

CHAPTER 3 INLAND CONTAINER DEPOT

3.1 Inland Container Depots in the World

3.1.1 The Meaning of "Inland Container Depot"

1. Almost every shipping freight conference or agreement regulates the rules on so-called "Inland Container Depots (ICDs)." The precise meaning of an ICD is an "Inland Empty Container Depot" or an "Inland Clearance Depot". Non-conference shipping operators establish their depots more freely.

2. The following is a sample sentence of conference rules concerning ICDs:

"Each ICD must be owned and/or operated by the ocean carrier or its duly appointed agent, must be located within a commercial zone, and cannot be a shipper's, consignee's, forwarder's, or NVOCC's place of business, nor can the operator be a shipper, consignee, forwarder, or NVOCC. The location of each ICD must be on file with the Conference chairman."

3. There are two categories of ICD concerning the location. One is an "off-dock container depot" located adjacent to a container marine terminal in a port area. The other is an "inland container depot" being prepared somewhere in the hinterland far away from a container marine terminal. The former are established in the following cases:

- 1) A container terminal is operated on the basis of public common use, then empty container storage is generally prohibited by the operator.
- 2) The yard of a container terminal is small and not sufficient to accommodate a lot of containers.
- 3) The preparation of an off-dock container depot is convenient for export and import customers.

4. The latter is considered to be appropriate for customer service for the following reasons:

- 1) An "inland empty container depot" is less expensive and more convenient for importers in the hinterland to return empty containers to shipping companies after devanning their goods, and also for exporters to save picking up charges of empty containers for stuffing export goods.
- 2) An "inland clearance depot" is efficient and convenient for exporters to gain export clearance of their goods, and for importers to obtain customs permission of import without going to container marine terminals which are located far away from exporter's and importer's places of business.

3.1.2 ICDs in the World

5. The concept of an ICD was born in the U.S.A. In the late 1970s, an "inland empty container depot" was considered to be good for customer service. In the general procedure of container usage, empty containers, after devanning of goods by importers, have to be returned to a container yard or a shipping company's designated place in the port area. However, for importers in the U.S. Midwest, it is convenient and saves transportation charges to return empty containers to an inland depot instead of to a container marine terminal. For exporters in the hinterland, the logic is the same. Furthermore, in 1980, an Interior Point Intermodal (IPI) service was commenced. Shipping companies designate their own or operated bonded container clearance depots in the hinterlands and issue intermodal through bills of lading up to their depots. They use railway terminals, truck terminals and warehouses as depots in accordance with their handling container volume.

6. The Hamamatsu Inland Container Terminal in Japan was built by the Shizuoka local government in 1971. The inland terminal is located 100 km west of Shimizu Port. Main exports cargoes originating in the Hamamatsu region are stuffed into containers after obtaining customs clearance at the terminal, and transported via Shimizu Port and other neighboring ports such as Yokohama, Tokyo and Nagoya. The total area of the inland terminal is 33,000 m², and the terminal includes two container freight stations of 9,300 m² and 1,800 m². In 1987, about 25,000 TEU of containers were handled.

7. In 1975, Kontena Nasional SDN Berhad, Malaysia established an "Inland Clearance Depot" 35 km away from the Port of Kelang. The depot has a container freight station of about 1,800 m² for stuffing/unstuffing export and import cargoes from and to surrounding industrial estates. The depot is a bonded area and 35 customs officers are stationed there. Bonded transportation with three container seals by the shipping company, Customs and the depot respectively is conducted between the depot and the port by railway and truck. The depot also serves for warehousing, container leasing as an agent for several leasing companies, storing empty containers, container repairing and cargo packing, etc.

8. Table I.3.1 shows other examples of ICDs in Asia and Africa.

Table I.3.1 Some Examples of ICDs in Asia and Africa (1987)

Port	Location	Distance by Rail (km)	ICD Name	Owner	Operator	Space (m ²)	Stacking TEU	Equipment
Bombay, India	New Delhi	2,218	Inland Container Depot	Northern Railway	Shipping Corporation of India	N/A	800	Forklift(3t)x5 Top Lifter(45t)x1 Crane(15-45t)x6
"	"	"	Container Freight Station	Central Warehousing Corporation	Seahawk	N/A	350	Forklift(3-5t)x3 Crane(20-25t)x3
Madras, India	Bangalore	364	ICD Bangalore	Southern Railway	Vikram Associated	6,000	400	Forklift(3-10t)x2 Crane(40t)x1 Spreaderx1, Trailerox2
"	Coimbatore	492	ICD Coimbatore	"	Vikram & Company	1,200	120	Forklift(3t)x1 Crane(35t)x1
Karachi, Pakistan	Lahore	1,280	Dry Port (Lahore)	Pakistan Railway	Each Shipping Agent	N/A	N/A	Crane(50t)x2 Forklift(5-7t)xN/A
Dammam, Saudi Arabia	Riyadh	580	Riyadh Railways Container Terminal	Saudi Railways Organization	Shobokshi Maritime co.	45,000	N/A	Forklift(30t)x2, (1-10t)xN/A Top Lifter(42t)x1
Durban, S.Africa	Johannesburg	650	South Africa Container Depot	South African Container Depot PTY	Each Shipping Agent	N/A	1,000	Forklift(7-25t)x8 Crane(35t)x2
"	"	"	Freight Base Container Depot	Ren Freight Forwarding	Ren Freight Forwarding	27,000	N/A	Forklift(12-25t)x4
"	"	"	Unicorn Container Depot	Unicon Lines	Unicon Lines	N/A	4,000	Forklift(12-25t)x5
"	"	"	Transvaal Container Depot	Container World (PTY) LTD	N/A	24,000	N/A	Forklift(10-15t)x4

3.2 Container Transportation System between the Marine Container Terminal and the ICD

9. The function of the ICD is basically the same as that of the CFS except that the location of the ICD is far from the port.

3.2.1 Bonded Area and Bonded Transportation

10. In order for container terminal operators to maintain efficient container operations at all times, containers must not remain for long periods of time in the marine terminals. On the other hand, it is not convenient for shippers and consignees to go through all the export and import procedures including customs procedures in the port area, which is located far from their places of business.

11. Considering this situation, customs procedures are to be completely executed at the ICD. Therefore, not only the marine terminals but also the ICD should be designated as bonded areas, where customs clearance of both import and export cargoes can be executed. Then, containers should be transported in bond between the two places by reliable trucking companies and railway companies. The marine terminal operator or the ICD operator should declare the bonded transportation of containers to Customs on behalf of shippers and consignees, attaching a transportation manifest. When containers arrive at the marine terminal or the ICD, container seals are checked and this declaration is verified by customs officers.

3.2.2 Transportation Responsibility between Laem Chabang Port and the ICD

12. While containers are transported by trailer or by railway between the two places, there is the question of who is responsible to shippers and consignees for this transportation.

13. In case the place of receipt for export or the place of delivery for import on the B/L issued by a shipping company is clearly written as the ICD, or the ICD is designated as the CY/CFS by the shipping company, it is very clear in accordance with international trade rules the the shipping company is responsible to shipping companies and consignees for the

transportation between Laem Chabang Port and the ICD. However, in case the shipping company issues a B/L on which the place of receipt or the place of delivery is not the ICD but Laem Chabang Port, it is necessary to make this point clear in order for shippers and consignees to utilize the ICD without hesitation. Since the Study Team recognizes that the unified management and operation of the container terminal, the ICD and the transportation between the two places is to be implemented by a single entity, it should be understood that the above entity is responsible to shippers and consignees for this transportation.

3.2.3 Trucking Companies

14. It is generally reported that there are many cases of pilferage and contraband in Thailand. Railway transportation, which is controlled by SRT, is still safer than road transportation. In light of the long distance of 120km between Laem Chabang Port and the ICD, road transportation involves some possibility of theft, smuggling or other difficulties. In order to prevent these criminal acts, a surveillance network along the main roads should be established by both customs and the police, and the road transportation should be steadily conducted by reliable trucking companies.

3.2.4 Bonded Transportation in Asian Countries

15. In some Asian countries, the system of bonded transportation has been introduced newly and improved by the Customs Departments because of the rapid increase of container cargoes. This system has promoted door to door transportation, which is surely a result of positive government policies.

16. Table I.3.2 shows the content of each country's system. It should be noted that the checking of departure and arrival time in Taiwan and the additional seal affixed by the ICD operator in Malaysia are unique methods. Though the method whereby Customs officers accompany the cargo during the bonded transportation is the most secure, it is not adopted except partly in Taiwan because of the high cost.

17. In any case, each country has introduced an original bonded

transportation system which is suitable for the local conditions. Generally speaking, Customs inspection has been gradually simplified since document inspection is mainly executed instead of strict physical inspection.

3.2.5 Recommended Measures to Introduce Bonded Transportation

18. It is understood that the Thai Customs Department should try to establish a reasonable bonded transportation system step by step especially between the ICD and the Laem Chabang marine terminal, taking other countries' systems as a model.

19. The study team proposes the following measures for bonded transportation by trailers considering the conditions in Thailand. As for the bonded transportation by railway, there are no problems as far as shuttle services between the marine terminal and the ICD are concerned.

(1) First Step

i) To oblige the ICD operator or the marine terminal operator to affix an additional seal as well as a Customs seal.

ii) To designate reliable trucking companies as authorized transporters between the ICD and the marine terminal, and to oblige them to distinctly mark their road trailers.

iii) To designate a transport route between the ICD and the marine terminal.

(2) Second Step

After the First Step is properly executed, the following measures are to be adopted.

i) To check departure and arrival time for every road trailer at the ICD and the marine terminal.

ii) To adopt document inspection instead of physical inspection.

Table I.3.2 Bonded Transportation in Some Asian Countries

Country Item	Malaysia	Sri Lanka	India	Taiwan	Japan
Declaration of Bonded Transportation	Required	Required	Required	Required	Required
Customs Seal	Required (and ICD Operator's Seal)	Required	Required	Required	Not Required
Designated Transport Mode	Road, Railway	Road, Railway	Railway	Road, Railway	Road, Railway
Transport Accompanied by Customs Officer	Not Required	Not Required	Not Required	Partly Required	Not Required
Check of Departure and Arrival Time	Not Required	Not Required	Not Required	Required	Not Required
Designation of Bonded Area	Possible	Possible	Possible	Possible	Possible

3.3 Functions of the ICD for Laem Chabang Port

3.3.1 Basic Functions of the ICD

20. Laem Chabang Port is located about 130kms southeast of Bangkok which is the main center of economic activities in Thailand. If there were no ICD around the Bangkok area, the shippers/consignees with LCL cargoes or whose plants can not accommodate stuffing/unstuffing work would have to bring and pick up their cargoes to and from Laem Chabang port CFS under their own arrangement and pay for the inland transportation to and from the Port. They will thus benefit greatly if an ICD is provided around the Bangkok area, because they will be released from travelling to Laem Chabang Port to request the loading/unloading operation and carry out the necessary procedures.

21. Then the basic function of the ICD for Laem Chabang Port must be as a stuffing and unstuffing station in which customs clearance is conducted to complete all procedures by shippers/consignees. Other ICDs throughout the world fulfill the same basic functions.

- 1) O/D . around Bangkok
- 2) lot size . LCL
. FCL which shippers/consignees can not stuff/unstuff at their own plants

22. Though around 90% of the total volume of containerized cargo at present are FCL lots, more than 80% are stuffed/unstuffed at Klong Toei Wharfs. Even after the complete improvement of unfavorable factors, approximately 60% would still be stuffed/unstuffed in the port area, because of a shortage of space and inconvenience of access at shipper's/consignee's plants.

23. After the ICD begins operations, various social benefits can be expected in addition to the benefits to consignees/shippers:

- (1) To decrease the total traffic volume on the roads between Bangkok area and Laem Chabang Port, in particular by consolidating several

lots of LCL cargoes into a container designated by a shipping company or its agents.

(2) To reduce the burdens on Laem Chabang Port in terms of port road capacity and terminal congestion.

24. At the marine terminal, terminal operators will also benefit as they can save space from the CFS and stacking operations which would be transferred to the ICD and simplify container handling operation inside the marine terminal, and this would increase efficiency and allow faster dispatch of ships and containers. These benefits from the ICD will ultimately benefit all shippers/consignees.

3.3.2 Classification of Cargo Characteristics

25. To examine the other functions of the ICD, we consider different cargo characteristics in four categories as below:

- 1) Origin and Destination of cargo (BKK area or LCB area)
- 2) Lot size of cargo (FCL or LCL)
- 3) Stuffing/unstuffing place
- 4) Customs inspection place

According to these characteristics, we can classify cargo into four groups as in Fig. I.3.1.

26. Fully bonded and non-bonded FCL transport must be fully utilized with strong coordination from the customs through simplifying inspection for some types of cargo.

27. In the "Via ICD" group, the basic function is seen in pattern (4)-1, where stuffing/unstuffing and customs clearance will be conducted at the ICD for both FCL and LCL cargo. The cargo volumes for each are estimated in this report. Pattern (4)-3 includes so-called "one-touch" operation, and if this ICD is acknowledged as the CFS of some shipping companies or of shipping freight conferences it becomes a very important function of the ICD but this will not require much operational support from the ICD. We may imagine the pattern (4)-2 as export by independent consolidators or NVOCC transporters, for which customs clearance inspection sites will be necessary whether inside the ICD or at the shipper's site. We think the volume of such cargo will not be so big, because these business can simply use pattern (4)-1 without paying empty container hauling costs, etc.

28. An image of the total system is shown in Fig. I.3.2. As for empty boxes, the shippers/consignees will benefit greatly if the shipping companies could provide an empty container depot around the Bangkok area. A marine terminal often cannot afford enough space for empty boxes, and shipping companies frequently prepare such empty container storage areas outside the marine terminal. One of the reasons is that the overflow of empty boxes, which is unavoidable in fluctuation, tends to hinder efficient operation inside the marine terminal. Considering the limited space of the stacking yard, the staying period at the stacking yard of empty boxes should be minimized with great effort to effectively utilize the space.

29. Reviewing the present warehousing business, export cargo, in particular agri-products, are mostly gathered and stored in river-side go-downs usually with jetties accommodating ocean-going vessels or shallow lighters. For general cargo, the imported goods must pass through the PAT sheds to be inspected by the customs and are stored until claimed by consignees, which sometimes causes a shortage of shed space. As for export, though conventional cargoes are brought into sheds and stored until

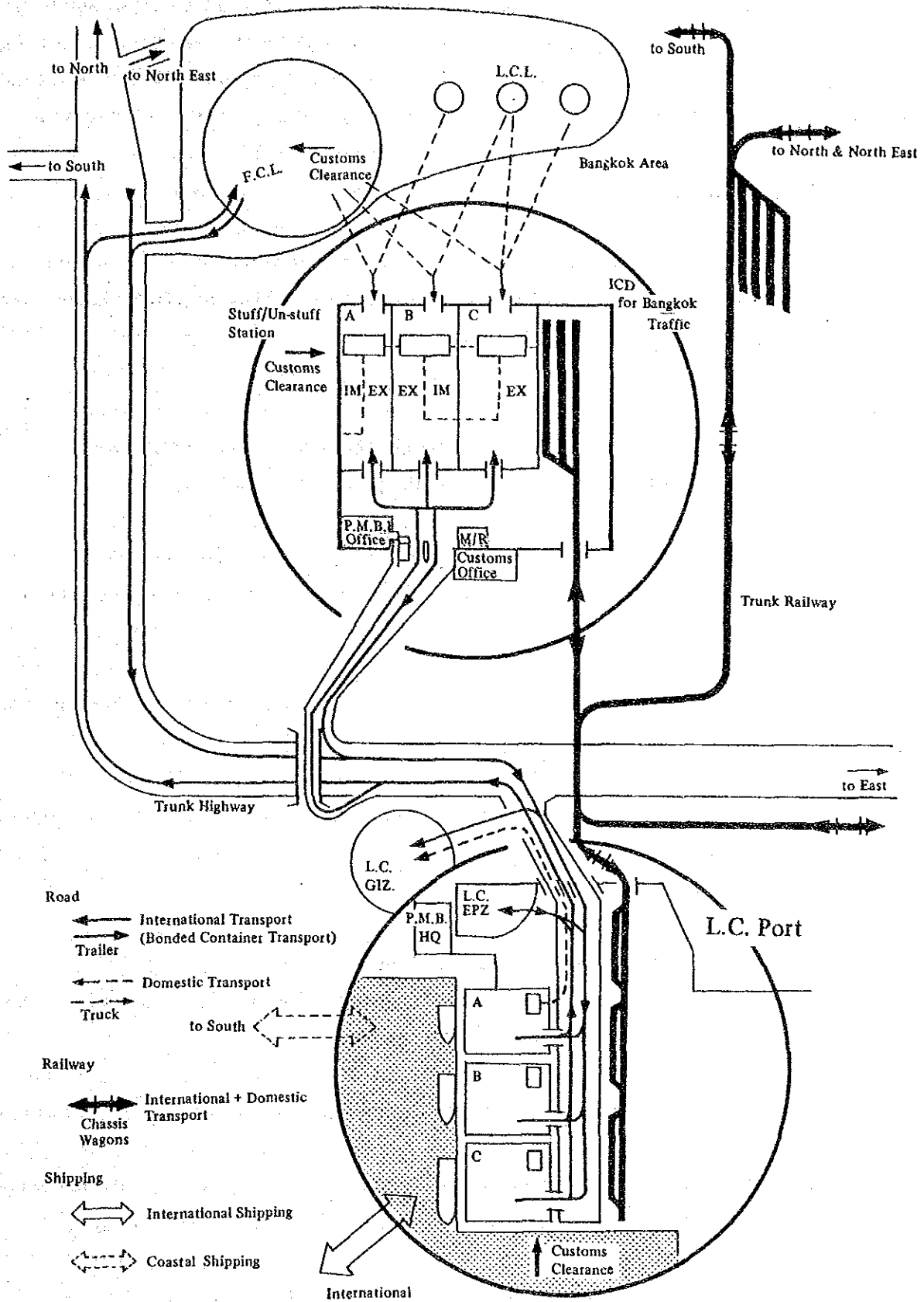


Fig. I.3.2 Port, ICD and Inland Transportation (Model)

loading to vessels, container boxes are also sometimes used like sheds in the case of container cargo. It is said that the port has been offering this kind of service and traders have been depending upon this system, and consequently the warehousing business outside the port is not so active.

3.4 Facilities at the ICD

30. Based on the ICD functions examined in the previous section and on the facilities prepared at the marine terminals, the following facilities are required as components of the ICD.

- (1) Gate box
 - . to check the entrance and departure of trucks and trailers.
 - . security guards to be stationed at gate box.
- (2) Container gate
 - . to supply a booth in order to check the outside conditions of containers and to record the EIR (Equipment Interchange Receipt).
 - . entrance and exit to be separated.
- (3) Weighbridge
 - . to check container total weight; usually located below the container gate.
- (4) Parking Area
 - . private cars and trucks to be parked, and not to be allowed entry to container yard.
- (5) Office building
 - . ICD operators' and customs officers' room
 - . space for workers and canteen
 - . control room for container handling may also be located on the top floor
- (6) CFS
 - . receiving, sorting, customs entry and stuffing of exported container cargo
 - . unstuffing, sorting, customs clearance and delivery of imported container cargo
- (7) Maintenance and repair shop
 - . containers to be repaired

- (8) Washing facilities
 - . container cleaning and washing
- (9) Container yard (CY)
 - . loaded and empty containers to be stacked
- (10) Parking for yard equipment
 - . parking for chassis and trailers
- (11) Cargo handling equipment
 - . toplifters for container handling at CY and forklifts for cargo handling at CFS
- (12) Reefer plugs
 - . reefer containers to be connected to plugs
- (13) Bonded fence
 - . all inside areas to be bonded
- (14) Fuel facilities
 - . fuel station for yard equipment
- (15) Electric sub-station
 - . transformation from high tension transmission voltage to low voltage
- (16) Rail track
 - . SRT railway site

31. The above items are required as basic facilities and equipment. And if the scale of the ICD is relatively big, the following common facilities are required to achieve effective operation.

