

Report of the Inter Ministerial Group Reducing Dwell Time of Cargo at Ports





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Preface

Ports are gateways to international trade. Compared to the actual traffic of 424 MMT at the Major Ports in 2005-06, the projected traffic to be handled in the year 2011-12 is 708 MMT. The expansion and increased globalisation of the Indian economy will require significant augmentation of port infrastructure.

To cope with the burgeoning traffic of international trade, the Government has undertaken several initiatives to bring the port sector at par with global standards. Efforts are underway not only to create additional capacity but also to increase the efficiency of the existing capacity in the sector. Thus, the reduction in dwell time and associated transaction costs is essential.

Inadequate port capacity and navigational aids, bunching of vessels, limited cargo handling facilities, high down time of equipment, low labour productivity and shortage of storage space, all contribute to the low efficiency of Indian ports. The average dwell time, in 2005-06, at container terminals in Major Ports was 1.88 days for imports and 3.78 days for exports compared to 0.6 days at international ports. The dwell time for dry bulk cargo in Indian ports was 38 days in case of imports and 27 days in case of exports compared to an international benchmark of 14 days.

An Inter Ministerial Group (IMG) under the chairmanship of Secretary, Department of Shipping was constituted in February 2006 for recommending measures to reduce the total dwell time at ports and to bring it in line with international standards. The Group held detailed discussions with representatives of the Major Ports and other stakeholders. It also studied the various aspects of dwell time at Rotterdam and Singapore ports. The Group also examined the various processes including the documentation involved in the clearing of cargo.

The Report makes key recommendations such as optimisation of cargo handling systems and equipment, better maintenance scheduling, 24x7 working at ports, augmenting capacities at ports, creating additional testing facilities, improving labour productivity, strengthening roads to and within the ports, creating exclusive cargo freight corridors, implementing EDI and port community system, single window environment for port users, simplification of documents, etc. The Report

has since been accepted by the Empowered Sub-Committee of the Committee on Infrastructure in its meeting held on September 18, 2007 under the chairmanship of Deputy Chairman. Implementation of these recommendations will result in a high degree of mechanisation in cargo handling, efficient information exchange, active participation by skilled workforce, sufficient space for storage and allied activities and better facilities for quick evacuation of cargoes for reducing total dwell time at ports.



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March 3, 2009

1. Background

In the meeting of the Committee on Infrastructure held on 16th February, 2006, it was decided that an Inter Ministerial Group (IMG) under the chairmanship of Secretary, Shipping be constituted to make recommendations for reducing the total dwell time at ports and to bring it in line with international standards. Accordingly, an Inter Ministerial Group was constituted on 13th March, 2006. It was required to submit its report by 31st May, 2006. The composition of the IMG was as follows:

- (i) Secretary, Shipping - Chairman
- (ii) Member Secretary, Planning Commission (or his representative)
- (iii) Chairman Railway Board (or his representative)
- (iv) Secretary, Department of Economic Affairs
- (v) Secretary, Commerce
- (vi) Secretary, Revenue.

The meetings of the group were held on 15.5.2006, 29.5.2006, 29.6.2006, 31.10.2006, 24.11.2007, 25.01.2007, 14.03.07 and 11.05.07 with the Members of IMG.

Detailed discussions were held with representatives of the Major Ports and Port Users to get a better appreciation of the issues involved and to identify the measures required for reducing dwell time at ports. Two separate teams of officers were also deputed to visit Rotterdam and Singapore Ports to study various aspects of dwell time at these ports.

Issues concerning the dwell time at ports and measures for its improvement were discussed in the meetings held with stakeholders and representatives and members of IMG. The

different components of dwell time at various stages involving different agencies were reviewed. A comparison was also made with the procedures followed in ports in other countries.

1.1. Terms of Reference

- To analyze the efficiency of Major Ports in the country and to identify the factors affecting their performance.
- To recommend measures to be adopted for improving efficiency at ports.
- To identify the factors affecting a port's efficiency and suggest measures for its improvement.
- To analyze the dwell time of cargo / containers at Indian ports and to arrive at the factors contributing to the high dwell time and recommend measures for reducing the dwell time and improve the efficiency at Major Ports.

2. Introduction

2.1. Indian Port Sector

Ports in India are classified as Major or Minor on the basis of ownership. The Government of India wholly owns the 12 Major Ports. While the Major Port Trusts Act of 1963 governs eleven of the Major Ports, the twelfth port, namely Ennore, is the only corporate port that is administered by provisions of the Companies Act. The ownership of Non-Major Ports is essentially under the jurisdiction of the respective Maritime Boards of the State Governments.

2.2. Cargo Profile at Indian Ports

The volume of cargo handled at Indian ports has witnessed a CAGR of 10.67% in the last five years. Total cargo handled at the 12 Major Ports was 423.34 million tonnes in 2005-06 against 383.7 million tonnes handled in 2004-05. The cargo profile at Indian Major & Minor Ports for the year 2005-06 is exhibited in Tables 1.1 & 1.2 of Appendix-1. The share of Minor Ports is growing steadily and is almost 25% of Indian maritime trade.

