing the intended construction or reconstruction of a container berth, it is essential to analyze the available land area in the port, and the ground resistance there; then, depending upon the results, one can evaluate the different variations. For example, when there are no space limitations in the port the investment will be more economical; the method of container storage can be one-high and this reduces the cost of pavement construction as special weight-resistant pavement construction would be unnecessary. Cargo lifting equipment need not be heavy for single layer storage of containers. On the other hand, when the space available is limited, it is necessary to conduct a more profound study of the ground resistance because in this case container storage is done by stacking them two or three high. Stacking requires much heavier equipment and this equipment requires much firmer ground.

The container terminal must have a repair workshop for the repair of all equipment involved in dockside operations; the workshop must be manned by qualified technicians and be equipped with spare parts so that repairs can be made at the port rather than elsewhere. In this way valuable time can be saved and operations can be carried out more efficiently. It is clear that the design of the container terminal must be selected carefully and various alternatives must be examined in order to obtain the most efficient and economical system for the port.
Apart from the container terminal a study should also be made with regards to the placement of the container base. This base, which acts as a center for consolidating break-bulk cargoes into full container loads and for unstuffing full container loads, need not be located in the port itself. Still it is an important component in the container system and must be a part of the preliminary analysis and planning. As containers will be stored and stacked in the base as well, an analysis of ground and pavement resistance must also be carried out.

It is highly advisable to consult specialists familiar with cargo handling, engineers expert in port construction, and shipping and transport consultants. In addition it is necessary to investigate the various types of container handling equipment currently available on the market.

1.3.- Financial Considerations for the Establishment of a Container System.

The general policy of the development of the container ports must be guided not only by economic considerations, but also by financial considerations. There is no question that port development projects merit top priority within the whole capital investment of a country because ports represent a major influence in the development of a national and international trade by generating commercial industrial activities. These activities in turn stimulate the economic growth of a country.

As containerization becomes increasingly important in the
trade of developing countries, the need to build expensive modern port and inland container facilities is becoming more critical. The rate of growth of a developing country will depend to a great extent on the availability of capital. The reconstruction of port facilities can be financed by a variety of international organizations, such as the International Bank for Reconstruction and Development (IBRD), otherwise known as the World Bank, which is concerned with transport projects under the aegis of the United Nations Development Programme (UNDP) and the Organization for Economic Cooperation and Development (OECD). Apart from these there are a number of other sources of finance which the developing countries can take advantage of such as loans from individual countries which are interested in establishing bi-lateral relations. In addition to providing direct financial assistance, many international organizations, including the International Maritime Organization (IMO), offer technical assistance in the form of technical advisors, technical training programs and so forth. One notable example is the World Maritime University (WMU).

The extent of the capital investment required for the installation of container port facilities and cargo-handling equipment is understandably a big concern to developing countries with limited resources. Nevertheless, these harbours, if well planned, can offer favorable financial returns. The ports that are able to offer access channels and berths, storage areas and cargo-handling facilities, and reasonably well-developed highways or rail networks, and effective communications with industrial and commercial inland areas
are the ports that have been profitable. On the other hand, it is very important that the developing countries are careful in their analysis and decision-making. They need to take into account that the technology of containerization is changing every day. Thus, they have to look very critically and objectively at any proposals for container port and infrastructure construction. This point is extremely important because sometimes the developed countries which generate new technology to keep themselves competitive in the world of shipping and international trade, do not consider the situation of the developing countries. These countries with limited financial resources can easily fall behind the trends of sophisticated technology. Therefore, it is vital that the developing countries select versatile and technically advanced equipment and not highly sophisticated, specialized equipment.

1.4.- The Computer and its use in a Container System.

When we refer to the structural organization of a container system, we cannot overlook the modern system which has been introduced in both technical and scientific fields, namely the computer. The computer system for a container system is not a mere extravagance, but in fact, a necessity. The efficiency, the saving of time, the saving of human resources, the saving of documentation, increased security and control of container activities, and the trust which can be obtained through the use of a computer are indisputable. Certainly a computer system represents an investment; nevertheless, from our standpoint this investment is minimal when compared with
the total investment which is required for the container system.