- (17) Main office building
 - . offices for customs, terminal operators, P.M.B and other related agencies
 - . if necessary canteen space to be attached
- (18) Overtime cargo warehouse
 - . overtime cargo to be transferred from CFS
- (19) Water drainage system
- (20) Water supply system
 - . if no water pipelines are available
- (21) Additional parking
 - . parking for trailers and trucks separated from the road

PART II MANAGEMENT AND OPERATION

CHAPTER 1 NEW MANAGEMENT AND OPERATION SYSTEM OF LAEM CHABANG
PORT AND THE ICD

1.1 Framework of Total Management and Operation System

1.1.1 Management and Operation System of Laem Chabang Port

(1) General Concept for Privatization

1. Privatization is not an almighty policy to solve problems in the public sector, and a careful examination is required case by case, because the situation of the public sector and the private sector is quite different field by field.

2. As the first step, we examine the general concept of privatization in terms of its purpose, effect and negative features.

1) Purpose and Effect of Privatization

3. One of the main purposes of privatization is the practical use of the private sector's advantages, which include financial ability, technical ability and rationalization tendency.

4. By using the financial ability of the private sector, decreased investment by the government can be considered as one of the effects of privatization. Some conditions are required to realize this situation, such as the private sector must be eager to invest due to expectations of a good return within a reasonable term and the field must be suitable for privatization from the viewpoint of the necessity and possibility of adequate control by the public sector.

5. If the public sector's technique is not sufficiently modernized, technical ability is another important aspect of privatization. If the local private sector has not developed sufficient technique, utilizing a foreign company is one of the methods to solve the problem. The same effect, however, can be realized by technical cooperation on a governmental or private basis.

6. The private sector is generally said to have a tendency of rationalization, because their purpose is usually to gain a profit and, thus, continuous efforts to minimize production costs and to develop a wider market are a common factor of their success. One of the large disadvantages often found in the public sector is the lack of motivation to rationalize.

7. There is, however, some limit to the profit-oriented approach. For example, PAT itself seeks a profit, but from the viewpoint of profit maximization, it lacks motivation to reduce costs and to cultivate the market, because the check by the Government as the shareholder is not sufficient. To maintain a continuous effort for rationalization, checks by the shareholders are one of the effective ways but competition is the best method. Non-competition, i.e. monopoly of the market, is the biggest factor that spoils efforts for rationalization. This also can be said for private enterprises, and thus privatization alone may not be effective when there is a lack of competition.

8. In industrial fields where the private sector is still developing, privatization has another feature as it promotes the development of private enterprises through giving local enterprises a chance of participating in a new business field. The effect would be remarkable in cases where the market has been substantially closed to such enterprises by the public sector and foreign companies as a result of institutional limitations or technical barriers.

2) Negative Features of Privatization

9. When discussing privatization, its advantages are always highlighted, but we can not overlook its disadvantages. If privatization is implemented, adequate counter-measures to overcome these disadvantages must be considered.

10. First we point out such disadvantages as increased costs for return of investment based on the following reasons.

i) Low interest public finances can not be used

- ii) The private sector would set a higher tariff to cover the risk of investment
- iii) Especially, foreign enterprises would rush to gain a return on their investment

11. Also, operations with a lower return will be left to management by the government, because the private sector does not want to take over these businesses. Even though these services are very important and need to be provided by the government, it becomes difficult to continue such operations against the social and political criticism caused by the worsened profitability.

12. Furthermore, a new institutional system for public control to watch over and control privatized activities becomes necessary. This is because such fields previously owned by the public sector are in the public interest and still require control to some extent. As a principle, control by the government should be as small as possible in order to maximize the advantage of private sector operation. The issue of the privatization will be significantly influenced by the extent of the control and the possibility to maintain control by the public sector. The extent of the control by the government should depend upon the characteristics of the work.

(2) Examination of PAT Management and Operation System

13. The following conclusions are based on the analysis of the actual management and operation system of PAT in the EPMOS study's Final Report.

14. Concerning operation of container handling at Klong Toei Wharves, the total throughput, around 780,000 TEUs in 1988, shows a considerable success of operations. But when we look into the actual operation performance, there are many problems. Congestion at the wharves has become a serious problem which may hinder the economic growth of Thailand. Even before, the wharves were heavily congested and not operating efficiently because there was no efficient control by the terminal operator, namely PAT. Fortunately, there was still some reserve handling capacity even under such inefficient management of the terminals. However, the high handling costs

are ultimately transferred, causing higher prices for both imports and exports. This reduces the competitive power of Thai products in international markets.

15. The operation system in Bangkok Port is summarized in Table II.1.1, which shows the bodies actually conducting each operation. The major problems of container handling in Bangkok Port are the lack of a total control system of vehicle traffic and container handling within the port area by PAT, and the shortage of equipment and skilled labor for container handling.

16. These problems are mostly caused by the lack of awareness that PAT is a terminal operator and is essentially in charge of all operations inside the terminal.

17. Within the administration system of PAT, we can also find certain points which seem to influence PAT operations. The government maintains strong control over major decisions, the body lacks flexibility to catch up with users' demands due to conflicts with employees, there is a vague policy on the distribution of the profits of PAT and an insufficient tariff system related to the actual cost.

18. We consider that these problems basically come from a single root. Bangkok Port has been the almost only port to accommodate maritime trade, and Bangkok has also been protected by law in particular for import trade. Together with the concentration around the Bangkok area, most shippers/consignees and shipping companies may have no choice other than to use Bangkok Port. On the other hand, PAT has been required to produce a profit to contribute to the national finances and to pay bonuses.

19. Port management has been consequently considered or recognized as a "profit-making business" rather than an "infrastructure to support economic activity," and the monopolistic status has made this possible. At this point we have to remember that Bangkok Port surely has served as a fundamental infrastructure for the Thai economy and has supplied essential services, but the port development including improvement of the existing

Table II.1.1 Conducting Bodies of Major Jobs in Bangkok Port

Job		Mark	Remark
Ship	Assignment, permission and confirmation of using berth facilities	A	Assignment is arranged at berth meeting every morning, but with less leadership of PAT.
	Pilotage	E	Harbour Department (arranged by shipping company)
	Navigation control	E	Harbour Department
	Tug boat	B	} Arrangement of shipping company by order of the pilot.
	Rope boat	B	
	Stevedoring	D	Private sector, subject to registration with PAT. (arranged by shipping company)
Cargo	Conventional	Longshoring	} Direct operation by PAT labor and equipment. (on request of consignees/ shippers)
		Shed operator	
		Tally	
		Delivery	
	Lighterage	C	Actually acknowledged by PAT and permitted by the Customs.
Container	Marshalling	B/C	} Obligated to use PAT labor and equipment. Private sector widely acting in case of shortage. (Operational indications and arrangement by shipping company)
	Stacking	B/C	

Common	Stuffing for export	B/C	Obliged to use PAT labor. Private sector sometimes acting in case of shortage. (arranged by shipper)
	Unstuffing for import	A	Exclusively conducted by PAT labor, at the same time as inspection by the Customs.
	Allocation of container yard	A	On application of shipping company.
	Storage of cargo (Shed, CFS, CY, warehouse)	A/C	On request of consignees except at CY. Containers in CY actually watched by shipping company.
	Road traffic control	A	Insufficiently controlled.
	Gate check	A	With the customs officials.
	Customs inspection	E	
	Quarantine	E	
	Immigration	E	
Carry - in/out	D/E	ETO's monopoly for carry-out. Carry-in arranged by shippers.	

Legend

- A ; Management/Operation by PAT directly
- B ; PAT's services but executed by groups other than PAT
- C ; Private sector's services allowed by PAT actually
- D ; Private sector's services permitted by PAT officially
- E ; Services by other public agencies

port management and operation has been unsatisfactory, compared with the progress of social and economic development.

20. For a new port management and operation system, the correct concept of port development and management should be introduced and carefully followed to support the new stage of Thailand's development as a nation with multiple deep seaports and one of the ASEAN countries.

(3) Adequate Extent of Privatization

1) Port Management Body

21. The port is a significant infrastructure for the national and regional society and economy. On the other hand, the port occupies the public water area exclusively. Considering examples of most ports in the world and the current system in Thailand, we reach the following ideas:

- i) The basic space and facilities in the port should belong to the public sector,
- ii) The public sector should be ultimately responsible for maintaining port services and also for preparing port services which might be required in the future.

22. The public sector is consequently suitable as a port management body which owns assets and has the responsibilities mentioned above. From the reverse viewpoint, privatization of the entire port management would be very difficult because the following areas should be managed by the public sector.

- i) Overall future port planning and management strategy,
- ii) Restriction on the activities and uses of the facilities within the port area, and
- iii) Public control over the privatized parts of management and operation.

23. As a result, privatization mainly focuses upon specific fields in the port management and operation absolutely excluding the above areas, in

order to realize an efficient system.

2) Possible Fields of Privatization

24. The basic concept of privatization of Laem Chabang Port are as follows:

- i) To pursue privatization as far as possible following the government policy to increase efficiency, and
- ii) To deeply consider the local characteristics of the port.

(a) Terminal Operation

25. Following the previous analysis of the PAT operation system, which is virtually the only experience in Thailand, the public sector including PAT does not have sufficient ability and experience in modern container operation. Then this field is suitable for privatization, which would also decrease further investment by the public sector in procurement of equipment and recruitment of new labor. We strongly hope that, as a result of privatization, terminal operation will catch up to user demand and the new port, thus, can work as expected. There are many successful ports throughout the world in which terminal operations have been privatized.

(b) Ancillary Services

26. To minimize the number of P.M.B. workers and to reduce operational cost, privatization of ancillary service should be pursued. The P.M.B. must, however, continue to control to an adequate extent such services even after privatization, because it is the P.M.B.'s duty to maintain the necessary services. The appropriate type of privatization should be selected for each job, according to the extent of concern of the P.M.B., the potential of the private sector and the commercial tradition. For example, for businesses which require a large investment, such as tug boats, etc., it is reasonable that the public sector makes the initial investment and then leases the equipment to private companies in order to attract the private sector to such businesses. In some cases, private companies would be required to register with the P.M.B. to assure service

quality and security.

(c) Common Services and Administration

27. In the present system of PAT, some areas like facility construction (excluding dredging work) are conducted by private companies. It is necessary to try to find adequate fields for privatization from small jobs like printing of publications and cleaning of buildings to larger ones like dredging and equipment maintenance.

28. Possible fields of privatization are roughly examined and the result is shown in Table II.1.2, and a further examination concerning the organization of the new P.M.B. is presented in section 1.2 of this Chapter.

(4) Framework of the New Management System

1) Management Body

29. In the EPMOS study's Final Report, the establishment of a new port management body is basically recommended but the report shows the second best choice, if the first choice has many difficulties, that the utilization of the existing PAT might be considered as a last resort. But it is strongly stressed that the management of Laem Chabang Port should be separated from that of Bangkok Port, and the study team then drew two alternatives, namely the two Directors General system and the two Sub-boards system. We agree with the above-mentioned recommendations and ideas as a whole.

30. Basically we hope to establish a new management body, but following the recent political situation we also have to take into account the possibility of PAT's involvement in the Laem Chabang port management. Against the EPMOS report's proposal, there is the argument that in such a separate management system alternative the decision making process and the members of the sub-boards are duplicated. We, following the EPMOS study, think that (1) the duplication of the decision-making process must be avoided in a way that the Board of Commissioners will issue rules and regulations common to both ports and take care of general affairs, and the

Table II.1.1.2 Possible Fields of Privatization

Activity		Responsible Body	Possible shape of privatization
Facility Management	Security and Safety Inside the Port Area	P.M.B. P.M.B. + Harbour Master	Partial O.O(1)
	Control of going in/out * Gate check * of vessels		
	Guard, Fire-fighting * of land area * of water area * inside terminal Traffic Control	P.M.B.+ Police Marine Police (P.B.B.)+T.O.	Partial O.O(1)(as guards) T.O. in lease terminal
	* of land area * of water area * inside terminal	P.M.B. Harbour Master (P.M.B.)+T.O.	Partial O.O(1) T.O.in lease terminal
Individual Facilities Management	Usage Coordination * Lease Contract * Usage Permission	P.M.B. (P.M.B.)+T.O.	X T.O.in lease terminal
	Collection of charges	P.M.B.+T.O.	Partial O.E(2) T.O. in lease terminal
	Maintenance (including dredging)	P.M.B.+T.O.	Most O.O(3)(as for work) T.O. subject to lease contract
	General Supervision of Usage	P.M.B.	X
Planning, Construction	Port Plan Preparing	P.M.B.	Partial O.O(4) (as for preparing draft)

Activity		Responsible Body	Possible shape of privatization
Operation Service	Execution Procedure	P.M.B.	X
	Construction	P.M.B.	Partial O.O.(5) (as for design, supervision, work)
	Pilot	Harbour Department	
	Towage	P.M.B.	O.E.(6), LS(7)
	Line Handling	P.M.B. + T.O. + PR.	T.O. at lease terminal else RG(9), free
	Water, Power, Communications Supply	P.M.B.+ T.O.	T.O. at lease terminal else O.E(10)
	Cleaning, Garbage	P.M.B.+ T.O.+ PR.	T.O. at lease terminal else O.E(11), RG(12)
	Painting, Repair	T.O.+ PR.	T.O. at lease terminal else RG(13), free
	Stevedoring	T.O.+ PR.	T.O. at lease terminal else RG(14)
	Longshoring	P.M.B.+ T.O.	T.O. at lease terminal
	Shed Operation	P.M.B.+ T.O.	T.O. at lease terminal
	Carrying In/Out	T.O.+ PR.+ SRT	Case by Case
	Cargo Handling		

Activity		Responsible Body	Possible shape of privatization
Procedure	Warehousing	PR.	Outside the port area
	Stuffing/unstuffing	T.O.	At container terminal
	Equipment Repair	P.M.B.+ T.O.	T.O. at lease terminal else O.O.(15)
	Customs	Customs Department	
	Quarantine	Quarantine Office	
	Immigration	Immigration Office	
	Others	Other Agencies	
	Grievance Dealing	P.M.B.	X
	Business Register	P.M.B.	X
	Promotion	P.M.B.	Partial O.O.(16)
Administrative	Business Space	P.M.B.	X
	Seamen's Welfare	P.M.B.	Partial O.O.(17)
	School, Hospital	P.M.B.	By allowance
	Others, such as printing, cleaning	P.M.B.	Most O.O.(18)
	Public relations		
Administration			

Legend

Body

P.M.B. : Port Management Body

T.O. : Terminal Operator

PR. : Private Company

Shape of Privatization

O.E. : Entrust to outside

O.O. : Order to outside

LS : Lease

RG : Require registration with P.M.B.

X : No room to privatize

actual decision-making must be vested in each port management core, and (2) the actual members, though some Government officials will be in common, will differ reflecting the involvement of local interests and the different characteristics of the two ports.

31. The delay of decision making also can be kept down to the minimum level through the above-mentioned method and the proposed simple organization. The careful selection of local members and the sufficient examination of policy by experts should ensure that decisions are not excessively influenced by local politicians.

32. The importance of separate management should be recognized. It is crucial to realize separate management through the organizational structure.

2) Foreign Experts

33. To make up for the lack of management expertise in Thailand, it will probably be necessary to employ foreign experts, especially during the early stages of the new ports. PAT personnel and other groups in Thailand are not appropriate for this sort of advisory position due to the lack of expertise and for political reasons.

34. If the port management bodies employ foreign experts on a commercial contract stipulating the responsibility to maximize profit, the foreigners would be under pressure to realize short-term profits which may be detrimental to the long-term health of the ports. Especially in the initial stages, a long-term perspective is required, and so commercial advisors may not be appropriate. Also, such advisors may hesitate to transfer proprietary technical knowledge to Thai nationals.

35. Luckily, the same sort of expertise can be extended by foreign experts who will work as advisors, for example, through bilateral cooperation from foreign governments. Experts dispatched to Thailand under a technical cooperation program can not only advise the management body on day to day affairs, but can also transfer valuable management knowledge to local managers, as they will not suffer from any sort of conflict of interest.

36. One further advantage of the advisor system is that Thai nationals would still retain control of actual port management. This may make little difference in terms of day to day affairs, but could be crucial in relation to major policy decisions and in extreme cases, such as during international conflicts.

3) Terminal Operator

37. Following the EPMOS study report, it may be possible to find operators for most of the terminals and such an arrangement for the break-bulk berth and the coastal berth may also be feasible through substantial subsidies from the government. Taking into account the container cargo forecast by the Study Team, the break-bulk berth would certainly be used for container handling to some extent, and the financial condition could be improved. We, hence, assume in this report each terminal will be separately leased out to the private sector.

4) Framework of the New System

38. Our proposal for the framework of the management and operation system is summarized as shown in Fig. II.1.1.

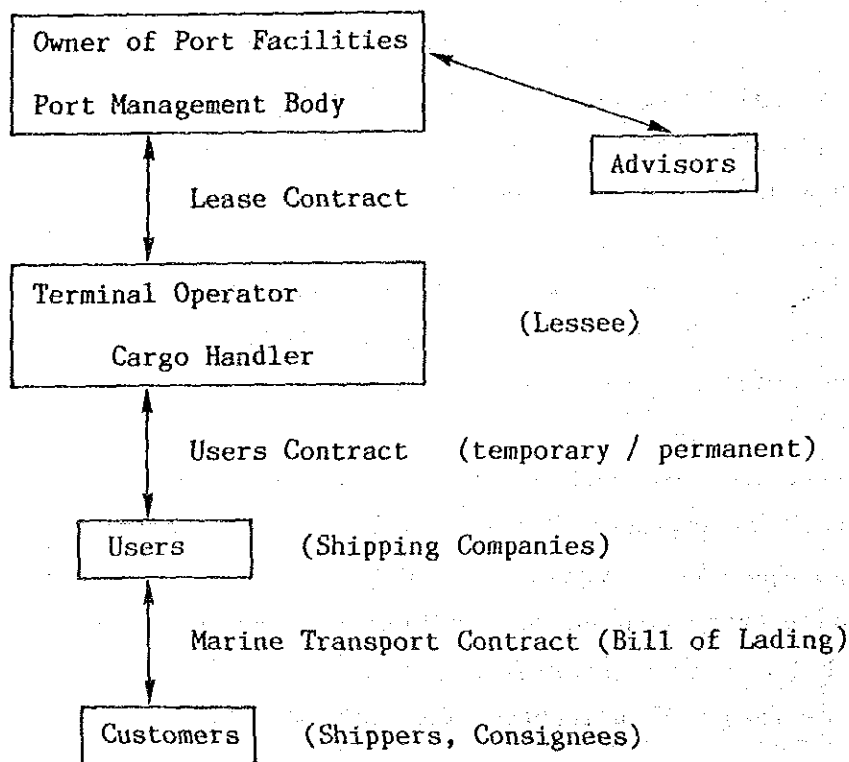


Fig. II.1.1 Management and Operation System for Laem Chabang Port (Framework)

39. The relations among the terminal operators, users and customers in the above figure are examined in detail in section 1.1.3.

1.1.2 Container Terminal Operation System

(1) Adequate Number of Terminal Operators

40. One of the important points to consider in the container terminal operation system is the number of terminal operators. As the first step, we examine an alternative with one operator for several berths. The major advantages of this system are said to be high occupancy ratio of the quay wall and an efficient, integrated operation. The former advantage is theoretically considered as the fruit of two characteristics, namely the linearly continuous berths and the operation principle of "first comes, first served".

41. Linearly continuous berths may occasionally be occupied by more than 4 vessels at quays originally designed for 3 berths, if smaller vessels such as the present feeders call at Laem Chabang Port. Considering that the size distribution of calling vessels at Laem Chabang Port would be more scattered than at Bangkok Port due to fewer depth restrictions, this would require many shift operations of already berthed vessels to make room for vessels coming later. The terminal operator would have to assign berths for vessels without accurate information on vessels coming later and such an operation would not realize as high a ratio of berth occupancy as is theoretically possible.

42. The "first comes, first served" operation however may contribute to equality of quay facility use among users and effective use of terminal facilities. For example, PSA (Port of Singapore Authority) offers their container terminal service on this principle and realizes an extremely good throughput of 2,450,000 TEUs through 9 berth, although more than half of this volume is transshipment cargo, which puts less burden on a terminal than usual cargo to and from inland areas. However using the "first comes, first served" system, in accordance with cargo volume, number of berths and operation experience, there will always be congestion through cross-transportation of containers inside the terminal. This is caused by

the difficulty to predict the assigned berth beforehand and the necessity to assign yard space at least several days before vessels come in order to accept containers from shippers.