2.3. Stakeholders of the Port Sector

Port authorities are one of the most important stakeholders in the supply logistics chain, whose performance is a key factor in determining the efficiency of the system. The identified stakeholders and their role in the port logistics chain are listed in Appendix-2.

2.4. Ex-Im Procedures at the ports

The Major Ports are ISO certified and the port procedures, in conjunction with those of Customs, are intended to provide definite and predictable methods by which cargoes can be handled and cleared through seaports on payment of applicable Customs duties and port charges for vessels / cargo, abiding by the laws of the land.

Ports are Customs-notified places under Section 7 of the Customs Act, 1962. They are also the custodians of cargo appointed by Customs, under Section 45 of the said Act, for the safe storage of goods till they are delivered. The respective ports prescribe procedures under the Major Port Trusts Act of 1963 for the handling of vessels / cargo and the delivery / admittance of cargo at the port in conjunction with Customs procedures for clearance of cargo.

All services rendered by the Major Ports are payable in accordance with the rates approved by TAMP. The Steamer Agents intimate the port regarding the arrival of the vessel. The port extends desired facilities for vessel and cargo operations on payment of applicable vessel related charges and the grant of permission by Customs. On payment of applicable stevedoring and other service charges, the Stevedore requests for provision of port labour for the cargo discharge and loading operations.

The Clearing and Forwarding Agents move cargo in or out of the port after completing formalities for the clearance of cargo at Customs. Wharfage charges are the basic dues on cargo passing through the port. In imports, cargo is delivered on receipt of Out of Charge order from Customs and in exports, cargo is loaded on receipt of Let Export Order / Passed for Shipment (or) Allowed for Shipment.

Manual processing, multiple physical interfaces and redundancy characterize the ex-im processes at Indian ports. Bottlenecks and limited use of information technology in the processes hamper the seamless transfer of cargo in the supply logistics chain. General procedures for import & export streams of containers, bulk and break bulk cargoes have been listed and explained with the help of respective process flow charts in Appendix-3.

3. Dwell Time and Efficiency at Ports

3.1. Concept and Introduction

Maritime trade contributes more than 90% of the total volume of ex-im trade.

Cargoes are transported in bulk, break bulk and containerized forms. The cargo handled at the Major Ports in 2005-06 was 423.34 million tonnes. The break-up is illustrated in the pie diagram below.

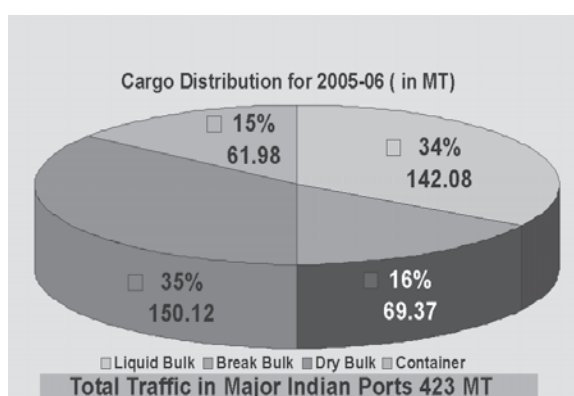


Figure 3.1. The Distribution of Cargoes handled by Indian Major Ports in 2005-06

3.2. Definition of Dwell Time

The duration for which an entity stays in the port for service is called dwell time of the entity. In the port parlance, the entities are mainly the vessel and cargo / containers.

Cargo / Container related dwell time

The time cargo / container remains in a terminal's in-transit storage area while awaiting shipment by vessels in exports or evacuation by rail / road in imports.

Vessel related dwell time

From the time a vessel reports at anchorage to the time it is cast-off from the berth.

Dwell time of cargo / containers and vessels broadly reflects the efficiency of ports. Thus, measures adopted to reduce dwell time influence efficiency.

3.2.1. Comparison of Average Dwell Time at Indian Major Ports

The Table below shows the dwell time at Indian Major Ports for the year 2005-06.

Average container dwell time at major container terminals:

- ❖ Import = 1.88 days
- ❖ Export = 3.78 days

Average Dwell Time of Indian Ports for Dry Bulk/Break Bulk:

- Import: Dry Bulk = $35 + 3.23 = 38.23$ days
 Break Bulk = $9.87 + 5.62 = 15.49$ days
- Export: Dry Bulk = $23.57 + 3.57 = 27.14$ days
 Break Bulk = $10.6 + 6.6 = 17.2$ days

It is pertinent to note that for liquid bulk cargoes, dwell time is not an issue since in most of the ports the cargo is pumped out of the port premises to user tank farms directly from the vessel.