Several years ago the shipping division of UNCTAD decided to develop a series of computer programs which could be used by shipping companies. Computers, it was decided, could be useful for several purposes: as a planning tool, a daily operational aid and a means of testing the effects of future changes in the service. With these purposes in mind a series of computer programs was developed; each program serves a different function for a shipping company.

There are several different available programs from UNCTAD including "MULTISHIP MODEL I", II, III, and IV. We would like to give a brief introduction to one of these container programs.

The "MULTISHIP MODEL II" is a program written in Fortran H. It is designed to use screen input and requires approximately 300k bytes of core to run. The program can handle up to 28 ports in a service. Each port can be connected with four inland container bases between which empty containers can be moved to serve a need in one or more locations. It has the possibility of recalculating the different percentages of owned, long-term leased (LTL) and short-term leased (STL) containers and of the different types of containers themselves, such as standard steel 20-footers, flatracks, etc. This computer program takes many of the problems out of the decision-making process. Container repair costs and amortization are also incorporated in the calculations.

Any company that wishes to use the UNCTAD computer programs must possess adequate and recent data regarding its operations, an
expert with sufficient knowledge of computers to operate the pro-
ogram, and compatible data processing equipment. We can find other systems such as CLS-System from Northern Cargo Systems AB. It is a Swedish computer program. This one is also suitable for container activities.

We will give an example of how information processing systems could be used in the container organization. As you can see from the diagram on the following page, the minicomputer system with their terminals can be installed in the different areas with key operations, such as the container terminal, the container bases, the shipping agencies, the domestic and overseas agencies and any other places where container control operations are carried out.

We know very well that this kind of equipment is very expensive, but in our opinion a container system cannot be profitable without a computer system.
Fig. 1.- Information Processing Systems.

Minicomp. System

Home-Office Computer System

Minicomp. System

Minicomp. System

Terminal
CHAPTER II

The Administrative Organization

of a Container System

The principal objective of this chapter is to present the author's personal point of view with regards to the general administrative organization of a container system, including container terminal and container base operations.

2.1.- Organization of the Central Administrative Structure of the Container System.

At this point we will present an administrative structure of a container organization which in our opinion could be effective. A container system can come under the management of any transportation company or person who is working directly with the freight market.

The success of any activity and of the container system depends completely on its organization and management strategy.

In the development of containerization around the world one can find many shipping companies which got started with the container itself; for example, a forwarder with financial resources acquired containers in order to provide container transport service to his customers and later began to charter the ships to transport the containers on coastal or deep sea trade lines, eventually changing his freight forwarding business to a shipping company.

Another possibility is the example of an established shipping company hiring or buying containers and adding this new service to the company; others have dedicated themselves to the construction of containers; some have leased containers; others have repaired containers; etc.. In some instances companies expand to include all aspects of the container system. Let us take the example of SeaLand,
a North American company. This company is involved in all aspects of container activities. They own or have favorable exclusive long-term leases on terminals, bases, ships (some are chartered as the need arises), and land transport networks. There are other shipping companies which have similarly expanded to include all facets of the container system.

When contemplating the establishment of a container system one may question whether it is advisable to create a new organization or simply to incorporate the container activities in an existing company or governmental organ. The addition of container activities to an existing shipping company has both advantages and disadvantages. One of the advantages is that the administration needed for container operations can be included in the following departments: the legal department, the administrative department, the financial department, and the department of operations. There is no need to establish separate administrative departments to deal with container activities. The only additional personnel required would be technical specialists.

On the other hand, this shipping company when expanding its services to include a container system will be taking responsibility for related activities which normally do not fall within the scope of a shipping company. These include inland activities, container control, container repair, container purchasing and selling, etc..