43. On the other hand, the shipping companies also would not be able to predict waiting time for berthing and might disfavor the increase of vessel cost and the unstable schedule.

44. Preventing this kind of disadvantage, a preferential system could be considered. In this system, a terminal operator favors certain constant users, assigning a certain berth and a near-by yard before ships come to the port and consequently the terminal operator may stack this ship's containers at a convenient place in advance and enjoy smooth operation of loading and discharging containers. At the same time, another important advantage of this system for shipping companies is less waiting time for berthing, which leads to less cost in the port for the ship and also to a more stable schedule. The terminal operator, in turn, would gain some privileges, such as a guarantee of substantial throughput from shipping companies. Widely applying the preferential system, in particular for frequently calling lines say with more than weekly service, the same berth and the same yard will naturally be assigned for convenience of operation and the advantages of the "first comes, first served" system are sharply reduced in accordance with the needs of the port and the requirement to provide better service.

45. To summarize this analysis, after the port reaches a certain level of its development, the actual operation becomes similar to that of a limited shipping line terminal in some terminals. We must pay more attention to the fact that PSA has not fixed their operation policy and has been changing to allow preferential use of berths for some shipping companies and will supposedly allow more preferences.

46. Reviewing the development of the management principle of container terminals, it changes step by step in every terminal around the world, catching up with the development of container transport at the port. We are convinced that the progress of containerization in Thailand has reached the level in which the "lease out with limited line" system is the most

workable for certain cargo.

47. It can be argued that the number of container berths is not sufficient at the initial stage in Thailand, and thus the greatest usage of the terminal should be pursued with the one terminal operator system.

48. Considering the total transportation cost, it is unrealistic to expect a high occupancy ratio of the quay wall in spite of the congestion in the container yard, which may possibly cause increased expenditure in ship waiting and in yard operation itself. Many terminals with two standard gantry cranes are limited in capacity mostly through the capacity of the yards and not mainly through that of cranes or quay walls.

49. A certain effect of scale merit, however, will appear in yard capacity through commonly using adjacent areas, but it may be within the range of lost capacity due to the type of operation equipment, frequency and stability of calling schedules, progress in the operational level of new managers and workers, etc., and, after all, the throughput volume the operators can gather.

50. Cost reduction in managerial and operational scale-merit can also be expected, but this estimation is only meaningful provided the capacity is almost fully used. Such costs include a high amount of fixed expenditures.

51. We would like to stress that the most important factor to be considered is the introduction of competition in the terminal operation market. The competitive market can bring more efficiency than relatively monopolistic conditions. For example, if a terminal is leased to a single shipping company and it can not fully use the terminal with its own cargo alone, the company must try to attract sub-users, because smaller cargo volume lead to the higher terminal cost, which will surely reduce its competitiveness in the shipping service market.

52. Considering the present condition of Thailand, it is more necessary to show the benefits of fair competition in the port market than to gain transient and unsubstantial profit through giving monopolistic status. We therefore recommend one operator for each berth, and maybe a few terminal

operators within the port.

53. A system whereby the P.M.B. would lease all terminals to a lessee and allow sub-lease to other private bodies may seem similar to our recommendation, but it is quite different. Because the lessee would oversee and control all terminal operators and this is the same as the function of the P.M.B., the lessee would easily become strong enough to defy the authority of the P.M.B.

(2) Potential Terminal Operators

54. Possible forms of terminal operators are as follows:

1) Port management body (P.M.B.)

- 1-a Direct operation by P.M.B.'s workers
- 1-b Handling operations entrusted to private companies

2) Shipping Companies (or their affiliated companies)

- 2-a One shipping company
- 2-b Consortium of shipping companies
- 2-c Joint venture among shipping companies, container handling companies, inland transporters, etc.

3) Independent Body

55. Terminal operators are required firstly to efficiently operate and handle container cargo, and finally to continue supplying their service and to pay the terminal rent. As the least qualification, they are required to have sufficient experience in terminal operation and of efficient cargo handling in Thailand, ability to evidently attract sufficient cargo volume and financial stability.

56. We must recognize the difference between the independence from shipping companies and fairness to them. All container terminals in the world naturally have specific connections with shipping companies which call at their terminals, and hence it is usually difficult to expect completely fair treatment. We also would like to point out that

independence from any shipping company means no solid assurance of cargo coming to the terminal. If such a terminal operator seeks stable business prospects before starting operation, he would have to negotiate with shipping companies and try to gain their decision to use his terminal.

57. To secure both higher usage of the port facilities and rent revenue, the P.M.B. is also obliged to reject the offer if a candidate operator fails to show evidence of cargo volume coming through his terminal.

58. For the future development of Thai ports, the need to cultivate operational techniques in Thai terminal managers and operators must be taken into consideration.

59. We consider that shipping companies would be the most appropriate candidates if they find Thai partners who have enough potential or some relation with the container transportation business because of the convenience in technical transfer.

60. At present, the Thai flag shipping companies do not have enough experience in terminal operation but foreign shipping companies, some of which have affiliated Thai companies, do. Examining shipping companies now calling at Bangkok Port regularly, there are two main groups, a commercial feeder group mainly connecting with Asian ports and the other group including the major shipping companies of the world. The former group holds a 40 % share of container throughput at Bangkok Port. Considering the future possibility to introduce larger container vessels, the latter group would find more advantages to use Laem Chabang Port instead of Bangkok Port.

61. After examining the results of interviews with major shipping companies and their association, and at the same time considering our estimation of the cargo volume through Laem Chabang Port, all of the shipping companies are undoubtedly interested in terminal operation at the port. They are, however, waiting for more fixed conditions including whether they can expect operations at Laem Chabang Port to be improved in terms of terminal operation itself, customs procedure, quality of transportation service, price, etc., because these factors will have a

decisive influence upon the attractiveness of the port for their customers. If our recommendations can be realized as a whole to a certain extent, we are sure that all of the container berths will work as expected. Each shipping company will, then, try to find the best way to participate including using the terminals of independent operators, through hard negotiations, being influenced by their own prospective cargo volume.

62. The actual procedure to select terminal operators is examined in Chapter 2 of this Part.

63. Considering the desirable flexibility of the P.M.B.'s organization and the capability of the private sector, we strongly feel that direct operation by the P.M.B.'s workers should be avoided, even if P.M.B. would be obliged politically to be responsible for operations at one of several terminals. To the idea that the P.M.B. operates all container berths as one terminal, we are doubly negative because both the lack of competition among terminals and the shortage of operation technique would lead to inefficient management and operation of container terminals, and as a result, to insufficient revenue and to strong complaints of users who compare the service quality of Laem Chabang Port with that of the neighboring ports.

1.1.3 ICD Management and Operation System

(1) Three Major Components

64. For the convenience of examining the framework of management and operation bodies of container transportation, we consider the three major components of container transportation through Laem Chabang Port, namely the marine terminal, inland transportation and the ICD. These three components would best be operated by integrated operators, the total number of which would equal the number of marine terminal operators. The reasons are as follows:

- i) The total management cost of the three functions could be reduced.
- ii) By means of operation under one comprehensive system:
 - a. Through unification of documents and procedure time and cost can

be saved. Also an on-line computer system can be easily introduced to multiply the above-mentioned effects.

- b. Arrangement of machinery and labor will be unified and users can enjoy scale merit, such as lower charges, more flexible and steady service, etc.
- c. For shipping companies as users of this system (sometimes they are the same as the services suppliers), they can supply timely and accurate information of cargo movement to their customers, not only to assure more security but also to achieve more reliability.

65. Under this idea, however, inland transportation operation will not necessarily be conducted by such operators themselves, but transportation arrangements and responsibilities should be vested in them.

66. In case the Laem Chabang marine terminal operation would be separated by berth, ICD operation would be the responsibility of each terminal operator based on the above-mentioned idea.

67. Remembering that the ICD's basic function is very much the same as that of the on-dock CFS, which is provided by the government in the case of Laem Chabang Port, we can easily reach the conclusion that the same system is suitable for the ICD. In other words, it is the responsibility of the port management body to prepare the ICD, without which Laem Chabang Port could not properly carry out its role. So, in conclusion there are many reasons to integrate these ICD functions by the public sector.

- i) Uniform management policy and control with the port and its container marine terminals.
- ii) Coordination with other agencies such as access transportation, environmental considerations, customs procedures, etc.
- iii) Investment cost reduction and scale merit of common operation.
- iv) Assurance to fairly offer equal opportunity to transport through Laem Chabang port via the ICD.

68. So, the ICD will be administrated by the same management body as that of Laem Chabang Port, and constructed naturally on the same policy as Laem

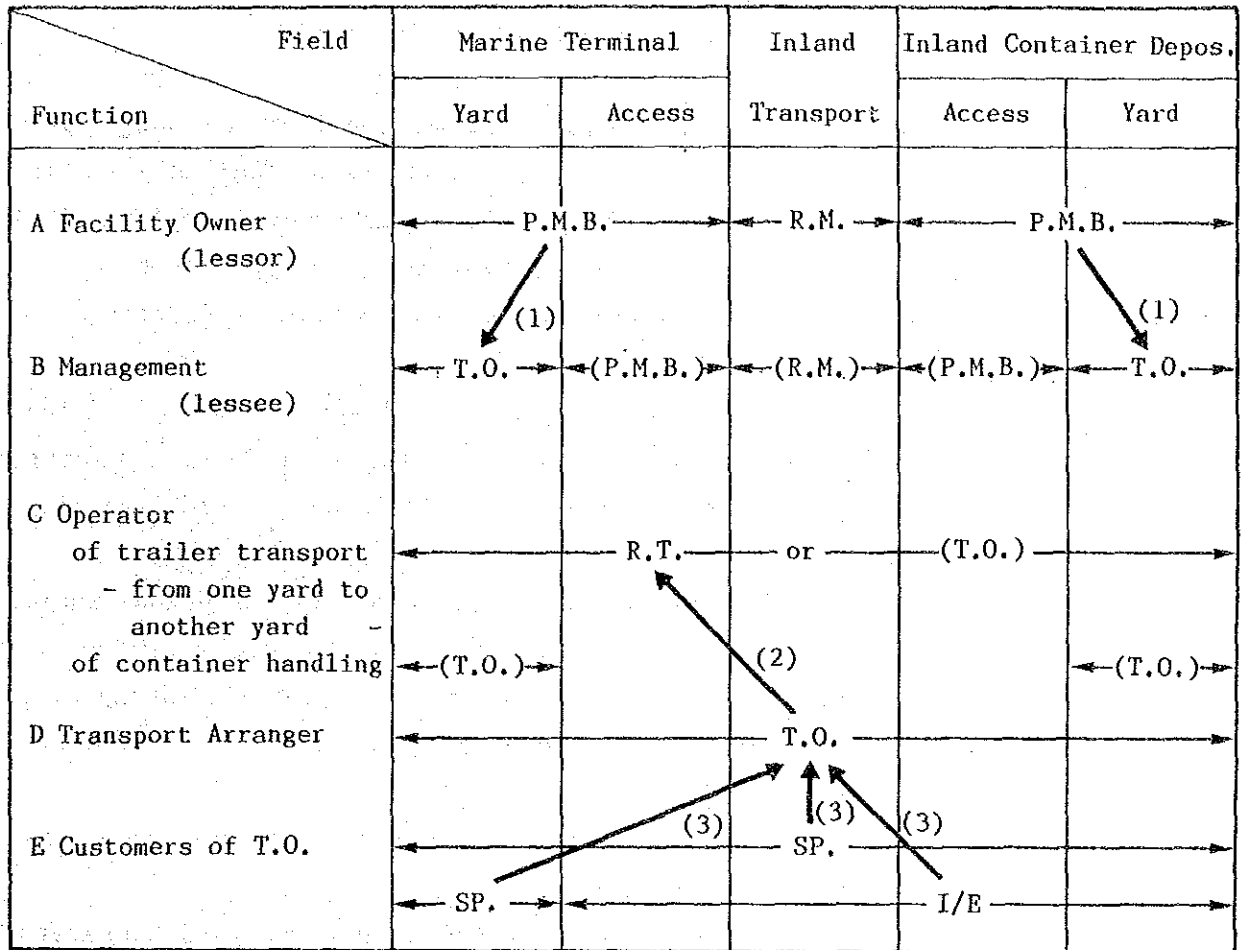
Chabang Port, in particular for fund raising, and each terminal operator will lease ICD facilities from the port management body in addition to leasing a marine terminal.

(2) Division of Operations among the Related Bodies

1) Road Transportation between the Port and the ICD

69. Considering the flexibility in choosing time and origin/destination, road transportation with trucks or chassis with tractor heads should be recognized as one suitable mode for the inland transportation of containers. Another important feature of such transportation is that there are many potential transporters, which shows the possibility of a workable market mechanism in this field. As we have often stressed in this report, if one wishes to make Laem Chabang Port workable, one of the most effective measures is to assure fair competition in inland transportation.

70. Trucks or tractors between the port and the ICD will actually be driven under the control of some inland transport companies whether they are the same as the terminal operators or not. In case the shipping companies will be responsible to shippers/consignees for container transportation until the ICD, they will have to arrange this inland transportation in addition to handling at a marine terminal and at the ICD. It is convenient and thus quite natural that terminal operator will be entrusted with all this handling and arrangements on behalf of a shipping company. Fig. II.1.2 shows a summary of the proposed operation system.



Relation

- (1) Facilities lease contract
- (2) (Inland) Transport contract/commission
- (3) Transport and handling contract/commission

Notes

- P.M.B: Port Management Body
- T.O. : Terminal Operator
- R.M. : Agencies in charge of Road Management
- R.T. : Road Transporters
- SP. : Shipping Companies
- I/E : Importers and Exporters

Fig. II.1.2 Road Transport Operation System

2) Railway Transportation between the Port and the ICD

71. Concerning railway transportation between the Laem Chabang port container terminal and the ICD, SRT (The State Railways of Thailand)'s role will be important but is still not fixed yet as government policy. We consider and examine 4 cases as alternatives under which SRT will be responsible for operations and management as below (see Table II.1.3):

Case I SRT is responsible for the complete management and operation of all container boxes using railways including taking out/bringing in to both marine terminals and the ICD stacking yard.

The stuffing and unstuffing from/to conventional wagons would also be conducted by SRT.

Case II SRT is apart from container box handling itself, though the marshalling planning and execution of operation of trains in the railway yard is still under SRT.

Case III SRT operates trains at the request of (marine) terminal operators, under contract.

Case IV Marshalling of trains is conducted by railway yard operators and SRT only operates trains between the marine terminals and the ICD.

(a) Concerning Cargo Handling:

72. Considering 1) the lack of experience of SRT in container handling itself and 2) more efficiency of unified operation with container terminal operation, it is recommendable to leave SRT apart from cargo handling and, thus, alternative (I) is not adequate.

(b) Concerning Rail Terminal Operator System

73. If the integrated terminal operators operate the ICD including the railway yard independently from SRT, namely alternative (IV);

i) SRT will likely lose an opportunity to utilize their precious experience in operation planning and marshalling technique. This

Table II.1.3 Operation Distribution Pattern

	CASE			
	(I)	(II)	(III)	(IV)
(A) Train Operation				
A-1 Driving locomotives	○	○	▽	○▽
A-2 Formation of trains	○	○	▽	□
(B) Maintenance (Rail related)				
B-1 Rail, Rail-bed, Crossing	○	○	○	○
B-2 Signal system	○	○	○	○
B-3 Yard facilities	○	○□	○□	□
B-4 Machines, equipment	○	○	○□	○□
(C) Operation Planning (Train, Bogey)				
C-1 Train schedule	○	○	▽	○□
C-2 Boggies distribution	○	○	□	□
C-3 Marshalling plan	○	○	▽	□
(D) Cargo Handling				
D-1 Loading/Unloading to/from trains	○△	□	□	□
D-2 Cargo handling within a yard	○△	□	□	□
D-3 Transport in/out of a yard	○△	□	□	□
D-4 Stuffing/Unstuffing containers	○△	□	□	□
	Full Operation by SRT	Excluding Cargo Handling	Entrusted Operating System	Rail Terminal Operator System

Legend

- SRT operates wholly by itself
- △ SRT controls other bodies
- ▽ SRT conducts operations only at the request of others, based on a contract
- Other bodies operate independently from SRT

operation field is quite different from cargo handling from the viewpoint of the experience of SRT.

- ii) Coordination between the marshalling plans of the terminal operators and the train operation plan of SRT could be a great problem, because each plan is closely related with labor and equipment arrangements, and with bogy distribution.
- iii) Each terminal operator will be required to prepare a certain number of railway workers for many different kind of works but the job volumes would not be much only for ICD terminal operations, and as a result, their working ratio and training cost would not be reasonable.

Alternative (III) commonly possesses the disadvantages of item i) and some of those of item iii), such as concerning planning of bogy distribution. If SRT offers the shuttle services on a fixed schedule base these disadvantages could be overcome, but there will be no differences in actual operation with alternative (II).

74. In alternatives (III) and (IV), some investments such as procuring new bogies etc. could be transferred to private terminal operators more easily, but this idea could still be applied to other alternatives if necessary.

75. The study team, thus, considers it is better that SRT be placed in charge of train operation and marshalling operation throughout, principally on a fixed schedule base, namely alternative (II). The details are presented in Fig. II.1.3.

1.1.4 Outline of Desirable Management and Operation System

76. Essential points to make container transportation work well in Thailand, from the viewpoints of management and operations, are summarized below, but still these measures alone will not be sufficient and many improvements will be required to follow and back-up these measures as mentioned in this report:

- i) An expert port management satisfactorily separate from that of Bangkok port, and basically the establishment of a new core

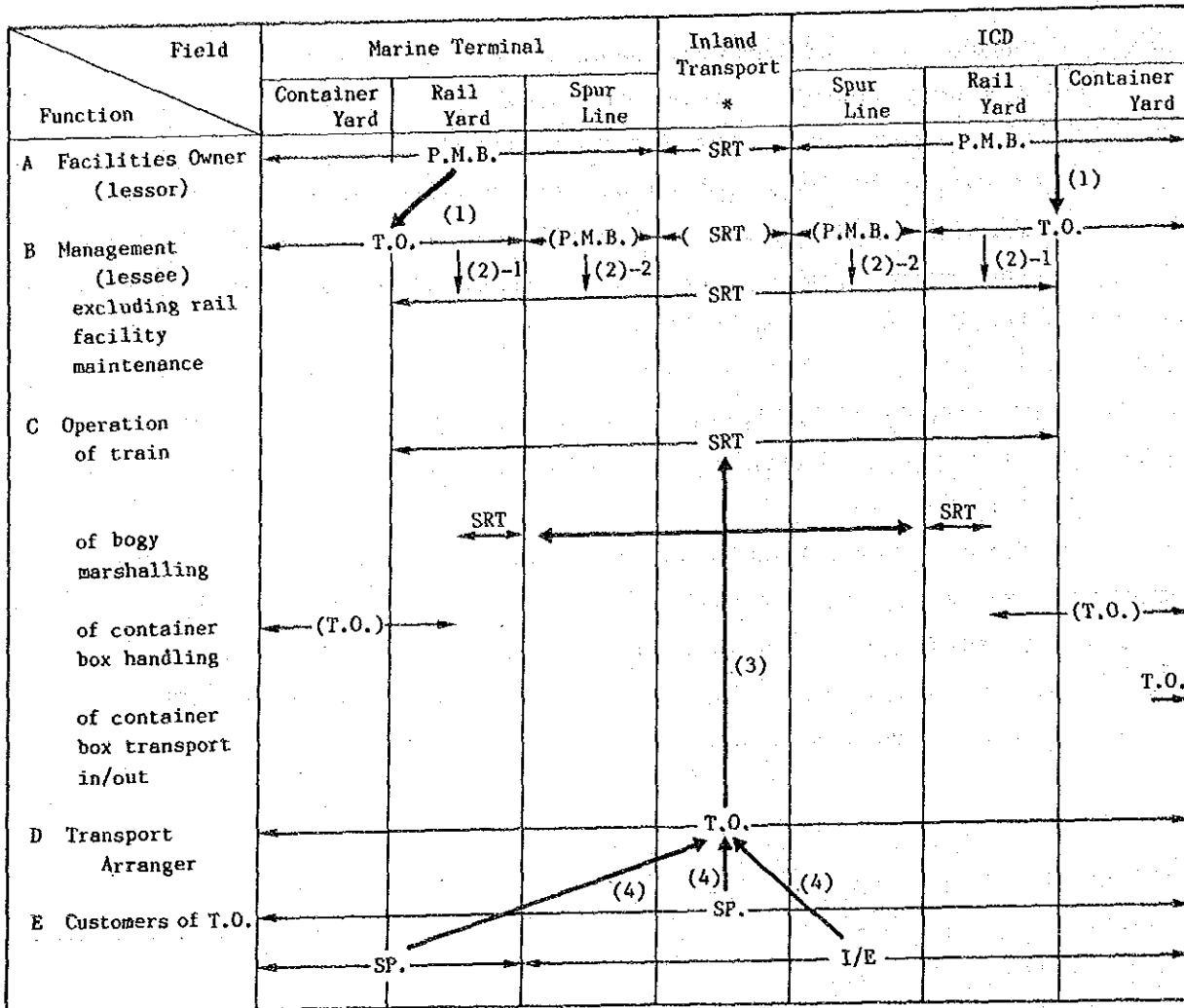
organization of the Government to oversee national port policy.

- ii) A modern container terminal operation introducing the capability and competition of the private sector.

A public ICD regarded as a port facility, namely with investment from the government and operated by the same terminal operators as the marine terminals with lease contracts between the operators and the P.M.B. of Laem Chabang Port.

- iii) A free market for inland transportation, in particular between Laem Chabang Port and the ICD, including competition for both selection of transportation mode and service quality, such as charges, schedule, etc.

- iv) Strong cooperation from other government agencies concerned, in particular the Customs, based on a common understanding to take advantage of container transportation, for example, more simplification of physical inspection and more flexibility to allow bonded transportation.



* including SRT's marshalling yard at LCB.

Relation

- (1) Facilities lease contract
- (2) Maintenance operation contract
- (3) Tariff and service agreement
- (4) Transport and handling contract/commission

Notes

- P.M.B.: Port Management Body
- T.O. : Terminal Operators
- SRT : The State Railways of Thailand
- I/E : Importers and Exporters
- SP. : Shipping Companies

Fig. II.1.3 Railway Transport Operation System

1.2 Administration and Management by the Port Management Body

1.2.1 Basic Concept

77. The basic concept of the management and operation of Laem Chabang Port was previously studied by JICA (Study on the Effective Port Management and Operation System in the Kingdom of Thailand, March 1988). The basic concept summarized here is based on this JICA (EPMOS) study.

(1) Philosophy of Management

78. Ports are indispensable infrastructures supporting the social and economic activities of countries and regions. Securing the cargo transport, they bring great benefits to regional and national economies. Therefore, it is desirable that ports be administered and managed by public institutions. The staff members of the P.M.B. of Laem Chabang Port should recognize the importance of the port activity and carry out the work maintaining the spirit of public service and not pursuing profit only for themselves.

79. On the other hand, the P.M.B. has to maintain its financial soundness. It is one of the most important responsibilities of the P.M.B. to secure sufficient revenues. In order to achieve this goal, it is essential to ensure that the Port is used actively. Thus, it is important for the P.M.B. to equally provide attractive service to all the users and customers of the Port. All the staff members of the P.M.B. must think of ways to provide attractive service to the users and customers of the Port, and do their best to put these ideas into action.

(2) Administration, Management and Operation

80. Though being located far from Laem Chabang, the ICD will actually function as a part of the marine terminal. Then, the marine terminal and the ICD should be administered and managed as one body.

81. The administration and management of the Port should be carried out by the P.M.B. which is a public agency. Terminal operation should be

privatized in principle. The P.M.B. should lease the marine terminal and the ICD to private terminal operators.

82. The duties of the P.M.B. are to oversee the overall activities which are carried out by various other bodies at the Port including terminal operators to ensure safe and efficient operations and to promote the orderly growth of the Port. The duties of the P.M.B. include:

- o Maintenance and utilization of its own facilities
- o Ensuring security within the Port
- o Control of traffic within the Port (Traffic control within the water area would be carried out by the H.D.)
- o Provision or arrangement of services for vessels
- o Port sales activity
- o Restricting disorderly use of the port area
- o Formulating and implementing port development plans
- o Lease of terminals (including the ICD) and collection of terminal rent
- o Collection of port charges which the P.M.B. should collect
- o Observing operations within the leased terminal based on the lease agreement
- o Necessary reports to the Government

83. The duties of the private operators include:

- o To accommodate vessels at the leased terminal and to provide them with services (line handling, etc.)
- o Stevedoring
- o Cargo handling
 - loading, discharging of cargo
 - yard operation (stacking, marshalling, etc.)
 - stuffing, unstuffing of containers
- o Receipt of cargo from shippers, delivery of cargo to consignees
- o Security and traffic control within the leased terminal area
- o Payment of the terminal rent and submission of reports based on the lease agreement
- o Other duties stipulated in the lease agreement (small repair of the

facilities, etc.)

* The P.M.B. should neither be responsible for nor carry out the cargo transport between the ICD and the marine terminal.

(3) Administration and the Organization of the P.M.B.

84. It is important to maximize the efficiency and productivity of the administration and management of the P.M.B. by minimizing the cost. In order to minimize the administration cost, the organization of the P.M.B. should be as simple as possible and the staff members of the P.M.B. should be appointed based on the principle of the able minority.

85. Some works of the P.M.B. should be carried out by the private sector as far as possible through contracts under the supervision of the P.M.B.

These could include:

- o design, construction and maintenance works of the port facilities
- o security guards
- o operation of tug boats and service boats
- o cleaning of the premises (land area and water area), etc.

86. For making decisions, matters should clearly be classified corresponding to their importance as follows (refer to Appendix 3. (1)):

- o matters which can be decided at the level of the units of the P.M.B.
- o matters which can be decided by the Director General of the P.M.B.
- o matters which should be decided by the Board of Port Commissioners or the Government.

The authority of decision making should be transferred to lower levels as much as possible.

87. The chain of command and the division of duties should be made clear. Arrangements between the units should be undertaken by the Secretarial Office of the Director General through ad hoc meetings or committees. Ad hoc meetings and committees should be arranged for the discussion and examination on issues such as the following:

- o annual budget of the P.M.B.
- o contract of the P.M.B.'s works

- o port development plan
- o port tariffs

(4) Essential Requirements for the Staff Members of the P.M.B.

88. Every staff member should possess enough experience, knowledge and judgment in the field which he or she would be in charge of. Moreover, as related in (3) above, the authority of decision making should be transferred to lower levels as much as possible. Accordingly, every staff member should possess understanding and judgment based on a broad outlook on the overall port administration and management and should also maintain a progressive attitude.

(5) Territory for Administration

89. The minimum territory will consist of the land area where the P.M.B. will have its own assets (the port terminal and the I.C.D.) and of the water area which is necessary for the port activity (including waterways and basins for turning, anchoring and quarantine inspection.)

90. In addition to the territory stipulated above, control by the P.M.B. is also necessary over the land areas which are required for the development, utilization and preservation of the port. There are some arguments whether the area for expected future expansion should be included in the territory for administration. It is advisable that these areas should be designated as "waterfront areas", which the P.M.B. can control to some extent by law in the future.

1.2.2 Organization of the P.M.B.

91. Fig. II.1.4 shows the proposed organization chart of the P.M.B.

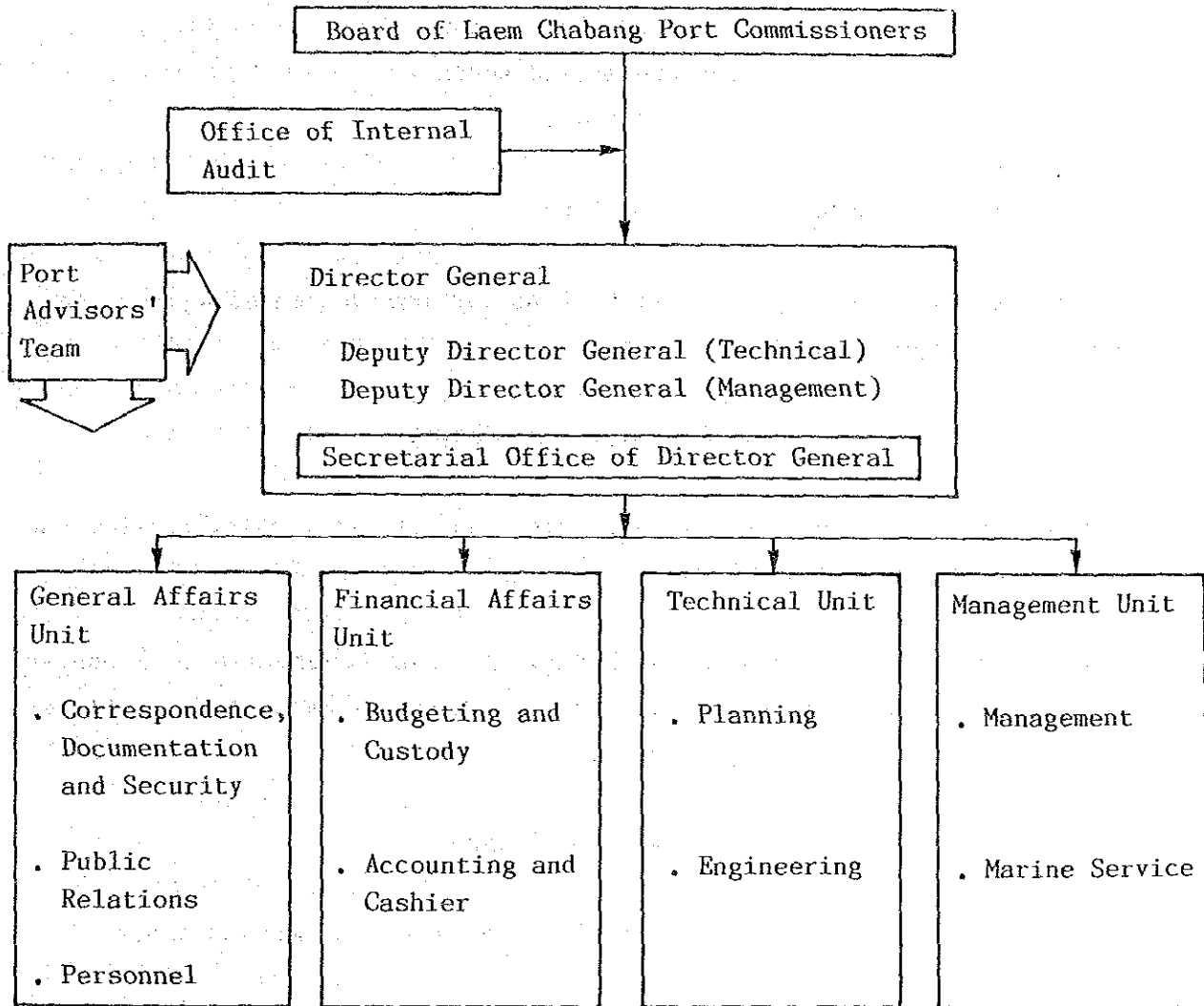


Fig. II.1.4 Organization Chart of the P.M.B.

1.2.3 Responsibilities of the Offices and the Units

(1) Office of Internal Audit

- 1) Investigation of accounting books
 - receiving and paying cash
 - revenues and expenditures
 - assets and liabilities
- 2) Checking the legality of accounting
- 3) Auditing, reporting the result of audits and recommending necessary measures or improvements

(2) Director General and Deputy Director Generals

- 1) The Director General should supervise and take responsibility for the overall activities of the P.M.B.
- 2) The Technical and Management Deputy Director Generals should assist the Director General and supervise the technical and management fields of the P.M.B.'s activities, respectively.

(3) Secretarial Office of the Director General

- 1) Secretariat of the Board of the Laem Chabang Port Commissioners (B.P.C)
 - o Meeting arrangements, administration
 - o Preparing materials
 - o Research
 - o Arrangement between the B.P.C. and the public and private organizations concerned
- 2) Secretariat of the Director General, the Deputy Director Generals
 - o General control and arrangement of the P.M.B.
 - o Arrangement of ad hoc meetings and committees
 - o Receipt and check of the reports and the matters for approval submitted to the Director General and the Deputy Director Generals

3) Secretaries of the Director General and the Deputy Director Generals

(4) Port Advisors' Team

The Port Advisors' Team should consist of port experts from abroad based on technical cooperation between governments and should exist until the staff members of the P.M.B. obtain sufficient know-how of new port management.

The Team should be independent of the chain of command of the P.M.B.

1) Senior Port Advisor

- o Representative of the Team
- o High grade advice and instruction concerning the overall port administration and management
- o Arrangement of the opinions of the Advisors

2) Port Advisors

- o Analysis, research and evaluation of each work of port administration and management
- o Advice, guidance and technical transfer for each work of port administration and management

3) Secretaries

(5) General Affairs Unit

1) Correspondence

- o Correspondence
- o Administration of the office building of the P.M.B.
- o Procuring, maintaining and providing supplies
- o Printing, other orders to outside supplies
- o Taking care of the finances of the Office of the Director General and the Office of the Advisors
- o Telephone operation

2) Documentation

- o Control of official letters

- checking the content
- publishing the official letters
- o Document keeping
 - collecting and keeping central documents
 - protecting documents
 - destroying documents
- o Control on draft of regulations designed by the units of the P.M.B.
- o Employee control
 - typist, telex, facsimile, copy, etc.
- o Contact to the legal advisor

3) Security

- o Security within the premises of the P.M.B.
 - research, planning and implementation of security activities
 - control of entrance into the premises of the P.M.B.
 - (issuing entrance permission, record of entrance)
 - security guards, traffic control
 - (setting the rules, allocation of the security guards, supervision)
 - preparation for emergency situations
 - (communication system, measures, training)
- o Cooperation and arrangements with other organizations
 - police (including fire fighting)
 - the Harbor Department
 - the Customs Department
- o Promotion of safety and security
 - researching, planning, determining, checking and improving safety and security measures and systems
 - providing safety equipment
 - safety training, fire fighting training

* The ICD will be closed at night in principle. But if some operator would operate at night at the request of some shippers or consignees, the operator should be responsible for the security. If the operators of the ICD propose to establish an association for administration, the P.M.B. may approve the proposal. In this case, the P.M.B. may admit the association to carry out the security activity by itself. But overall supervision for the

security activity should be left to the P.M.B.

4) Public Relations

- o Port sales (advertising for port activities)
- o Collecting information and material concerning port activities throughout the world
- o Answering enquiries and grievances
- o Welcoming and taking care of the persons who are interested in and visiting the Port
- o Checking news and articles published involving the Port
- o Checking the news concerning the Port

5) Personnel

- o Manpower control and planning
 - preparing and controlling the service regulations
 - number and allocation of staff members
 - preparing draft appointment plans
 - (employment, change, promotion)
 - control of service hours and salaries
 - personnel records (job history, training)
 - research, planning and arrangement of training
 - research and study on personnel matters
- o Health care and social welfare
 - health and hygiene
 - fundamental health care
 - (checking the health of the staff periodically by entrusting this work to some medical institution)
 - welfare

(6) Financial Unit

1) Budgeting

- o Preparing draft annual budget
 - The procedure for preparing the draft annual budget is shown in Appendix 3.(2)
- o Control of enforcement of annual budget
- o Loan and repayment planning

- o Contract procedure (excluding lease contract of the terminals)
The reasons why the Financial Unit should be in charge of contracts and contract procedures are shown in Appendices 3.(3) and 3.(4) respectively.
- 2) Custody
 - o Administration of assets, records, depreciation
- 3) Accounting
 - o Settlement of accounts
 - o Calculation and analysis of revenue and expenditure
 - o Financial statements, Financial reports
- 4) Cashier
 - o Billing, collecting charges
 - o Receiving and paying cash
 - o Accounting books
 - o Control of cash and deposits in banks
- (7) Technical Unit
 - 1) Planning
 - o Research and study on shipping, cargo transportation and port activities
 - o Research and study on port development (including collection and maintenance of meteorological and marine data)
 - o Preparing port development plans
 - o Making the annual implementation program of port development works and annual budget (arrangement by the ad hoc committee)
 - o Procedures for implementation of port development works (within the P.M.B., to the government), arrangement with other organizations concerned
 - o Inspection of the plans of the works submitted by the private sector from the viewpoint of port planning (via the Management Unit)
 - (should be stipulated in the regulations and terminal lease agreement)
 - (minor modification or repair of the facilities, etc.)

o Port statistics

(a) Collection of Vessel and Cargo Data

(submission of data should be stipulated in the terminal lease agreement)

(b) Data Processing (data arrangement and input, calculation, analysis, evaluation)

(simple works including data arrangement, input and calculation using computers can be carried out by the private sector through contract under the supervision of the P.M.B.)

(c) Publishing of the Port Statistical Reports (periodically)

2) Engineering

o Keeping the port facilities under the P.M.B.'s administration in good condition

The port facilities are enumerated in Appendix 3.(5).

o Carrying out the construction, improvement and maintenance works of the port facilities

The flow of the construction and maintenance of the port facilities is shown in Appendix 3.(6).

o Administration, maintenance and correction of the lists and drawings of the port facilities

o Engineering can be divided into four fields, namely, civil engineering, architecture, mechanical engineering and electrical engineering.

o Inspection of the construction, improvement and repair works carried out by the private sector (via the Management Unit)

(8) Management Unit

1) Management

o Study and preparation of basic plans for terminal management

o Setting and review of the port tariff

o Lease of terminals (Lease agreement)

preparing and review of the lease agreement

- selection of the lessees
- negotiation with the expected lessees
- o Management of terminals and other facilities under the P.M.B.'s administration
- o Observing lessees' operations
- o Making contact with the lessees
- o responding to the requirements of the port users

2) Marine Service

- o Receiving entrance/clearance declarations
 - in order to collect port dues
 - in order to know vessels' situation
- o Cleaning the water area within the Port
 - (cleaning work can be carried out by the private sector through contract under the supervision of the P.M.B.)
- o Providing or arrangement of service for vessels calling at the Port

* The P.M.B. is ultimately responsible for providing every service necessary for the calling vessels always. The services are provided by the P.M.B., by some public agencies other than the P.M.B. and by the private sector. The P.M.B. should provide some services by itself and should allow the private sector to provide some services under the control of the P.M.B. and should also make arrangements with the other public agencies which provide other services necessary for the calling vessels.

Services provided for the vessels are listed as follows:

<u>Service</u>	<u>Provided by</u>
. Port information	P.M.B., Terminal operators
. Entrance/clearance permission	P.M.B. (procedures can be simplified making each terminal operator submit the registered vessels list previously)
. Berth assignment	Each terminal operator
. Navigation aids	P.M.B. should provide and maintain

. Pilotage (compulsory)

the facilities arranging with the Harbor Master, who is responsible for navigation safety.

Harbor Master

. Tug service

Tug boats would attend vessels as required by the Pilots

(3 cases of operation)

1. Operation by the P.M.B.

2. P.M.B. entrusts the operation to others

3. operation by the private sector

Case 1, 2 : P.M.B. owns tug boats

Case 2, 3 : P.M.B. does not need to employ the crew

. Line handling

Each terminal operator

. Stevedoring

Each terminal operator

. Water supply,

Each terminal operator

Fuel supply,

(basic facilities are provided by

Telephone service

the P.M.B., charges are collected from vessels and paid to the

suppliers by the terminal operator)

* The Harbor Department is responsible for the safety of navigation and is in charge of the navigation control at present. The Harbor Master under the Harbor Department carries out the navigation control within the port area.

However, it is preferable for the P.M.B. to control the navigation within some area adjacent to the Port by itself considering the merit of the administration of the Port by a single management body.

In order to carry out the navigation control, the P.M.B. should solve institutional problems with the Harbor Department (including amendment of regulations and laws), determine the water area for control, allocate necessary personnel and provide necessary equipment and vessels.