In our opinion the inclusion of the above-mentioned activities can lead to a weakening of the company's principal function which is to operate and make optimal, profitable use of ships. The con-
HOUSE TO HOUSE
CHICAGO, ILLINOIS - SHIPPER

FRANKFURT

BARGE

LINEHAUL

ROTTERDAM

NEW YORK

Fig. 2
Fig. 3
PIER TO HOUSE

FRANKFURT

BARGE

LINEHAUL

ROTTERDAM

NEW YORK

CHICAGO

Fig. 4
PIER TO PIER

FRANKFURT

LINEHAUL

ROTTERDAM

NEW YORK

CHICAGO

Fig. 5
LINEHAUL "LH" AND FEEDER

"F" (OR RELAY "R")

GERMANY

FEEDER 1

LINEHAUL 1

ROTTERDAM

FEEDER 2

FEEDER 3

LINEHAUL 2

SCANDINAVIA

GREAT BRITAIN

NEW YORK

BALTIMORE

FEEDER 4

FEEDER 5

BOSTON

Fig. 6

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Container system can be used in different ways, such as House to House, House to Pier, Pier to House, Pier to Pier, or Linehaul (LH) and Feeder as shown in Figures 2 through 6. But it is important to remember that the container is the common denominator in the development of intermodal transport and this mode of transport can only be considered truly intermodal if there is only one transport operator who oversees and is responsible for the entire series of transport links. Therefore, it is our opinion that the container activities should not fall under the umbrella of an existing shipping company, but rather be operated as a separate entity.

With this in mind, we propose to present a model of an administrative organization of a container system in a developing country. Beginning with Figure 7, we will explain the functions of each department.

President: The executive officer directs the policies of the company, develops long-range goals and controls the performance of all company activities. In some cases the President may be aided by an Assistant, however, this position may not be necessary if the dimensions of container traffic are small.

Commercial Vice-President: The Commercial Vice-President is responsible for directing and coordinating the activities of the Marketing Department, the Cargo Procurement Department and the Pricing Department. These three departments work together to analyze the market, obtain cargo and set freight rates. More specifically these departments have the following functions: the Department of Marketing is responsible for an ongoing analysis of market conditions,
Fig. 7: Administrative Organization of a Container System.
for appraising the present situation as well as forecasting the future outlook, so that company policy can be formulated. This department is also in charge of the purchase, sales and leasing of containers. The Cargo Procurement Department deals with the acquisition of new sources of cargo for both import and export. If the demand for containerized cargo transport is sufficient this department proposes the opening of container bases. Finally, the Pricing Department is responsible for the setting of freight rates and the drafting of contracts with all parties related to the container service.

**Operations Vice-President:** The Vice-President of Operations directs the work of four departments, namely the Chartering Department, the Container Control Department, the Transport Operations Department and the Container Base Operations Department. The Chartering Department is responsible for the chartering of ships in order to carry out company services. The next department, as its name implies, oversees container control, paying particular attention to the precision and efficiency of container movement, so that any delay or damage can be traced and liability claims be filed accurately. The Department of Transport Operations ensures the smooth operation and coordination of all of the various means of transport which are chartered with the objective of offering a house to house, house to pier, pier to house or pier to pier service. The last department, the Container Base Operations Department, is responsible for the control and operation of the container bases.

**Financial Vice-President:** The Vice-President of Finance is
in charge of overseeing all company financial matters and takes an active part in the analysis and execution of the development programs and company investment. This vice-president directs two departments, namely the Accounting Department and the Invoicing and Payment Control Department. The Accounting Department is responsible for bookkeeping and maintaining a continual check of the state of the accounts and of the profitability of the company. The Invoicing and Payment Control Department keeps periodical financial analyses, maintaining control of departmental balance sheets, invoices, recovery and payments.

**Administrative Vice-President:** The Vice-President of Administration is responsible for all personnel matters. This vice-president directs three departments, the Internal Service Department, the Investment Development Department, and the Personnel and Training Department. The Personnel and Training Department supervises technicians and workers, and develops and administers training courses to upgrade the skills of the personnel. The Investment Development Department is responsible for the execution, check and control of the company's development plans and investments. Finally the Internal Service Department is in charge of company transport and communications, for the acquisition and distribution of the material resources necessary to execute the work of the company, and for the maintenance of the installations.

**The Legal Department:** This department, as the name implies, is responsible for all legal and judicial aspects of the company, namely preparing legal documents, leases, shipping documents, etc.
and discussing cases in national and international arbitration cases. This department is also responsible for the analysis and identification of the way in which national and international regulations, laws and such which relate to company activities are implemented. The department elaborates, approves, and prepares certain legal and official documents which need to be published; for example, tariffs, regulations, dispositions and information.

**Domestic and Overseas Agencies:** A container company should have domestic and overseas offices in certain areas and foreign countries to provide close, regional container control, to organize the receiving and sending of the containerized cargo, to make contracts, to manage transport, personnel and services and to execute all negotiations related to company activities.

2.2.- **The Organization of a Container Terminal.**

A container terminal is made up of the berth or berths where the ships can make their loading and/or unloading operations; the space or area where containers are stacked, and of a repair workshop where the cargo-handling equipment is repaired. Clearly the success and efficiency of container operations will depend upon the administrative structure of a container terminal. (See Figure 8)

In our opinion, the administration of a container terminal should be divided into the following departments: the Operations Department, the Technical Matters Department, the Department of Container Control, the Department of Personnel, and the Department of Finance, all of which would come under the leadership of the
Fig. 8: Scheme of a Container Terminal.

- Berth
- Operations Area
- Containers
- Dangerous Goods
- Refrigerated Containers
- Containers To
- Empty Containers
- Import
- Export
- Administration
- Workshop
- Parking
- Parking
- Exit Gate
- Entry Gate
terminal's administrator. Port Customs would form another terminal activity area, but does not fall under the responsibility or direction of the terminal administrator as it is a government organ.

When designing a container terminal it is extremely important to carry out an in-depth study of traffic flow in the area. The terminal should be equipped with both entry and exit gates and the offices and workshops should not be situated in places which will obstruct the movement of the equipment. The traffic routes in and around the terminal must be clearly laid out on the pavement so as to avoid any accidents or interruptions to the efficient flow of cargo handling operations.

To continue we will give a brief explanation of the functions of each of the departments.

The Department of Operations: The work of this department is generally to carry out the daily, weekly, monthly and annual plans for operations; specifically this department develops terminal work shift schedules, and in conjunction with this, the distribution of workers needed in each area of activity; for example, teams of stevedores, teams of drivers and operators of cargo-handling equipment. They also determine the type and quantity of each piece of equipment needed to carry out each of the various terminal operations.

The Department of Container Control: This department has responsibility for the control and checking of all documentation related to the containers bound for export and the containers received as import. Another important function is the organization and planning of the stacking in each of the terminal areas; for the careful and
detailed check of documentation and stacking of the containers stuffed with dangerous goods to ensure that both nationally and internationally established regulations concerning containerized cargo are fulfilled. For this they must keep in mind the International Maritime Dangerous Goods Code.

The Department of Personnel: This department is responsible for all work sites, and ensuring that the personnel of each meet the technical and professional qualifications, experience and personal characteristics required. The personnel department is further responsible for raising the technical level of workers by means of general and specialized training courses.

The Departement of Finance: All financial matters are handled by the Finance Department; their work includes preparing invoices, accounting costs and collecting and reckoning balance sheets of each of the terminal departments. The department is further responsible for the invoicing of all services provided by the terminal and for the analysis of the tariffs which apply. This department is very important because it can determine through financial analysis the profitability and productivity of the terminal and the degree of financial flexibility with which it is possible to operate.

The Port Customs: One of the essential activities in a container terminal takes place in the Port Customs office. It is here that national laws and regulations related to the import and export of merchandise are safeguarded. The office works very closely with the administration of the container terminal, but it does not come under the management of the terminal because it is a government
body. As such it can act as an official representative of the government in legal and judicial matters.

The container terminal, in our opinion, should be under the General Port Authority, as its activities are an integral part of port operations. (See Figure 9)

2.3.- The Organization of a Container Base.

In this section we will describe the characteristics and functions of a container base. Many people tend to confuse the container base with the container terminal. A container base is an area of land with facilities for storage of break-bulk cargo and for the repair of containers. It is at the container base that individual cases of break-bulk cargo bound for export are consolidated and stuffed into containers. The unstuffing of import containers is also carried out there.

Container bases can be situated in the port itself, in the area directly adjacent to the port, or even in a distant industrial area as long as that area can support the facility with an adequate quantity of containerized import and export cargo. The number of container bases serving a port will indubitably increase as the containerized cargo traffic increases and of course, depending on the decisions taken by the authorities keeping in mind the level and locations of the nation's trade and the physical layout and conditions.