1.2.4 Required Number and Qualifications of the Staff Members

(1) General

92. The personnel organization should be determined considering the vitality and flexibility of the organization which the P.M.B. should maintain continuously.

93. Personnel movement should be encouraged within each technical and management field so that every staff member can obtain a wide range of knowledge and experience.

94. The officer class staff members can be classified roughly as follows:

- Rank A: Director of each Unit or Office
 - o should have work experience of more than 20 years
 - o should possess sufficient general knowledge and experience and judgment in the field of which he or she is in charge
 - o should be able to administer the staff under his or her supervision well
- Rank B: Chief of each Subunit
 - o should have work experience of more than 15 years
 - o should possess enough knowledge, experience and judgment in the field of which he or she is in charge
- Rank C:
 - o should have work experience of around 10 years
 - o should possess enough knowledge and experience to carry out the work of which he or she is in charge
- Rank D: Secretaries of the Director General and the Deputy Director Generals

95. Other than the officer class staff members, it is necessary to employ some workers. It is desirable to pool the workers for every Unit and Office in order to use them efficiently and not to keep too many workers.

96. The total number of the staff members is estimated as follows:

officer class	70
{ D.G., D.D.G.....	3 }
Rank A	6
Rank B	29
Rank C	29
Rank D	3
worker level	63
<hr/>	
Total	133

The staff members of each Unit and Office and their qualifications are examined in detail in Appendix 3.(7).

(2) Port Advisors and Training of the Staff Members

1) Port Advisors

(a) Senior Port Advisor 1 person
 o desirable to possess sufficient knowledge and more than 25 years experience on overall port administration and management

(b) Port Advisors about 3 persons
 o desirable to possess sufficient knowledge and more than 15 years experience in port administration and management

- i) port sales, financial management and planning
- ii) overall technical matters
- iii) terminal management and operation, port tariff

* The Port Advisors' team should give advice as a team based on the common philosophy of port administration and management. Therefore, it is desirable that the members of the Team be from a single country.

2) Training of the Staff Members

o It is recommended to send each Director of Unit and the Chiefs of the principal Subunits, namely, Public Relations (especially port sales), Planning, Engineering and Management to advanced major foreign ports in order to let them learn modern and efficient port

administration and management systems for one month or so prior to the opening of Laem Chabang Port.

- o The staff members other than those mentioned above will be trained through on the job training, getting advice from the Port Advisors' Team.

1.2.5 Port Tariff System

(1) General

97. The P.M.B., as a corporate body, should make the greatest effort to keep the balance of revenue and expenditure and to maintain its financial soundness, cutting wasteful expenditures and obtaining revenue which covers necessary expenditure through its activity. On the other hand, port charges should be at a reasonable level for the port users. High level port charges increase the export cost and decrease the competitiveness of Thai products in the international market and finally decrease the vitality of the Thai economy. They also increase the import cost and the price of imported goods and finally burden the people. Port charges should be determined carefully considering these facts.

98. As mentioned in the beginning of this chapter, ports are indispensable infrastructures supporting the social and economic activities of countries and regions. Therefore, many ports in the world are administered by public agencies.

99. Generally, initial investments for port facilities are quite large and sometimes it is difficult to return all the investments including the land (non depreciating assets) acquisition cost only by the revenue from port charges of a reasonable level. This can be said especially for newly constructed ports. Then, in many countries national governments often grant port management bodies financial aid for some part of the investments considering the public interest (subsidies, no-interest loans, etc.).

100. It is a matter of policy whether the P.M.B. should make a profit or not. It is a political decision based on national port and transport policy, national financial and taxation policy and national public

investment policy, whether to set port charges at a low level, covering the P.M.B.'s deficit from the national treasury in order to encourage national cargo transportation, or to cover all the investment and expenditures only from the revenue from port charges in order to keep the P.M.B.'s finances self-supporting.

101. However, it is also necessary to take into consideration the nature of the P.M.B. as an enterprise. Profitability provides an incentive for efficient port management. Thus, the port charges should be set at the best level from the standpoint of the port management body as both a national agency and an enterprise.

102. The port tariff should be structured to ensure fairness to all the port users and should be as simple as possible in order to ensure the ease and certainty of levy. The P.M.B. should examine the appropriateness of the port tariff and should revise the tariff whenever necessary.

(2) Port Charges Collected by the P.M.B.

103. Port charges can be divided into two categories, i.e., those collected by the P.M.B. and those collected by other bodies. The port charges collected by the P.M.B. are as follows:

1) Terminal Rents

104. Terminal rents are the charges for the facilities leased to the terminal operators and collected from each terminal operator. The amount of rent and conditions of payment are determined in the lease agreement (refer to Chapter 2 of Part III). The P.M.B. should calculate the minimum rent prior to the tender for lease of the terminal. The terminal rent should cover the cost of all the facilities which are to be leased.

105. There are various systems for setting the rent (refer to the EPMOS Study). Of these systems, the fixed flat rate system is the most desirable because the lessor can obtain stable revenue and the incentive for the lessee is the biggest because the lessee can obtain revenue almost in proportion to throughput.

106. In the case of Laem Chabang Port, a substantial cargo throughput volume can be expected soon after the opening of the Port, and thus the P.M.B. can set a considerably high terminal rent from the beginning. Moreover, it is desirable for the Port to give the lessee incentives to increase the throughput.

107. Terminal rent can be set separately for the marine terminal and the ICD, but it is desirable to combine these charges.

2) Charges for the Common Use Facilities

108. Charges for the common use facilities are the charges for the facilities which are not exclusively leased, and should be collected from every user corresponding to the usage. These can be divided into two categories, i.e., the charges for the land area and the charges for the water area.

(a) Charge for the Facilities in the Water Area

109. This charge should cover the costs of the waterways, the basins and the navigation aids (and sometimes the breakwaters). This charge should be collected from the calling vessels (excluding official vessels), and the P.M.B. should publish the rates. There are two methods of collection, i.e., direct collection from shipping companies or shipping agents, and collection from the terminal operators who collect the charge from the shipping companies or shipping agents on behalf of the P.M.B. as husbanding agents. The latter is more convenient for both the P.M.B. and the shipping companies.

(b) Charge for the Facilities in the Land Area

110. This charge should cover the costs for the common use facilities including the roads and the railways. Generally, this charge is placed on the cargo itself. But, considering the personnel and the costs for collection, it is actually quite difficult or impossible to collect the charge directly from every shipper and consignee because most of the shippers and consignees will stay in Bangkok and the number of them is

countless. Therefore, it is convenient to add this charge onto each terminal rent. (The added charge would ultimately be paid by the shippers and consignees via the terminal users (shipping companies) and the terminal operators.)

3) Calculation of the Port charges

111. Calculation of the port charges should be based on the costs.

The components of the costs are as follows.

- o Initial investment for construction or purchase of facilities (repayment of loans or depreciation)
- o Interest on loans
- o Maintenance costs
- o Administration costs

Other than the costs mentioned above, the profit of the P.M.B. and payment to the Government should be added to the calculation if necessary.

(3) Charges Collected by Entities other than the P.M.B.

112. The following charges are collected by entities other than the P.M.B.

- o Terminal operation charge, which the terminal operators collect from the users or the customers
- o Charges for tug and pilot services
- o Charges for bunkering, water supply and telephone services
- o Land transport charge between the marine terminal and the ICD

1) Terminal Operation Charge

113. The terminal operation charge would be collected from the terminal users (shipping companies) or the customers (shippers/consignees) by the terminal operators. The terminal operation charge covers the following elements.

(a) Terminal Expenses

- o Terminal rent collected by the P.M.B.
- o Operation and administration cost for the terminal operator

(b) Tax to the Government

(c) Profit (or sometimes loss)

114. In the case of the container terminal, this charge is usually simplified as the throughput rate which means a single rate per 20' or 40' container including all the charges from discharging to delivery at the terminal gate for import and all the charges from receipt at the terminal gate to loading for export. But the CFS handling charge is not usually included in the throughput rate; rather it is collected separately.

2) Charges for Tug, Pilot, Bunkering, Water Supply
and Telephone Service

115. These charges would be collected by each supplier.

3) Charge for Cargo Transport between the Marine Terminal and the ICD

116. This charge is finally paid to the transporters (truckers, SRT, etc.). But depending on the responsibility for transport, this charge is collected as follows:

Case 1 Shippers/Consignees ———→ Terminal operators
(Terminal operators are responsible for the transport)

Case 2 Shippers/Consignees ———→ Shipping companies
(Shipping companies issue B/L up to or from the ICD and are responsible for the transport)

CHAPTER 2 LEASE CONTRACT OF CONTAINER TERMINAL AND ICD

2.1 The Essential Parts of the Terms and Conditions of a Lease Contract of a Container Terminal

(1) The Parties of the Lease Contract

1. Each party's name (lessor and lessee) should be clearly described. The lessor will be a governmental agency of Thailand, and the lessee a private sector body.
2. If the lessee is a consortium of several companies, the representative lessee should be specified on behalf of the consortium members. All the member's names should be confirmed by presenting to the lessor a copy of the witness clause of their consortium agreement which is duly signed by each representative.

(2) The Objectives of the Lease

3. The contract should completely stipulate the location, address and the premises to be leased. The acreage and dimensions of all facilities including wharfs, paved yards, office buildings, container freight stations and gate lanes should be shown. The capacity and particulars of gantry cranes as terminal equipment should also be described or included in appendices.
4. Ancillary facilities which include electric and water supply, fences, booths, reefer plugs, weight scales, container washing and cleaning area, sanitary sewer system, yard lighting, etc. are to be explained using drawings.
5. The lessor on its own responsibility has to guarantee and maintain a water depth of 14 meters at all times along the wharfs leased by the lessee.

(3) The Purpose of Use

6. The contract has to stipulate the purpose of use of the container terminal as follows:

- 1) to moor container vessels at wharf and conduct discharging/loading operations of containers from/to vessels.
- 2) to receive loading containers and deliver discharging containers.
- 3) to stuff/unstuff cargoes into/from containers.
- 4) to arrange maintenance and repair of containers and yard equipment.
- 5) to stow empty containers.
- 6) to obtain the lessor's approval in advance or to prohibit the use of the container terminal for purposes other than those stipulated above such as accommodating conventional vessels or passenger boats.

7. The lessor may grant to the lessee the use of the terminal in the following manner:

- a) an exclusive manner; or
- b) a preferential manner; or
- c) on a first come, first served basis.

In the event of a first come, first served basis, the public container handling tariffs should be published.

8. The lessee shall not do anything whatsoever which may be or tend to cause annoyance, nuisance or damage to the other tenants or occupiers of any portions of the premises.

(4) Period of the Lease

9. The effective date of the commencement and termination of the lease should be clearly stipulated showing the total duration of years, months and days with an option for further extensions.

10. Section 540 of the Civil and Commercial Code (CCC) of Thailand

stipulates that the duration of a hire of immovable property cannot exceed thirty years and this period may be renewed but must not exceed 30 years from the time of renewal. However, according to the study team's survey, the most popular period of a container terminal lease contract in Japan is ten years with further renewal periods of ten years at the lessee's option and in the U.S.A. the most popular period is five years with a further renewal of five years at the lessee's option.

11. Considering the stability of the lease contract, the life of gantry cranes and the amount of capital invested in facilities and equipment by the lessee, a period of ten years with further renewal periods of five years at the lessee's option would be appropriate.

Section 538 of CCC states that if the lease period is more than 3 years, the lease is enforceable only for 3 years unless it is registered with the competent official.

12. Written notice of extension is to be presented at least six months prior to the expiration of the initial lease period. The renewal terms shall be the same terms and conditions as were in effect at the end of the preceding term. However, the rent per annum might be amended subject to the economic situation.

(5) Rent

13. The rent for the lease shall be stipulated as the total amount of Baht per annum.

The amount of rent can be fixed at the same amount throughout the entire period.

14. The method for calculating the rent is examined in Chapter 1 of Part II.

15. In case the lessee would like to use a part of the premises while the premises are not completely constructed without obstructing the construction works, the reduction of rent during the period of use should be negotiated between the lessor and the lessee. In case of an alteration in the construction schedule, the amount of rent is also to be negotiated

between both parties.

(6) Change of Rent

16. In any of the following cases, the rent shall be changed by notice of the lessor, even during the term of the lease.

- 1) Where it is recognized to be necessary to change the rent due to changes in the economic situation or for any other reason.
- 2) Where any improvement or modification is made to the facilities or equipment.
- 3) Where it is recognized to be necessary to change the rent to maintain an equitable balance with any other similar lease by the lessor.

17. The notice to change the rent should be presented in writing to the lessee at least thirty days in advance.

18. Generally speaking, in order to maintain the stability of the lease contract by both the lessor and the lessee, changes of rent should be minimized, and should be conducted after at least half of the lease period has expired.

(7) The Method of Payment of Rent

19. The lessee pays the monthly rent by the end of every month according to the method specified by the lessor. Where the effective date of the lease is not the first day of a month or the final date is not the last day of a month, the amount to be paid in the month shall be calculated on a per diem basis for the number of days of the said month regarding a month as thirty days.

20. In case there is some involuntary interference with terminal operations for more than, say, fifteen days, the monthly rent should be reduced according to the involuntary situation, as the case may be, such as a strike, other labour disturbance or force majeure. Work stoppages by the employees of the lessee will not be considered.

(8) The Payment of Utility Fees

21. The lessee shall be liable for and have to pay all charges for utility services supplied to the facilities and equipment. The services include electricity, gas, water, sewerage, garbage disposal, etc. Payment may be made directly to the supplier, i.e. in the case of public utilities the Electricity Authority, Metropolitan Waterworks or the Telephone Organization of Thailand or to the lessor according to the bills issued by the lessor.

22. The method of payment of the above shall be designated in billings from the lessor or the suppliers.

(9) Bond or Deposit Money

23. The lessee shall deposit some amount of money in the form of cash or a bank guarantee with the lessor as security for the payment of rent and other damages in order to guarantee the full performance by the lessee of all terms and conditions of the lease.

24. The amount of deposit is generally three-twelfths of the annual amount of rent. In general, no interest shall be paid on deposit money.

25. When the amount of deposit money is changed according to a change of the rent, the balance of deposit money should be adjusted to the revised amount immediately by returning or collecting funds to/from the lessee.

(10) The Maintenance and Repair of the Premises

26. The lessee has to examine the premises before receiving them, and accepts them in their present condition. At the termination or before the termination of the lease, the lessee shall return the premises to the lessor in good and tenantable condition, ordinary wear and tear excepted. Reasonal wear and tear is to be borne by the lessor.

27. For the above purposes, daily maintenance and minor repairs on the premises costing not more than Baht per month should be the responsibility

of the lessee during the lease period.

28. All alteration or modification of the premises must be executed with the lessor's approval and will remain at the end of the lease, and the altered or modified facilities shall become the property of the lessor at the expiration of the lease.

29. Where any damage to the premises has occurred by force majeure, the repair should be basically borne by the lessor. However, where the damage caused by force majeure is considered to be due to the negligence of ordinary maintenance and repair by the lessee, the lessee shall have to make repairs on its own account.

30. Periods when the terminal cannot be used due to force majeure should be considered as an involuntary situation in which the amount of rent is to be reduced except as stipulated in the preceding clause 4.

(11) Alteration and Modification of the Premises

31. The lessee shall make no alteration or modification to or upon the facilities and install no fixture without first obtaining written approval from the lessor. In the case any alteration or modification shall be made or fixture installed by the lessee, they shall become part of the realty and become the property of the lessor.

32. In the event the lessor itself is intending to make any alteration or modification on the premises, the lessor has to obtain the lessee's consent in advance in order not to disturb the daily operations of the lessee. If the premises can not be used during the lessor's alteration or modification, the amount of rent during the unavailable period should be reduced.

(12) Prohibition of Transfer

33. The lessee must not transfer the right of lease under the lease contract to a third party. Subletting the right should also be prohibited. No charge or encumbrance by the lessee should be made on the premises.

34. In case of the dissolution of a consortium lessee, the remaining consortium members have a right to continue the lease on the same terms and conditions of the original lease contract. Addenda may be executed.

(13) Insurance

35. The lessor will arrange for fire insurance on the facilities and equipment through a reputable insurance company. The insured amount is to be based on the actual value. The lessee has to pay a premium as a terminal lease contractor.

36. In case the said insured properties or any part of them are destroyed or damaged by fire whether resulting from explosion or otherwise, the actual repair or replacement expenses under the limitation of the insured amount should be compensated by the insurance company.

37. The lessee may arrange for fire insurance on its own property within the premises.

(14) Public Liability Insurance

38. The lessor has to arrange for public liability insurance which covers injury or death to any person caused by the facilities and the equipment. The premium of this insurance is to be paid by the lessee.

(15) Default

39. The lessor may cancel the lease if the lessee falls under any of the following conditions:

- 1) When the lessee has violated any of the terms or conditions of the lease.
- 2) When the lessee is delinquent in payment of the rent for more than, say, three months or has often been delinquent in payment of the rent.
- 3) When the lessee ceases works specified in (3), the purpose of use.
- 4) When the lessee falls into dissolution or goes into bankruptcy.

40. If the contract is terminated by the lessor because of the lessee's default, the lessor shall have a lien or the right to forfeit the entire deposit as compensation for damages, outstanding rent and repair fees.

41. The lessor is held harmless with respect to all damages incurred by the lessee.

(16) Indemnity

42. When the lease is cancelled according to the preceding clause, the lessee has to pay to the lessor an indemnity in an amount equal to the unused period of the amount of rent because the premises are idle for the time being until a new lease contract is made.

43. The actual amount of the indemnity might be negotiable between the lessor and the lessee except where the release of the lease is due to bankruptcy.

(17) Monthly Report

44. The lessee has to submit to the lessor the monthly data on the number of vessels, containers and cargo tonnage which the lessee handled at the terminal.

(18) Cancellation of the Lease

45. The lessee can cancel the lease by notification in writing six to twelve months prior to the termination date, but only when more than half of the lease period has elapsed.

46. The lessee has to pay an amount equal to six to twelve months rental to the lessor as an early termination fee.

47. In case the facilities and/or equipment can not be used and/or the lessee cannot provide all services to its customers due to force majeure or any other disaster for more than six to twelve months, the lessee may cancel the lease immediately by written notice to the lessor. In this case,

the lessee does not have to pay the above early termination fee to the lessor.

(19) Termination of the Lease

48. The lease contract is terminated at the end of the agreed term without notice by either party, unless the lessee has executed the option to renew the lease.

49. Upon termination of the lease, the lessee must restore the facilities and equipment to a good and tenantable state and return them within one to three months after the date of termination. During the restoring period, the lessor is entitled to receive compensation at Baht per day until the restoration is completed. This amount should be high enough to encourage the lessee to finish the restoration quickly.

50. Where the lessee fails to restore equipment and facilities to a good and tenantable state and where the lessor deems it necessary to restore said equipment and facilities, the lessor may execute the work in place of the lessee at the expense of the lessee. In this case, some amount of the deposit money may be used for this purpose.

(20) Arbitration

51. Disputes arising out of this contract shall be settled amicably by arbitration using Thai Commercial Arbitration Rules. Both the lessor and the lessee have to obey the decision of the arbitration award.

(21) Court of Jurisdiction

52. Despite the preceding arbitration, where no final agreement can be reached among the parties, the dispute may be filed in court by either party. The laws and jurisdiction of Thailand shall be applicable.

(22) Preparation of the Lease Contract

53. In witness of the lease contract, three original lease contracts are to

be made and signed by the authorized representatives of the lessor and the lessee and each party is to keep one copy. The other copy shall be registered with the competent official.

54. Section 538 of CCC provides that, if the lease is more than 3 years, it must be registered or otherwise it will be enforceable for only 3 years.

55. The fee for registration of a lease agreement is 1% of the total rent. Also a duty stamp of 0.10% of the total rent is to be affixed to the agreement.

2.2 The Essential Parts of a Lease of the ICD

56. The ICD is to be a part of the marine terminal and the ICD and the marine terminal will be leased and operated as one body. But, under the Land Code, registration of a lease or any other juristic act concerning immovable property must be executed by an official of the Provincial Land Office of the Province where the land is located. Under the regulations and practices of the Land Department, the official would refuse to register any unified lease contract covering land at more than one location. Moreover, if there were disputes arising from a unified contract, jurisdiction would become an issue. With separate leases, the court which has jurisdiction over the area where the premises are located shall in principal have authority over the case. Therefore, the lease contracts for the marine container terminal and the ICD should be separated.

57. In order to prepare separate lease contracts for the ICD and the marine container terminal, some clauses, phrases and words in the lease for the container terminal should be amended for the lease of the ICD because the ICD has no premises for vessel operation and has some different facilities. However, the effective date and term of each lease agreement should be the same, and if either agreement becomes invalid, the other agreement should also automatically be rendered invalid. And the P.M.B. should execute a tender for the lease of both facilities together, and select the winning bidders assuming the blanket lease of both the ICD and the marine container terminal.

58. Other items and conditions of the container terminal lease should be amended as follows:

- (1) The word "wharfs" in the first clause of "The Objectives of the Lease" (2.1(2)) is to be deleted.
- (2) The third clause of "The Objectives of the Lease" (2.1 (2)) is to be deleted.
- (3) The words "container terminal" in the first sentence of the first clause of "The Purpose of Use" (2.1(3)) are to be changed to "ICD".
- (4) 1) of the first clause of "The Purpose of Use" is to be deleted.
- (5) The words "Container Terminal" in 6) of the first clause of "The Purpose of Use" to be changed to "ICD".
- (6) "Accommodating conventional vessels or passenger boats" in 6) of the first clause of "The Purpose of Use" is to be changed to "warehousing".
- (7) The second clause of "The Purpose of Use" is to be deleted.
- (8) The word "vessels," is to be deleted and the word "terminal" is to be changed to "ICD" in "Monthly Report" (2.1.(17)).

2.3 Invitation to Candidate Operators for the Container Terminal and the ICD

2.3.1 Publication

59. Where a governmental agency invites candidates for container terminal and the ICD operators for public subscription, the objectives, the lease period and the public services provided by governmental agencies should be published in detail showing drawings of acreage and dimensions.

60. The contents of the invitation should include the following:

1) Objectives

(a) Container Terminal

- i) the facilities: wharfs, paved yards, office buildings, container freight stations and gate lanes
- ii) the equipment: gantry cranes
- iii) the rail on site: railroad track

(b) ICD

- i) the facilities: paved yards, office buildings, container freight stations and gate lanes
- ii) the rail on site: railroad track

2) Lease Period

(a) Container terminal: () years with the lessee's option for further extensions of () years.

(b) ICD : same as above

3) Public Services

(a) Marine service: pilotage, tugs, dredging

(b) Utilities service: water supply, drainage, sewerage, waste collection, electric supply, fire fighting, telecommunications, provision of fuel, etc.

2.3.2 The Pre-qualifications of Candidates

61. The following items are considered as prerequisites:

- 1) a private corporation with more than 51% Thai ownership.
- 2) a corporation which can arrange official procedures for entry/exit of container vessels and can handle container loading and discharging to and from vessels.
- 3) a corporation which can collectively operate a container terminal and an inland container depot.
- 4) a corporation which can provide the necessary cargo handling equipment, office machines and business supplies.
- 5) a corporation which can collect sufficient cargo and is capable of securing regular container vessel calls.

In case a corporation is going to use railway, the corporation has to provide container loading/unloading equipment to and from wagons because the railroad enterprise, SRT only operates trains and maintains tracks in good order, and does not handle containers.

2.3.3 The Documentation and Deposit for Bidding

62. Candidate operators are requested to present documents in free form describing the following:

- 1) The name of the corporation. In case the candidate is a joint-venture, all members names are to be listed with the shares of each member clearly stated. The expected board members and their brief business history.
- 2) The amount of paid-up capital.
- 3) Financial statements over the past three years. In case of a joint-venture, every member is requested to submit its financial statements.
- 4) Container handling volume (TEU) in Thailand by export and import over the past three years. In case of a joint-venture, the accumulated number of TEUs clearly showing the volume handled by each member.
- 5) Expected container handling volume (TEU) by shipping lines for the first five years after the commencement of the lease.
- 6) The estimated numbers of clerks and workers in the container terminal and inland container depot, and also any proposed training schemes.
- 7) The offered amount of rent per annum.
- 8) The bidders have to submit a deposit in cash or a bank guarantee equal to 10% of the offered amount of rent. The deposit will be returned with no interest when the candidate is selected or ninety (90) days after the bidding, whichever is earlier.

2.3.4 Criteria for Selection of the Successful Bidder

63. Where there are numerous candidates, a government agency as the lessor might make a short list based on the above documents and interviews with the candidates.

64. As Criteria:

- 1) Whether the candidate is a famous, powerful container terminal

operator, or whether the candidate will be able to conduct excellent container terminal operations considering the history and expertise of the expected board members.

- 2) The total handling container volume is very important. However, the growth of the volume and the balance between export and import are also important.
- 3) Regarding the expecting handling volume (TEU) by shipping line over five years, the likelihood of actually achieving these targets based on past results.
- 4) Whether the training scheme is reasonable or not considering the number and the experience of the experts. Especially, the training scheme for Thai clerks and workers should be carefully considered.
- 5) Whether the program to arrange or purchase equipment and supplies is reasonable or not.

2.4 Procedure and Schedule to Select the Operator

65. Regarding the selection process, the government agency will normally give top priority to the total rent. Although other factors may be considered, the total rent bid will be the main criteria for selecting the successful bidder. The form of the agreement will be under the responsibility of the Public Prosecution Department.

66. The construction works of container terminals at Laem Chabang Port have already started. After having fixed the location of the ICDs, rough drawings of the ICDs and construction schedules, a governmental agency will publish the bidding date and time, clearly presenting the qualifications of candidates listed in the preceding section.

67. The following points are to be considered:

- 1) The cut-off date for bids should be within one month after the public notice.
- 2) The successful bidder should be decided within one month after the cut-off date.
- 3) After that, the governmental agency as the lessor has to present a

draft of the container terminal lease contract to the successful bidder.

- 4) Within three months, the contract should be signed by both parties.
- 5) During the above three months, the negotiations between the two parties should include a delay clause or a cancellation clause checking the actual progress of the construction works.
- 6) The lease contract of an ICD would be prepared in the same manner as for the container terminal.
- 7) If the lessee desires to modify the construction specifications after the conclusion of the contract, the negotiable period should be limited to within three months after the signature of the contract. In this case, the burden of additional expenses, if any, should be negotiated by both parties.

68. In case the total cost of construction works can not be finally calculated before the bidding, the lessor may show only the minimum bidding price to the candidates. In this case, the successful bidder might sign the contract temporarily subject to further negotiations on rent.

CHAPTER 3 COMPUTER INFORMATION SYSTEM

3.1 Preconditions for Development of Information System

1. The level of computerization in Thailand is not so high and is still at an early stage compared with more developed countries.

At present, in the public sector, many agencies are commencing their computerization plans. On the other hand, in the private sector, computers are used mainly in such fields as finance, air transport and manufacturing. In particular, the financial sector, which already has a nationwide banking system, is so advanced compared with the other sectors that they are eager to develop more advanced computer systems.

2. Computerization in the port related business, in general, is not so advanced as a whole while some shipping companies/shipping agents have highly advanced computer systems to support their management and operations.

3. Computerization in Thailand would expand rapidly under an adequate government policy which would overcome budget constraints and the undersupply of computer engineers, computer programmers and so forth which have generally hindered advances in this field. There would be a trade-off between computerization and the reduction of employees from the improvement and rationalization of various works. Many employees are opposed to such a reduction. Therefore, careful attention should be paid to balancing the computerization and the reduction of employees.

3.1.1 Present Computerization of Port Related Bodies

(1) The Port Authority of Thailand (PAT)

4. In recent days the congestion of container and other cargoes at Bangkok Port has become a serious problem.

5. At present PAT, however, has no computer system to support the management and operations in the port, but only some personal computers for internal works. In order to alleviate the congestion and to improve the

port service level, PAT has been planning the introduction of a computer system. PAT's computerization policy focuses on the following objectives:

- (i) To use the computer for recording and reporting data on the movement of all containers by means of an on-line, and interactive system.
- (ii) To use the computer system for controlling the utilization of the space (yards) and large-sized container equipment, ensuring that the maximum benefits will be achieved.
- (iii) To facilitate the printing of the bills and particulars of the containers as soon as the services are completed or as required.
- (iv) To provide data for management for making various reports.
- (v) To produce the Port Management Information System (PORTMIS).

6. According to the policy, PAT will provide several computer sub-systems which are planned to be developed in three phases. At the first phase, billing, container tracking, and accounting systems will be installed and developed. The container tracking system is supposed to control all the container movements in the container terminal and at shed sides which will be divided into large and small spaces to make it easier to identify the location of containers and cargo.

7. At the second phase, the container tracking, the transit shed management, and the cargo handling management systems will be installed and a backup machine will be introduced.

8. Finally, the third phase will introduce data communication equipment.

9. PAT also started the PORTMIS Committee in December 1986 to produce a Port Management Information System for organization, statistics, documentation, tariff structure, finance and so forth.

10. Further information about PAT's computerization policy and PORTMIS is

presented in Appendix 4.(1).

(2) Customs

11. Customs presently has a computer system with a database for trade statistics and accounting. The system is on-line not only with its own two divisions but also with the Ministry of Finance, which includes both real-time and batch processing. Customs also uses the work-stations of Thai International Airlines at Don Muang International Airport in order to check transit data.

12. Although they do not have a comprehensive computer network linked to other parties, Customs is presently planning to widen its system and to connect it with other related bodies, especially with airports and seaports. The plan is still under study and at the conceptual stage. According to the plan, Don Muang International Airport will first be linked with the customs computer system, and seaports will go on-line afterward.

(3) The State Railway of Thailand (SRT)

13. SRT is employing a computer for its internal works such as payroll, accounting and statistics, and the system is being improved in-house.

14. SRT plans to introduce and develop new computer systems including seat ticketing reservation, wagon control (operating control), and inventory control systems. The wagon control system will be closely related to container operation and will improve transportation efficiency.

(4) The Express Transportation Organization (ETO)

15. ETO utilizes a computer for such internal works as accounting and payroll, and plans to start studying statistics and revenue by computer.

16. As far as truck control operation or monitoring is concerned, ETO presently uses no computer but maintains radio communication between the headquarters and the sub-main stations. A new truck control system is currently under study by Chulalongkorn University. If the system is

established, the radio communications for the truck operation will be replaced by an on-line computer system and the wagon operation will be controlled more efficiently and effectively in the future.

(5) Shipping Companies/Agents

17. The level of computer utilization of shipping companies/agents in Bangkok ranges widely.

18. Some of the shipping companies/agents have advanced computer systems which cover almost all the container operations in the port area including the necessary documentation, and also have world-wide information networks using computers and satellite telecommunications. Furthermore, some are planning to connect their customers to their own computer systems. A certain shipping company plans to install a computer information network between its Bangkok office and a newly constructed off-dock CFS somewhere nearby to promote efficient container and cargo handling operation.

19. Most of the companies'/agents' plans to develop new or more advanced computer systems emphasize their operations at Bangkok Port. The aforementioned shipping companies'/agents' computer systems and advanced knowledge, however, are also expected to be utilized for the new container operation at Laem Chabang Port and at the ICD.

3.1.2 Telecommunications

20. When an information system is established to link the ICD, Laem Chabang Port and other parties on-line, the quality and quantity of the telecommunications medium are considered to be critical.

21. Each telephone exchange in Thailand is linked by FM radio, digital radio, or optical fiber cable. An optical fiber cable, although it requires careful maintenance, can convey information with much stability regardless of the weather conditions, etc.

22. The Telephone Organization of Thailand (TOT) is presently implementing the Fifth Telephone and Telegram Expansion Plan with a target year of 1992.

An optical fiber cable already connects the Chonburi and Sattahip telephone exchanges. The Laem Chabang telephone exchange, which is to be newly opened for the eastern seaboard in 1990, is to be connected to the Si Racha telephone exchange via Ao Udom by the optical fiber cable. The Laem Chabang telephone exchange will provide 190, 200 and 220 telephone circuits to Laem Chabang Port in 1990, 1995 and 2001, respectively.

23. Communications among telephone exchanges present no technical problems. However, the quality of users' lines from the telephone exchanges may be problematic. But this issue may be resolved by using leased line.

3.2 Scope of Computer Information System

3.2.1 Cargo Movement and Necessary Documents

24. Port management and operations involve many bodies. Along with cargo and container movements, numerous documents and information are needed.

25. Figs. II.3.1 and II.3.2 show the necessary document flow accompanying the cargo and container movement among the port management body, the ICD (including empty container depot), the marine terminal, shipping companies/agents, shippers/consignees/forwarding agents, Customs, and ships, for both import and export. Each circled number in the figures corresponds to the same number of explanation for each import and export.

(1) Import

26. The documents and information flow accompanying import container cargo movement are explained below.

- ① The shipping company sends import container documents such as the manifest (M/F), the stowage plan, the container load plan (CLP), the bill of lading (B/L) copy, the special container list, the reefer container list, the dangerous cargo list, etc. to the marine terminal. The shipping company sends the M/F, the CLP and the B/L copy to the ICD not later than 3 to 7 days before the scheduled container ship's arrival.
- ② The shipping company sends the arrival notice (A/N) to the consignee (importer).
- ③ The consignee (importer) shows the B/L to the shipping company office, and exchanges it for the delivery order (D/O). Then the shipping company relays this information to the marine terminal and the ICD.
- ④ After the arrival of container ships, discharged containers are transported to the CY of the marine terminal. The marine terminal prepares the boat note (B/N) in which container number and weight are listed, and it is signed by the ship's master acknowledging the receipt of containers.

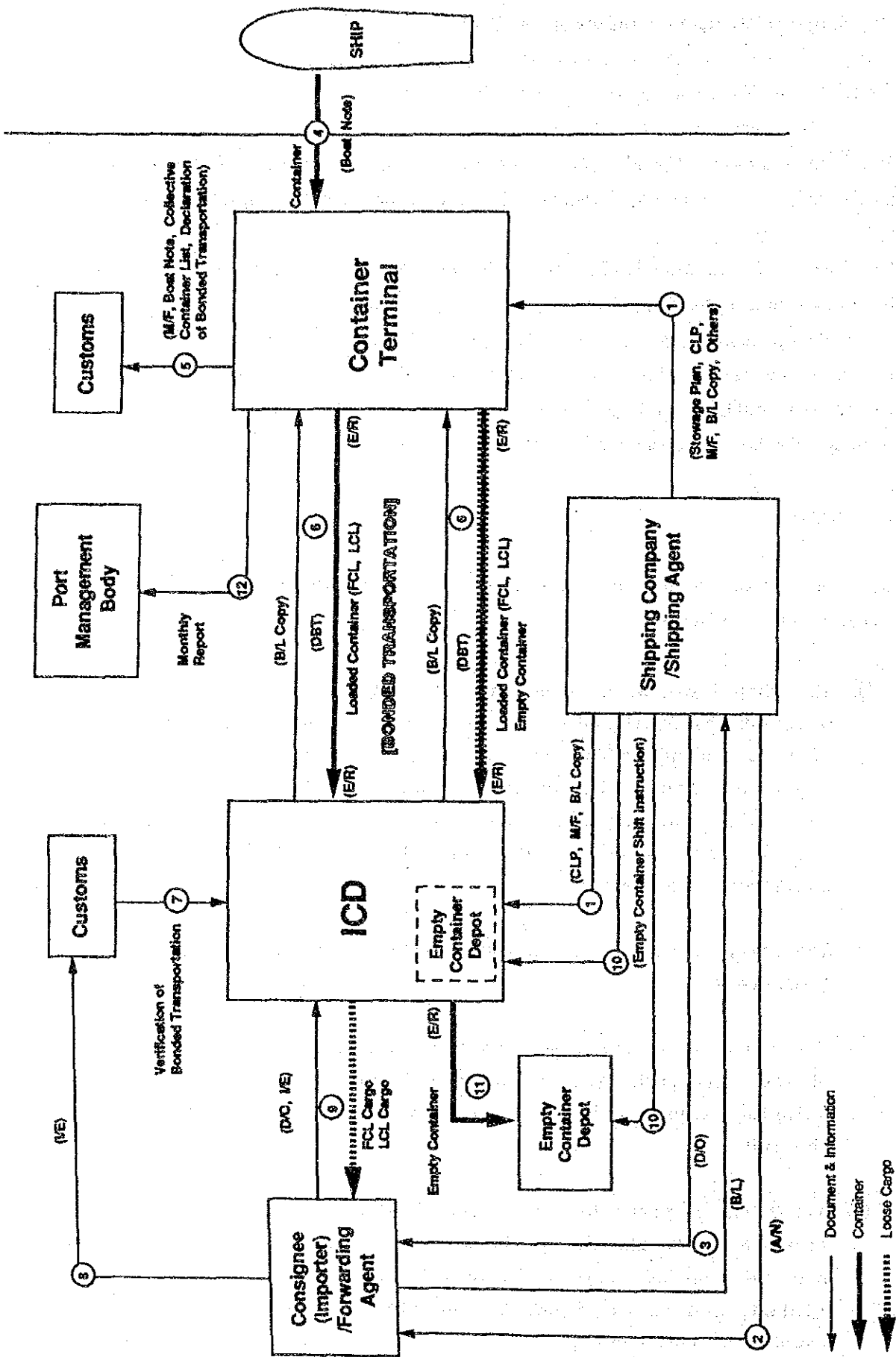


Fig. II.3.1 Flow of Container Cargoes and Documents via the ICD (Import)

- ⑤ The marine terminal submits the M/F, the container list and the B/N to Customs, which procedure confirms the completion of discharge and bringing in of containers. At that time, the marine terminal submits the declaration of bonded transportation (DBT) after receiving the delivery schedule of containers from the ICD.
- ⑥ The driver of the road tractor, on behalf of the ICD operator, presents the B/L copy to the gate office. When delivering the container at the gate office, the equipment receipt (E/R) is signed by both the gate clerk and the driver, who is entrusted to carry the DBT and the related documents. In the case of railway transportation, the SRT officer on board is entrusted with the above documents upon the delivery of containers.
- ⑦ At the CFS of the ICD, the container is unstuffed according to the container unstuffing instructions. The ICD operator submits the DBT to Customs, and Customs verifies it.
- ⑧ The consignee (importer)/forwarding agent completes the import entry (I/E) and, if necessary, cargoes are inspected.
- ⑨ After giving the delivery schedule of his cargoes to the ICD, the consignee (importer)/forwarding agent presents the D/O and the I/E to the ICD, and then takes the cargoes out by truck.
- ⑩ The shipping company instructs the ICD about the positioning of empty container.
- ⑪ Some of the overstayed empty containers, after being unstuffed in the ICD, are transferred to the empty container depot. At the gate office, the E/R is signed by both the gate clerk and the road trailer driver.
- ⑫ The marine terminal operator submits monthly reports of containers and cargoes to the port management body.

(2) Export

27. The documents and information flow accompanying export container cargo movement are explained below.

- ① The shipper (exporter) sends the shipping application (S/A) to the shipping company in order to book ship space.
- ② The shipping company sends the booking list which summarizes each S/A to the marine terminal and the ICD.
- ③ The shipper (exporter)/forwarding agent delivers his cargoes to the ICD.
- ④ The shipper (exporter)/forwarding agent completes customs export clearance and the export entry (E/E).
- ⑤ The shipper (exporter)/forwarding agent submits the D/R and E/E to the ICD.
- ⑥ The shipping company instructs the ICD about the type and container number of the empty containers, and sends the equipment despatch order (EDO) to the ICD.
- ⑦ The shipping company orders the empty container depot to deliver the empty containers.
- ⑧ The ICD arranges road trailer and receives empty containers in exchange for the EDO at the empty container depot.
- ⑨ After stuffing the containers with export cargoes, the ICD submits the DBT to Customs and affixes the customs seal besides the shipping company's.
- ⑩ The ICD arranges road trailer and delivers the containers into the marine terminal. The driver of the road tractor presents the gate-in slip, CLP, dock receipt (D/R), E/E and DBT. The container is checked

at the gate office for several items such as seal, outside condition, weight, temperature of reefer containers, etc. The E/R is countersigned by both the gate clerk and the driver. As for railway transportation, the ICD entrusts the SRT officer with the above documents.