In a container base there are different combinations of full container loads (FCL) and less container loads (LCL), namely: FCL-FCL, LCL-FCL or LCL-LCL. The objective is to bring together break-
Fig. 9: Administrative Organization of a Container Terminal
bulk cargoes destined for the same domestic region or foreign country within the FCL and thus provide a service for the small importers and exporters of the area. The process of stuffing and unstuffing of the containers is carried out in the container base. The major advantage of the container bases is the service they provide for small importers and exporters; in addition to this, however, they tend to reduce congestion in the port, for example, by storing containers which are waiting clearance of a document.

The organizational structure of a container base is not as complex as that of a container terminal. A container base is very similar to a container terminal, nonetheless, in its distribution of space, because the area must be divided into areas for dirty, empty containers and clean, empty containers; for FCL and LCL export containers; for FCL and LCL import containers; containers to be repaired; a container repair workshop, and storage facilities for break-bulk cargo.

With relation to the administrative structure, the container base must have a container control department, an inspection department and a technical department. The base must also have customs facilities in order to ease the work load of customs officers in the container terminal.

The Department of Container Control: The role of this department is to control the reception of the loaded containers for import and the break-bulk cargo to be stuffed in empty containers for export. For the reception of import containers it may be necessary to unload the cargo at the base itself if the containers are LCL or
if the importers do not have the facilities at their industries or
distribution centers for unstuffing.

The Department of Inspection: This department is responsible
for the inspection of the containers; the filing of the Container
Interchange Report, the international document which reports on the
condition of the container upon its arrival at the base; the veri-
fication that the containers meet the specific requirements for
cleanliness of the cargo which is to be stuffed in it, and the veri-
fication that the standards established by both national and inter-
national regulations are upheld.

It is the inspector's job to ensure that the containers comply
with all national and international regulations establishing minimun
standards for safety, cleanliness and repair. Regulations such as
those made by the International Standard Organization (ISO) and the
International Maritime Organization (IMO) outline specific rules
regarding dimensions, conditions and requirements for containers.
Two IMO instruments deal directly with containers, namely the Inter-
national Convention for Safe Containers - 1961 (CSC), which establishes
standards for structural safety, and the aforementioned International
Maritime Dangerous Goods.Code - 1965 (IMDG), which outlines regulations
regarding the transport of dangerous goods by all means of transport.
It deals with the classification, appropriate packing procedures and
labelling norms of dangerous goods. For the container base operator
there is an outline of suitable segregation of dangerous goods within
loading, discharge and storage areas.

The Technical Department: This department is responsible for
the repair and cleaning of the containers according to nationally and internationally established regulations. In addition to this principal duty, the technical department orders the quantity and type of materials needed for the realization of base activities.

The Personnel Department: This department is responsible for the employment or the contracting of personnel needed for the execution of various jobs held by, for example, mechanics, inspectors, stevedores, drivers, solderers, etc..

All of the departments of the container base are directed and controlled by the administrator or chief of the base.

2.4.- Characteristics of management personnel.

It is very important not only to have an organization which is well structured, but also one in which managers at each of the levels are well prepared for the responsibility needed to carry out their field of activity. As this is so important, we would like to mention some elements which must be kept in mind at the time of selecting the management leaders of each activity area.

What should be considered when recruiting a person for a leadership role in the container organization? Certainly a manager should possess the appropriate technical or professional qualifications and experience in the area in question. He or She should also demonstrate dependability in exercising responsibilities, and have some essential personal characteristics and abilities. We will mention some of the most important personal and professional characteristics of a leader; they include efficiency, boldness, honesty,
self-confidence, sense of humor, sense of justice, dedication, consistency and discretion.

A good manager also shows initiative and perseverance when it comes to plans or projects; integrity and tact are also essential. He should be skillful in preparing and clarifying department aims and further breaking these into smaller workable objectives. He should always tell the group not only what they should do, but also why. Encouraging or building team spirit is another valuable skill for a manager to possess.