- ⑪ The marine terminal submits the DBT to Customs, and Customs verifies it.
- ⑫ The container is stacked in the CY and loaded onto the container ship.
- ⑬ The D/R and CLP are sent from the marine terminal to the shipping company.
- ⑭ The marine terminal submits the D/R, CLP, E/E and the collective container list to Customs, which procedure confirms the completion of loading onto the ship.
- ⑮ The shipping company issues the B/L in exchange for the original D/R and prepaid freight.
- ⑯ The marine terminal submits monthly reports of containers and cargoes to the port management body.

3.2.2 Scope of Computer Information System

28. Computers can be used in a number of ways: to take care of repetitive chores, for research purposes (periodic or spot uses), and as an operational tool (on-line). The routine clerical chores such as accounting, payroll, personnel affairs, statistics and the calculation of port performance indicators can be quickly dealt with utilizing a computer. An additional advantage is derived from the fact that duplication of documents with the attendant risks of errors can be dispensed with. But a thorough cost-benefit analysis and a review of the input and data acquisition procedures must be carried out before a decision is made on the purchase and size of the computer system.

29. This study presents a new organization for the container handling system through Laem Chabang Port, the ICD and the Port Management Body, and a new efficient and effective management and operation system for the ICD.

(1) Computer System for Office Work within the Port Management Body

30. The port management body is, as mentioned in Chapter 1 of Part II, the owner of the port and not the operator, and has less direct relationship to the container handling operation than the other related bodies do. The management body basically is concerned with the port management, its internal management and operations and so forth. Among the jobs of the port management body, the following may be computerized, and can be controlled and operated by personal computers because the volume of information and documentation processing is not so great, and can also be executed off-line on a batch system:

1) Ship movement within the port

- To receive the entrance/clearance declarations submitted by each terminal operator and to make the schedule of ship movement.

2) Accounting

- To calculate and to analyze revenue and expenditure.

3) Port statistics

- To make the yearly and monthly statistics required for each unit of the port management body

(2) Scope of Computer System among the Container Terminal, the ICD and the Other Related Bodies

31. As mentioned above, the cargo and container handling operation requires the movement of a lot of documents and information. Cargo handling operations at the ICD as well as the required flow of information and documentation is almost the same as at the marine terminal except that the loading and discharging to and from ships is not carried out in the ICD. Since the ICD is to be operated by the same entity which operates the marine terminal and has to be closely connected with the marine terminal, it is quite reasonable to install a computer system based upon on-line processing and to link the ICD and marine terminal as a single unit.

32. In fact, shipping companies and container terminal operators have already developed their own computer systems at container terminals throughout the world. The circumstances of container operation, however, vary from country to country. Those shipping companies and operators have developed systems in such a way that they can use them most effectively. It is, therefore, optimal for them to use their own computer systems for the container operation.

33. Appendix 4.(1) describes the steps and effects of computerization in the container terminal. Some examples of computer systems at typical container terminals in the world are shown in Appendix 4.(2).

34. In addition to the above-mentioned conditions, to determine the scope of the computer system, the Study Team has assumed i) the operators of the marine terminals will be shipping companies/shipping agents who have great experience in container handling operations; ii) the operators will utilize their own advanced computer information systems to support their container handling operations in the marine terminals; iii) the host computer of the system will be set in the operator's computer room located in the marine terminal and connected with work-stations in the ICD's operator office because of the large volume of cargo, containers, documents and information treated at the marine terminal and; iv) the operators (shipping companies/agents) could be linked with both the ICD and the marine terminal.

35. Consequently, considering the aforementioned conditions and assumptions, the Study Team has limited the scope to the basic design of the computer information system which focuses on the ICD's operation and communications among the ICD, the marine terminal and the operators (shipping companies/agents).

(3) Integrated Information System as a Future Target

36. All the bodies related to the container cargo handling operation would like to have a common database from which they can collate or obtain the data or information they need for efficient container cargo handling operation by using an on-line computer information system. The on-line system could provide the necessary information and documents to fulfill the related bodies' needs at any time. An integrated information system which involves all the bodies could connect them all together for efficient information communications, and could assist their efforts to realize efficient container cargo handling operation.

37. An integrated information system, sooner or later, will be developed in accordance with the rapid growth of container cargo transportation, while this study concerns only the initial computer system.

38. An integrated information system, which can greatly contribute to the container cargo handling and connect closely the related bodies, is one of the great and common concerns in this field and the future ultimate target for the final stage. The system can give efficient, effective, and accurate information to those bodies. There are some successful integrated computer information systems already operating which cover several related bodies, some of which even include Customs. It, however, has taken a long time to develop and install those systems because many discussions must be held to reach a consensus on unifying various operational procedures, documentation forms and so forth. The related bodies also have their own perspective on the system because their main concerns are different.

39. An integrated information system which includes all the related bodies with the ICD and the marine terminal as a center would be a future final target for the container handling operation. As mentioned above, the

computerization of this field in Thailand is not yet sufficiently developed. Before the system is started, many hurdles must be cleared such as unifying code, documentation forms and communication protocol, how to deal with the rapid shift to a comprehensive information system from a less computerized stage, who takes strong leadership for the development of the system and so forth. For that purpose, it will take a long time to hold discussions to reach some conclusion and consensus.

40. Appendix 4.(1) shows examples of partly integrated information systems for cargo and container handling operations in the world.

3.3 Basic Design of Computer Information System

3.3.1 Manual Operation Activity Related to the ICD

(1) General Operation Flow Related to the ICD Operation

41. Container and cargo movement with the ICD as a center is shown in Fig. II.3.3. It consists of four main movements of container and cargo for import and export with empty container receiving/delivery to and from an outside empty container depot and container maintenance/repair if necessary.

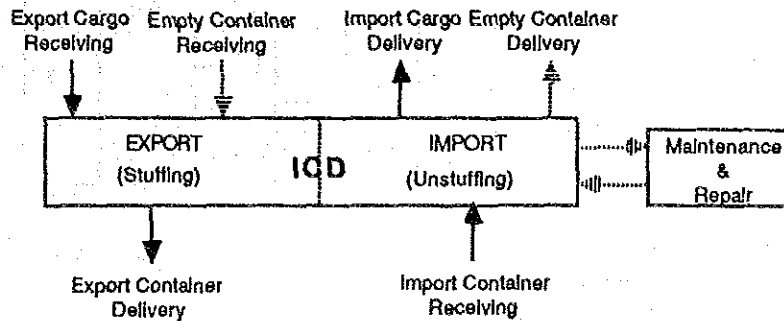


Fig. II.3.3 Cargo & Container Movement through the ICD

42. Operations related to cargo and container movement by import and export are illustrated in Fig. II.3.4 below.

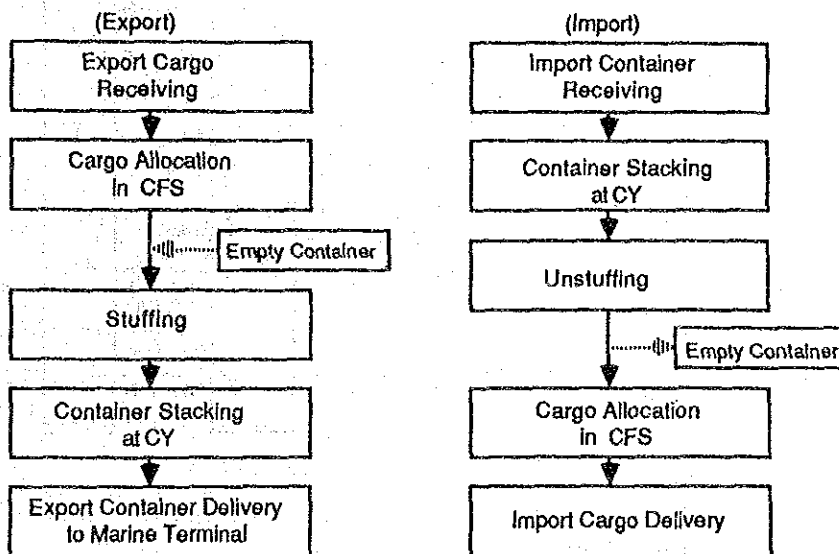


Fig. II.3.4 Operation Flow at the ICD

43. The flows of container/cargo movement and necessary documents/information for import and export are shown in Figs. II.3.5 and II.3.6, respectively.

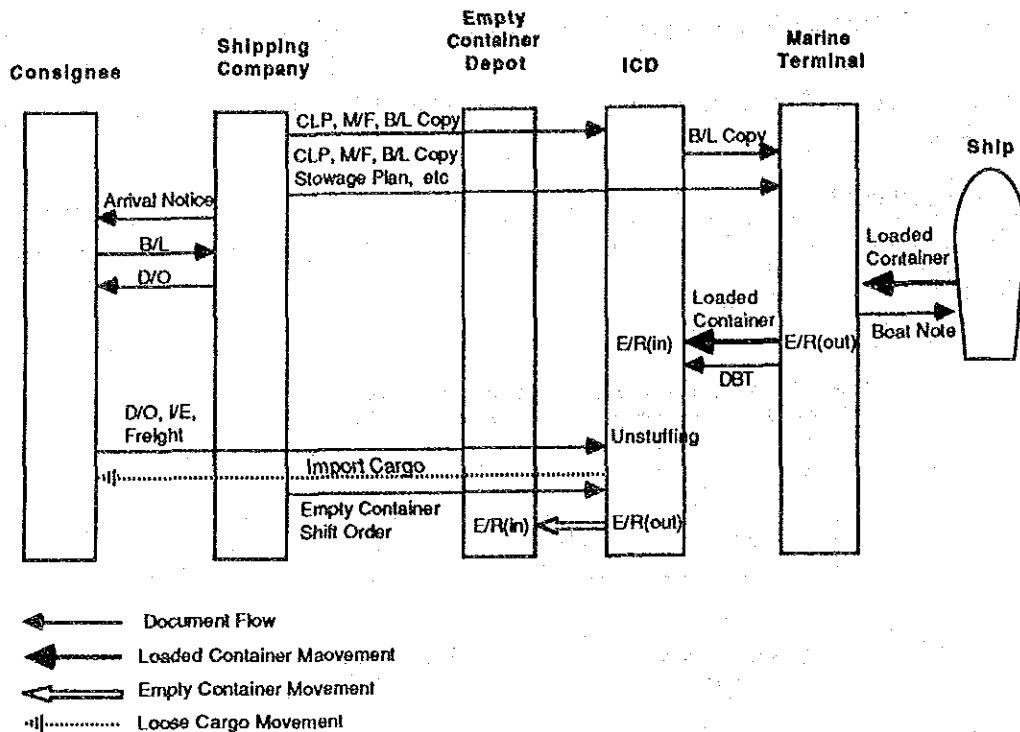


Fig. II.3.5 Cargo and Container Flow and Information (Import)

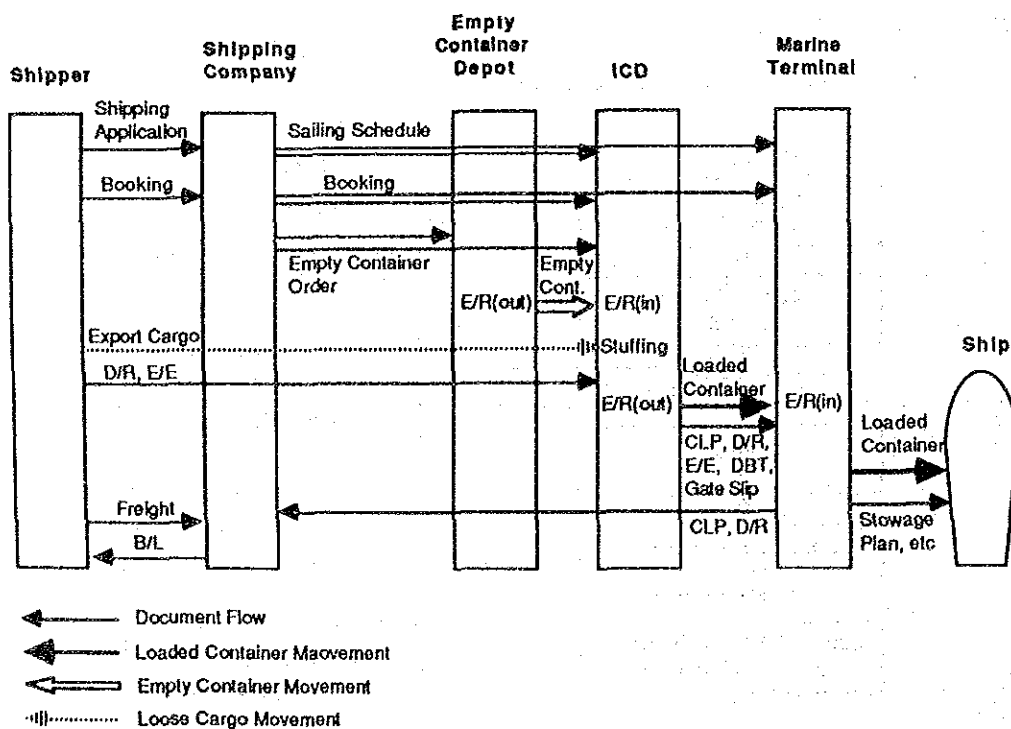


Fig. II.3.6 Cargo and Container Flow and Information (Export)

(2) Manual Operation Activity in the ICD

44. The proposed manual operation activities are described in Figs. A.4.9 and A.4.10 in Appendix 4.(3). The scope of the computer information system as mentioned above is limited to the operation in the ICD and that between the ICD and the marine terminal. Thus, these operations are described in detail.

3.3.2 Basic Design of Computer Information System

(1) System Organization

45. In this section the computerized container handling system is proposed on the basis of the aforementioned manual operation. The basic design of the system focuses on the following four objectives to be achieved by the system:

- i) On-line and real-time processing
- ii) Less paper-oriented processing (operation)
- iii) Dialogue-styled man-machine interface on the Cathode Ray Tube (CRT) display
- iv) Managing various related files by database

46. Provided that shipping companies could link the operator's computer in the marine terminal with theirs, it would be much helpful. However, some of them have their own various format of information and documents, which makes it difficult for them to use the operator's computer for their communication. Therefore, the system covers operation of an operator of the marine terminal and ICD alone. The entire system should include both the marine terminal and the ICD operations using the host computer set up at the marine terminal computer room as shown in Fig. II.3.7. However, the operators (lessees) of both the marine terminal and the ICD are considered to use their advanced computer system for the marine terminal operation with their abundant experiences. Therefore, the proposed computer system here is designed on the assumption. The container handling information system gives the operator a great help in processing the data and information because the ICD operator can reduce the duplication of the data

input by using data which the marine operator has already input into the computer's database or files, and vice versa. Through this effective communication between the marine terminal and the ICD, the container handling will become much more effective and efficient.

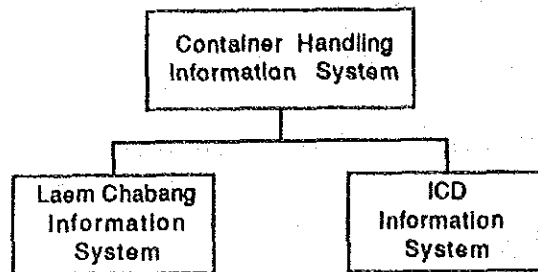


Fig. II.3.7 Entire System Organization

47. The ICD information system consists of the following three main parts due to characteristics of the cargo/container handling operation at the ICD.

- i) CFS Operation (cargo)
- ii) CY Operation (container)
- iii) ICD Management

Fig. II.3.8 illustrates the further detailed system organization of the ICD information system. The numbers on the left shoulder of each sub-system correspond to the ID numbers of computerized operation activities flow (Figs. A.4.11 through A.4.13) and sub-system profile (Table II.3.1). Fig. II.3.9 shows the image of relation between the ICD's operation and the system. CY, railway, top-lifter, and yard chassis operators are distributed the necessary work instruction and also instructed through VHF transceiver by yard controller in the ICD office.

(2) Computerized Operation Activity in the ICD

48. The computerized container handling system through the ICD is shown in Figs. A.4.11 and A.4.12 for import and export operations, respectively. Furthermore, such exceptional operations as casual container shift and empty container shift are illustrated in Fig. A.4.13.