It is probable that there are few people who have all of these attributes, but it is necessary to bear in mind that the majority of these can be learned and developed with practice. Therefore, wise directors assess their workers with the long-range objective of shaping new directors, and promoting those with managerial potential to administrative or managerial positions so that they can expand their background and obtain the basic knowledge about many areas of company activity.

Once in a managerial position, it is essential that a person keep in touch with developments in the container field through the reading of professional journals, the attendance at local, national or international meetings and conferences, and membership in constructive maritime professional organization.
CONCLUSION

In this paper we have tried to give some ideas about a container system and its organization. Our discussion is directed to any of the developing countries that have not yet established a container system. The general development of the Third Nations depends on industrial growth and development; this in turn depends on the cultivation of foreign trade, which depends to a large extent on the improvement and expansion of transport services. Therefore, in order to achieve overall development, a developing country must concentrate both human and financial resources on the development of transport. A container transport system, as stated at the outset, offers great potential for growth in these areas. Nonetheless, it is important to remember that in order for the organizational scheme presented in this paper to be successful, the central administration must be able to establish close coordination and cooperation between all of the supporting 'legs' involved in this complex activity. It is very important to avoid chaos in the transport chain. We know that the most of developing countries are facing great problems in their transport systems because of the lack of administrative organization.

A key element in improving an organization in any country is human resources. The developing countries must develop their people. It is really the most important priority. These countries need to prepare specialists, technical experts, leaders, people capable of representing their countries in international maritime meetings-conferences, etc.. In our opinion this is a great problem for the developing countries because even though they may attend many inter-
national symposia, etc., their representatives often do not possess adequate qualifications, knowledge, experience, etc. about the matters under discussion, so of course, they cannot participate in a significant way. Furthermore, in many cases the native languages of the representatives of the developing countries are not among those used at such conferences; this is a large disadvantage for them as it hinders both their ability to understand and to express their opinions.

It is highly unlikely that the developed countries are going to stop their penetration of the transport trade of the developing countries. Therefore, the developing countries must wake up and ensure that they obtain a greater percentage of their national trade by taking steps now to expand their transport services. The establishment of a container system, in our opinion, is absolutely vital to the achievement of this goal.

To conclude, it is hoped that this brief report will stimulate some action in the establishment of the container activities, or some improvement in the existing organization of the transport chain through improved container management and increased technical qualifications, thereby aiding the overall raising of living standards.
ANNEX I.- Containerized Traffic Growth in Developing Countries.

We would like to include in this report some of important statistics about the growth of the container traffic from 1970 to 1982 and the Container Traffic growth prospects to 1990 in the Third World Countries.

Latin American Containerised Traffic Growth 1970/1982

('000 tonnes)

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>SOUTH AMERICA</td>
<td>144</td>
<td>600</td>
<td>1522</td>
<td>4907</td>
</tr>
<tr>
<td>%</td>
<td>17</td>
<td>23</td>
<td>27</td>
<td>47</td>
</tr>
<tr>
<td>C. AMERICA &amp; CARIBBEAN</td>
<td>725</td>
<td>1961</td>
<td>4050</td>
<td>5456</td>
</tr>
<tr>
<td>%</td>
<td>83</td>
<td>77</td>
<td>73</td>
<td>53</td>
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</tbody>
</table>

Source: CSR Consultants Ltd.

South and E. Asian Containerised Traffic Growth 1970/1982

('000 tonnes)

<table>
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</thead>
<tbody>
<tr>
<td>SOUTH AND SOUTH EAST AREA</td>
<td>34</td>
<td>1527</td>
<td>7071</td>
<td>17366</td>
</tr>
<tr>
<td>% of Area Traffic</td>
<td>18</td>
<td>25</td>
<td>39</td>
<td>46</td>
</tr>
<tr>
<td>EAST ASIA</td>
<td>151</td>
<td>4527</td>
<td>11164</td>
<td>20117</td>
</tr>
<tr>
<td>% of Area Traffic</td>
<td>82</td>
<td>75</td>
<td>61</td>
<td>54</td>
</tr>
</tbody>
</table>

Source: CSR Consultants Ltd.

('000 tonnes)

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<tr>
<th></th>
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<tbody>
<tr>
<td>NORTH AFRICA</td>
<td>3</td>
<td>92</td>
<td>548</td>
<td>1990</td>
</tr>
<tr>
<td></td>
<td>% of African Traffic</td>
<td>3</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>WEST AFRICA</td>
<td>25</td>
<td>464</td>
<td>2272</td>
<td>4904</td>
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<tr>
<td></td>
<td>% of African Traffic</td>
<td>26</td>
<td>41</td>
<td>33</td>
</tr>
<tr>
<td>EAST AFRICA</td>
<td>11</td>
<td>30</td>
<td>211</td>
<td>1427</td>
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<tr>
<td></td>
<td>% of African Traffic</td>
<td>12</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>SOUTH AFRICA</td>
<td>56</td>
<td>536</td>
<td>3821</td>
<td>6039</td>
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<tr>
<td></td>
<td>% of African Traffic</td>
<td>59</td>
<td>48</td>
<td>56</td>
</tr>
</tbody>
</table>

Source: CSR Consultants Ltd.

### Developing Middle East; Containerised Traffic Growth 1974/1982

('000 tonnes)

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>MIDDLE EAST</td>
<td>104</td>
<td>1324</td>
<td>6365</td>
<td>9662</td>
<td>10531</td>
</tr>
<tr>
<td></td>
<td>% of World Traffic</td>
<td>0.1</td>
<td>0.8</td>
<td>3.0</td>
<td>3.8</td>
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</table>

Source: CSR Consultants Ltd.
('000 tonnes and %)

<table>
<thead>
<tr>
<th>Region</th>
<th>mt 1970</th>
<th>%</th>
<th>mt 1974</th>
<th>%</th>
<th>mt 1978</th>
<th>%</th>
<th>mt 1982</th>
<th>%</th>
<th>mt 1990</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Latin America</td>
<td>869</td>
<td>1.8</td>
<td>2,561</td>
<td>2.1</td>
<td>5,572</td>
<td>2.6</td>
<td>10,363</td>
<td>3.6</td>
<td>23,377</td>
<td>5.7</td>
</tr>
<tr>
<td>S &amp; E Asia</td>
<td>185</td>
<td>0.4</td>
<td>6,074</td>
<td>4.9</td>
<td>18,505</td>
<td>8.6</td>
<td>37,483</td>
<td>13.1</td>
<td>73,921</td>
<td>18.0</td>
</tr>
<tr>
<td>Africa</td>
<td>95</td>
<td>0.2</td>
<td>1,123</td>
<td>0.9</td>
<td>6,852</td>
<td>3.2</td>
<td>14,360</td>
<td>5.0</td>
<td>26,148</td>
<td>6.4</td>
</tr>
<tr>
<td>Near &amp; Middle East</td>
<td>*</td>
<td>*</td>
<td>104</td>
<td>0.1</td>
<td>6,365</td>
<td>3.0</td>
<td>10,531</td>
<td>3.7</td>
<td>24,273</td>
<td>5.9</td>
</tr>
<tr>
<td>Developing Countries Total</td>
<td>1,149</td>
<td>2.4</td>
<td>9,862</td>
<td>8.0</td>
<td>37,294</td>
<td>17.4</td>
<td>72,737</td>
<td>25.4</td>
<td>147,719</td>
<td>36.0</td>
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<tr>
<td>World Total</td>
<td>47,317</td>
<td>100.0</td>
<td>123,745</td>
<td>100.0</td>
<td>214,492</td>
<td>100.0</td>
<td>286,803</td>
<td>100.0</td>
<td>410,789</td>
<td>100.0</td>
</tr>
</tbody>
</table>

* less than 0.1%

Source: Consultants Ltd
FOOTNOTES

1 Radzikowski, Phillip, "A Strategic Direction for the Container Industry", Containerisation International; May, 1984, vol. 18, no. 5; page 52.


4 Lambert, Mark, "World Box Moves Set to Top 50 Million TEU for 1984", Containerisation International; December, 1984, vol. 18, no. 12; page 65.


7 Goss; page 7.

8 Shukla; pages 4-8.


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Nagorski, Bohdan, Port Problems in Developing Countries; The International Association of Ports and Harbors, Tokyo, 1972.

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