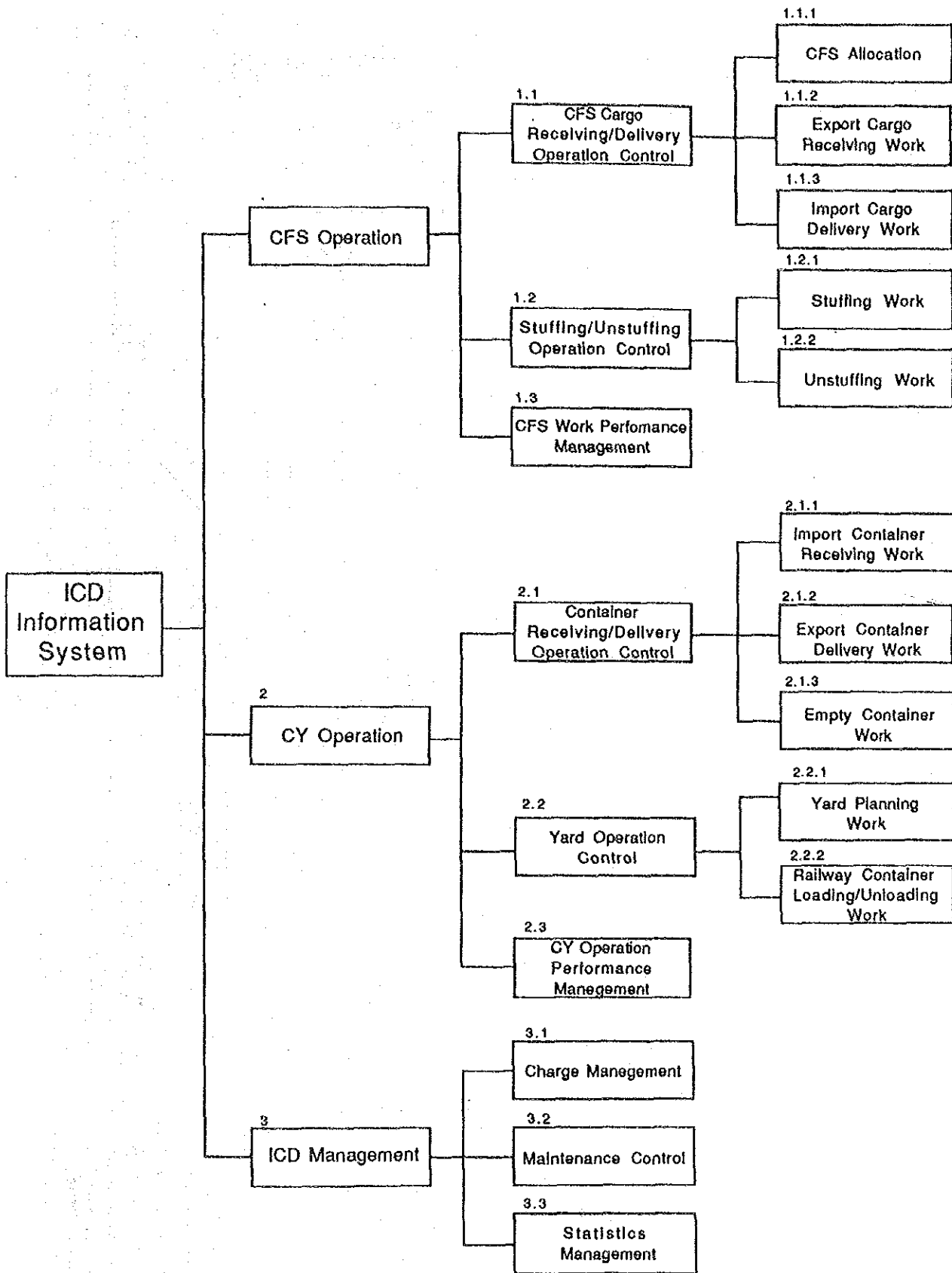


Fig. II.3.8 Computer Information System Organization

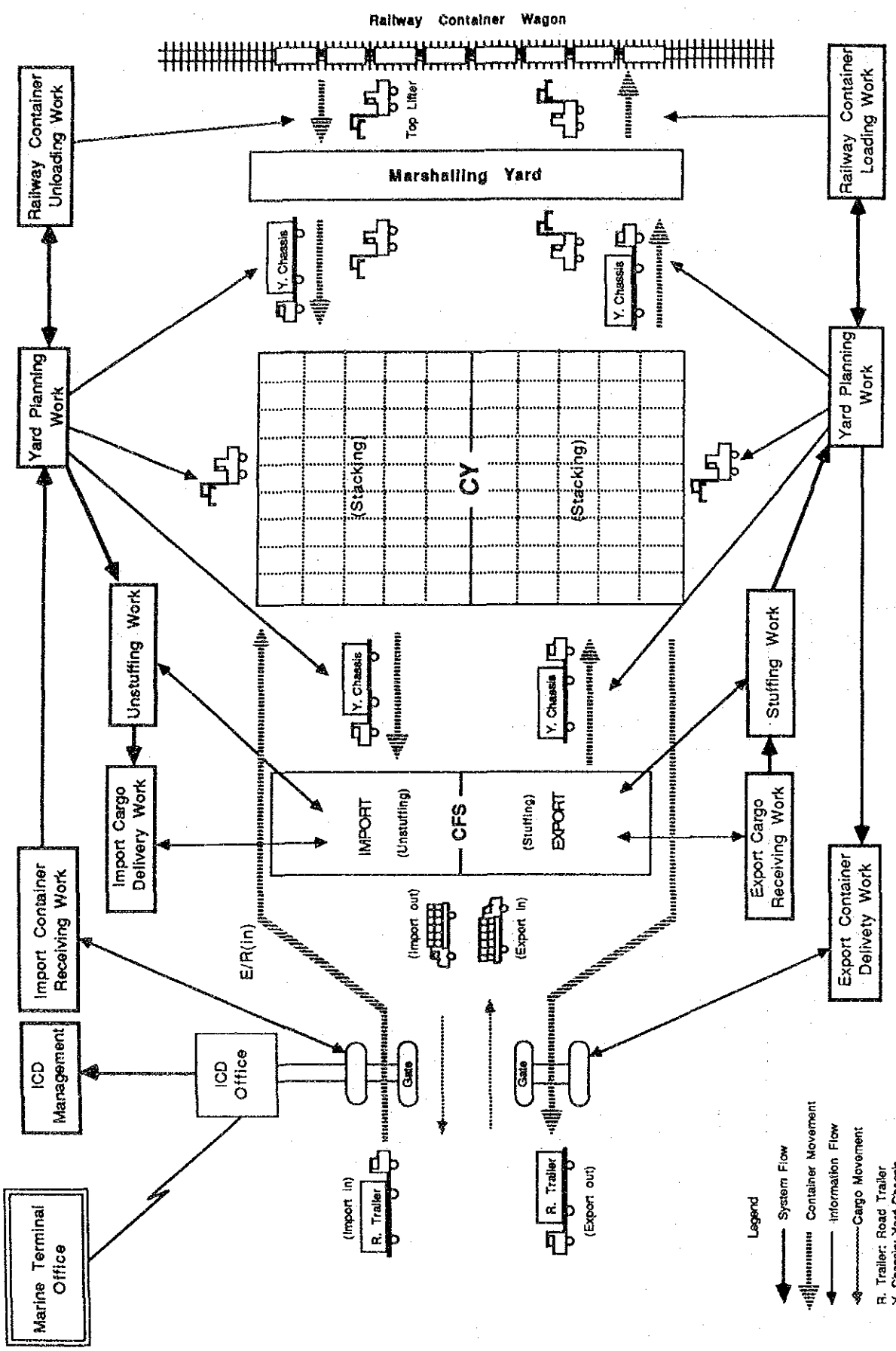


Fig. II.3.9 Computer Information System and Container/Cargo Movement in the ICD

(3) Sub-system Profile

49. In this section, the proposed sub-systems are profiled as shown in Table II.3.1. In the table, the ID numbers indicate the ID numbers of sub-system shown in Fig. II.3.8 "System Organization."

Table II.3.1 Sub-system Profile (1)

Input	Sub-system Process/Description	Output
	<p>1. CFS Operation</p> <ul style="list-style-type: none"> - To control the operation within the CFS, comprising the following three sub-systems 1.1 CFS Cargo Receiving/Delivery Operation Control 1.2 Stuffing/Unstuffing Operation Control 1.3 CFS Work Performance Management 	
<ul style="list-style-type: none"> - Export/Import cargo information - Tally sheet - M/W - Invoice - Ship's movement 	<p>1.1 CFS Cargo Receiving/Delivery Operation Control</p> <ul style="list-style-type: none"> - To control receiving/delivery of export/import cargo and CFS allocation at the CFS, comprising the following three sub-systems 1.1.1 CFS Allocation 1.1.2 Export Cargo Receiving Work 1.1.3 Import Cargo Delivery Work 	<ul style="list-style-type: none"> - CFS allocation master file - CFS cargo master file
<ul style="list-style-type: none"> - CFS allocation 	<p>1.1.1 CFS Allocation</p> <ul style="list-style-type: none"> - To plan the CFS allocation of cargo considering the space in the CFS with CFS cargo master file 	<ul style="list-style-type: none"> - CFS allocation master file - Import cargo list - Export cargo list - CFS allocation
<ul style="list-style-type: none"> - Export cargo receiving information (E/E, D/R) 	<p>1.1.2 Export Cargo Receiving Work</p> <ul style="list-style-type: none"> - To provide necessary information for the cargo receiving from shippers and allocation of the cargo according to CFS allocation - To input information of receiving to change the related files' contents 	<ul style="list-style-type: none"> - Export cargo list - CFS cargo master file - CFS allocation
<ul style="list-style-type: none"> - Import cargo delivery information (D/O) 	<p>1.1.3 Import Cargo Delivery Work</p> <ul style="list-style-type: none"> - To prepare necessary information for cargo delivery to consignees - To input information of delivery to change the related files' contents 	<ul style="list-style-type: none"> - Import cargo delivery list - CFS cargo master file - CFS allocation file - Non-customs clearance cargo list - Undelivered cargo list - Import cargo delivery plan - Over-short cargo list
<ul style="list-style-type: none"> - CFS allocation file - Container master file - Cargo master file 	<p>1.2 Stuffing/Unstuffing Operation Control</p> <ul style="list-style-type: none"> - To make stuffing/unstuffing plan for stuffing and unstuffing work in CFS. Comprising the following two sub-systems 1.2.1 Stuffing Work 1.2.2 Unstuffing Work 	<ul style="list-style-type: none"> - Stuffing work list - Unstuffing work list
<ul style="list-style-type: none"> - CFS allocation file - Stuffing work file - Information of work status 	<p>1.2.1 Stuffing Work</p> <ul style="list-style-type: none"> - To provide stuffing work list with CFS allocation and Stuffing Plan - After stuffing work, with finishing information to make Stuffing report and CLP, then to change the related files' contents 	<ul style="list-style-type: none"> - Stuffing work list - Stuffing plan - Stuffing work file - CFS allocation file - CFS cargo master file - Export cargo list - CFS allocation - CLP

Table II.3.1 Sub-system Profile (2)

Input	Sub-system Process/Description	Output
<ul style="list-style-type: none"> - CFS allocation file - Unstuffing work file - Information of work status 	<p style="text-align: center;">1.2.2 Unstuffing Work</p> <ul style="list-style-type: none"> - To provide unstuffing work list with CFS allocation and unstuffing Plan. - After unstuffing work, with finishing information to make unstuffing report, then to change the related files' contents 	<ul style="list-style-type: none"> - Unstuffing work list - Unstuffing work file - CFS allocation file - CFS cargo master file - Unstuffing plan - CFS allocation - Import cargo list
<ul style="list-style-type: none"> - Finishing information of each CFS work - CFS-in No. 	<p style="text-align: center;">1.3 CFS Work Performance Management</p> <ul style="list-style-type: none"> - To store information about cargo handled in the CFS 	<ul style="list-style-type: none"> - CFS allocation file - CFS cargo master file - Stuffing report - Unstuffing report - Exception list
	<p style="text-align: center;">2. CY Operation</p> <ul style="list-style-type: none"> - To control the CY operation and container receiving/delivery work, comprising the following three sub-systems 2.1 Container Receiving/Delivery Operation Control 2.2 Yard Operation Control 2.3 CY Operation Performance Management 	
<ul style="list-style-type: none"> - Information of container to be received and delivered - Ship's movement 	<p style="text-align: center;">2.1 Container Receiving/Delivery Operation Control</p> <ul style="list-style-type: none"> - To control the receiving/delivery work of export/import containers, comprising the following three sub-systems: 2.1.1 Import Container Receiving Work 2.1.2 Exprt Container Delivery Work 2.1.3 Empty Container Work 	<ul style="list-style-type: none"> - Export container list - Import container list - Container master file - Import container yard file - Export container yard file - Yard master file - Ship's movement/ cut-off time
<ul style="list-style-type: none"> - E/R(in), DBT, etc 	<p style="text-align: center;">2.1.1 Import Container Receiving Work</p> <ul style="list-style-type: none"> - To input information of received import container at the Gate, and based on the information Yard controller gives an instruction to CY operators 	<ul style="list-style-type: none"> - Container master file - Yard master file - Import container yard file - E/R (in) - Yard plan - Import container receiving plan - Import container receiving list
<ul style="list-style-type: none"> - E/R(out), etc 	<p style="text-align: center;">2.1.2 Export Container Delivery Work</p> <ul style="list-style-type: none"> - To input information of delivered container at the Gate, and Yard msster file, Export container yard file are changed 	<ul style="list-style-type: none"> - Container master file - Yard master file - Export container yard file - E/R (out) - Export container delivery plan - Export container delivery list - Yard plan
<ul style="list-style-type: none"> - Empty container shift instruction - Empty container order - E/R - EDO 	<p style="text-align: center;">2.1.3 Empty Container Work</p> <ul style="list-style-type: none"> - To control the empty container receiving/delivery to/from the ICD and the Empty container Depot - Overstayed empty container will be delivered to the Empty Container Depot - If no empty container in the CY, empty container will be received from the Empty Container Depot 	<ul style="list-style-type: none"> - Empty container file - Empty container yard file - Overstayed empty container list - Empty container list - Yard plan - Container master file

Table II.3.1 Sub-system Profile (3)

Input	Sub-system Process/Description	Output
<ul style="list-style-type: none"> - Container transportation mode - Export/import container information - Ship's movement file - Railway condition file 	<p style="text-align: center;">2.2 Yard Operation Control</p> <ul style="list-style-type: none"> - To provide necessary information for container stack at the CY, container shift, loading/unloading container from/onto railway wagon, comprising the following two sub-systems <p>2.2.1 Yard Planning Work 2.2.2 Railway Container Loading/Unloading Work</p>	<ul style="list-style-type: none"> - Yard master file - Container shift instruction list - Railway condition file - Railway plan file
<ul style="list-style-type: none"> - Export/import container information - Ship's movement file - Yard master file 	<p style="text-align: center;">2.2.1 Yard Planning Work</p> <ul style="list-style-type: none"> - To make stacking work plan and stacking work instruction from export/import container information 	<ul style="list-style-type: none"> - Export container yard file - Import container yard file - Export container work list - Import container work list - Container shift work list - Yard master file
<ul style="list-style-type: none"> - Export container yard file - Import container yard file - Railway condition file - Ship's movement file - Export/Import container information - Yard master file 	<p style="text-align: center;">2.2.2 Railway Container Loading/Unloading Work</p> <ul style="list-style-type: none"> - To make list of containers to be loaded or unloaded onto/from railway container wagon according to the ship's movement and railway schedule 	<ul style="list-style-type: none"> - Railway plan file - Railway condition file - Loading work list - Unloading work list - Export container yard file - Import container yard file - Yard plan - Loading plan - Unloading plan - Yard master file
<ul style="list-style-type: none"> - E/R, DBT, etc 	<p style="text-align: center;">2.3 CY Container Operation Performance Management</p> <ul style="list-style-type: none"> - To input finishing information of container receiving/delivery at the Gate, and to change the related file's contents 	<ul style="list-style-type: none"> - Yard master file - Import container yard file - Export container yard file - Empty container yard file - Container roster file
	<p style="text-align: center;">3. ICD Management</p> <ul style="list-style-type: none"> - To manage the general works of the ICD, comprising the following three sub-systems <p>3.1 Charge Management 3.2 Maintenance Control 3.3 Statistic Management</p>	
<ul style="list-style-type: none"> - Container master file - Cargo master file 	<p style="text-align: center;">3.1 Charge Management</p> <ul style="list-style-type: none"> - To manage the necessary files and unit charge file to calculate the charge of using the ICD 	<ul style="list-style-type: none"> - Bill - Receipt - Issued bill list - Charge payment status - Demand note - Charge management file - Charge rate master file (if changed)
<ul style="list-style-type: none"> - Container master file - Equipment inventory file 	<p style="text-align: center;">3.2 Maintenance Control</p> <ul style="list-style-type: none"> - To control information of maintenance and repair of containers - To control inventory of equipment and spare parts - To make maintenance & repair report 	<ul style="list-style-type: none"> - Container master file - Equipment inventory file - Monthly, yearly report
<ul style="list-style-type: none"> - Selection of kind of documents 	<p style="text-align: center;">3.3 Statistics Management</p> <ul style="list-style-type: none"> - To make various report and documents of containers and cargo treated - To make equipment report for efficient equipment use analysis 	<ul style="list-style-type: none"> - Container work performance report - Cargo work performance report - Manifest, other documents - Equipment performance report - Various statistical reports

(4) File Profile

50. Characteristics and role of each file of the system are described as shown in Table II.3.2. The files are classified into two categories; permanent files and temporary work files. The latter is in work during the ICD's serial operation of import and export for a single ship as shown in Fig. II.3.4. In the table, the files from No.12 on are temporary work files.

Table II.3.2 File Profile

File	Description
1.Container Master File	Comprehensive information file of containers handled and to be handled at the ICD during specific period. The information should be updated and deleted after the end of the specific period. And history of the information should be transferred to Container Statistic File.
2. Container Statistic File	The container information deleted from Container Master File under the specific rule is stored as necessary information for the statistical reports of the container.
3. CFS Cargo Master File	Comprehensive information file of cargo handled and to be handled at the CFS during specific period. The information should be updated and deleted after the end of the specific period. And history of the information should be transferred to the CFS Cargo Statistic File.
4. CFS Cargo Statistic File	The cargo information deleted from CFS Cargo Master File under the specific rule is stored as necessary information for the statistical reports of the cargo.
5. Yard Master File	File of status of each slots of Container Yard (CY).
6. Empty Container Yard File	File for the status of each slot of empty container space.
7. CFS Allocation Master File	File to store the condition of each location of the CFS.
8. Ship's Movement File	Information of ship's movement to/from Laem Chabang Port.
9. Charge Rate Master File	File of the charge rate for charge calculation on the ICD operation. When the charge rate be changed the file should be changed.
10. Charge Management File	Condition of invoice of charge and payment of charge.
11. Equipment Inventory File	To store the inventory conditions of equipment in the ICD.
12. Railway Condition File	Condition of the container on the railway container wagon to/from Laem Chabang Port. To be used for loading/unloading work of container to/from railway wagon
13. Railway Plan File	File for loading plan of container onto railway container wagon bound to Laem Chabang Port.
14. Export Container Yard File	Information of CY slots to stack export container by a ship, according to Yard Master File.
15. Import Container Yard File	Information of CY slots to stack import container by a ship, according to Yard Master File.
16. Stuffing Work File	To show CFS location of export cargo to be stuffed into corresponding container supposed to be loaded onto a same ship.
17. Unstuffing Work File	To show CFS location for import cargo to be allocated after unstuffing.

(5) System Configuration

51. The computer information system needs appropriate hardware, software, and communication means. The system configuration is as shown in Fig. II.3.10. The amount and the location of each hardware component is described in Table II.3.3. In reality, careful attention should be paid to selection of hardware and software because machines and software are different from one computer maker to another.

1) Hardware

52. The system needs the following hardware:

- i) Host computer (mainframe)
- ii) Disk unit
- iii) MT (magnetic tape) unit
- iv) FDD (floppy disk drive) unit
- v) Printer (for host computer)
- vi) Workstation (keyboard and display)
- vii) Printer (for workstation)
- viii) Modem (communication control)

2) Software

53. In order to operate the system, besides the application software for the container operation, the following software to manage and control the computer itself are necessary:

- i) Operating system
- ii) Data management program
- iii) Communication control program
- iv) Operation and management program
- v) Language control program
- vi) Transaction processing control program
- vii) TSS (time sharing system) control program
- viii) Thai language processing program

Application software for the operation is considered to be developed newly or modified from existing application software.

3) Communication

54. A trunk leased line will be leased from TOT to link the marine terminal and the ICD.

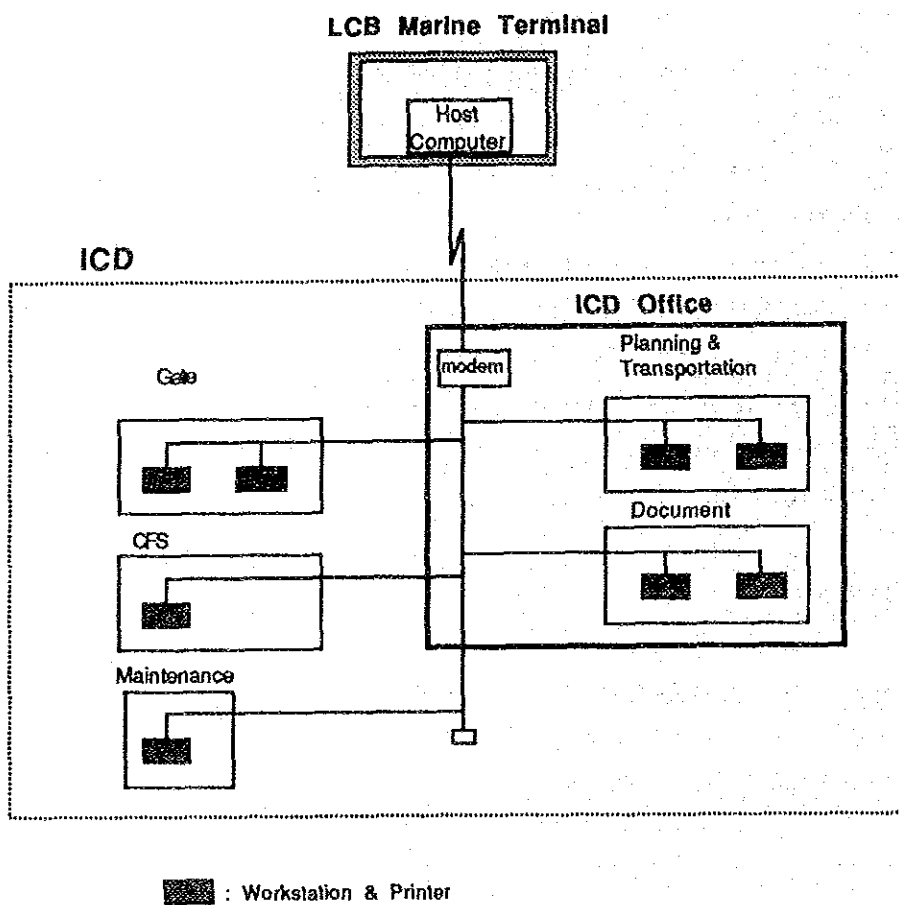


Fig. II.3.10 System Configuration

Table II.3.3 Required Hardware

Component	ICD	Marine terminal
Host computer (mainframe)	-	1
Disk unit	-	2
MT unit	-	2
FDD unit	-	2
Printer (for host computer)	-	1
Workstation (keyboard and display)	8	14
Printer (for workstation)	8	14
Modem (communication control)	1	1

Table II.3.4 Allocation of Workstations and Printers

Section	Requirement
ICD	8
Document	2
Planning & Transportation	2
Gate	2
CFS	1
Maintenance & Repair	1
Marine terminal	14
Document	4
Yard Plan	2
Maintenance & Repair	1
Gate	3
CFS	1
Computer	1