Except in the case of Jawaharlal Nehru Port, most of the container vessels calling on terminals

Dwell Time at Indian Ports for 2005-06:

Average Dwell Time at Indian Ports - Combined for Licenced Area, Transit Area and Terminal (2005-06)

(In Days)

Sl.No.	Port	Dry Bulk				Break Bulk				Container*	
		Import		Export		Import		Export		Import	Export
		WH-LA	Terminal	WH-LA	Terminal	WH-LA	Terminal	WH-LA	Terminal		
Indian	Major Ports										
1	TPT	NA	3	NA	NA	7	5	NA	NA	1.18	3
2	CHPT	50	3	30	3	15	7	15	7	3	4.5
3	MGPT	50	3.5	18	3	NA	NA	NA	NA	NA	NA
4	PPT	45	3	30	3	NA	NA	NA	NA	NA	NA
5	MBPT	NA	4	NA	NA	7	7	7	7	1.2	7
6	JNPT	NA	NA	NA	NA	NA	NA	NA	NA	1.5	6
7	KANDLA	60	4	7	6	6	7	11	7	5	1
8	HALDIA	30	3	30	3	10	5	10	6	6.5	6.5
9	KOLKATA	NA	NA	NA	NA	17	5	10	6	8.2	4.8
10	VPT	10	3	20	3	10	5	NA	NA	3.8	2.3
11	NMPT	10	3	30	4	7	4	NA	NA	NA	NA
12	COPT	25	3	NA	NA	NA	NA	NA	NA	10	7
13	ENNORE	NA	3	NA	NA	NA	NA	NA	NA	NA	NA
Average 35		3.23	23.57	3.57	9.87	5.62	10.6	6.6	1.88*	3.78*	

NA – Not Available. WH- Warehouse; LA- Leased, TA-Transit Area

Table 3.2.1.: Average Dwell Time in Indian Ports - Combined for Licenced Area and Terminal

* Only ports with dedicated container terminals / BOT terminals / throughput greater than 40000 TEUs have been taken into consideration.

today are feeder line vessels from nearby hub ports like Singapore, Colombo, Penang etc. The average dwell time at major container terminals is 1.88 (import) and 3.78 (export) days. Any reduction in dwell time would reduce transaction costs and also increase the capacity of existing port infrastructure. This in turn would facilitate trade in general and enhance the

competitiveness of Indian goods in international markets.

It is observed that the port's role in the entire logistics chain is mainly to provide infrastructure facilities for handling of vessels, containers and other cargo. A detailed time study of the actual time taken by port authorities for handling import

and export containers in the container terminal was carried out. It revealed that the total time taken, cumulatively, is 3.5 to 5.5 hrs for import and 3.3 to 5.3 hrs for export. Thus, it can be observed that the rest of the time the container dwells at the port is on account of other stakeholders like shipping agents, Customs, clearing agents / transporters etc. who have to play their respective roles in preparing & furnishing the requisite information to the port authority, arrange for funds for making payment of port charges, arranging for transport etc. Appendix-3A gives the time taken by the port for various activities related to handling of containers at the terminal.

3.3. Port Efficiency Parameters

The efficiency of any port may be judged by the Parameters such as – Pre-Berthing Detention Time (PBD), Non-Working Time at Berth (NWT), Turn Round Time (TRT) and Output per Ship Berth Day (OSB) of the vessels.

While making comparison on the basis of indices of efficiency it is important to note that ports differ significantly in their infrastructure, cargo mix, types of ships calling at the ports and nautical constraints etc. For these reasons, comparison of the indices of efficiency parameters, not only with international ports but also amongst other Indian ports, may not be appropriate.

3.3.1. Pre-Berthing Detention

Definition:

This is the time taken by a ship from its arrival at the anchorage (reporting station) till it starts its movement to the working berth, i.e. operational berth.

Pre-Berthing Detention is a component of Turn Round Time and any increase in the PBD correspondingly increases the Turn Round Time. Average Pre-Berthing Time on port account and non-port account at the Major Ports for the year 2005-06 is illustrated in Table 4.1 of Appendix-4. The factors (port account and non-port account) contributing towards Pre-Berthing Detention are listed in the table.

3.3.2. Non-Working Time of Vessels at Berth

Definition:

Non-Working Time is defined as sum of the idle time from the time of berthing to start of work, idle time during ship operations and idle time taken from the time of completion of operations to sailing from berth together.

Average Non-Working Time on port account and non-port account at the Major Ports for the year 2005-06 is listed in Table 4.2 of Appendix-4. The factors (port account and non-port account) contributing towards Non-Working Time are listed in the table.

3.3.3. Turn Round Time (TRT)

Definition:

Turn Round Time of a vessel refers to the time the vessel reports at the anchorage to the time it sails out from the berth.

Average Turn Round Time on port account and non-port account at the Major Ports for the year 2005-06 is listed in Table 4.3 of Appendix-4. The factors (port account and non-port account) contributing towards Turn Round Time are listed in the table.

From the data pertaining to the above three port efficiency parameters, it is observed that average PBD, NWT and TRT values, especially on non-port account, are quite high, indicating that ships have to wait at anchorage for berth to avail of services and the overall underutilization of resources at Indian ports. Ideally, the berths should wait for ships and not the ships for berth. At international ports, there is no concept of PBD as sufficient infrastructure is available to service the vessels as and when they arrive. NWT as also TRT at international ports is low.

3.3.4. Output per Ship Berth Day

Definition:

The average Output per Ship Berth Day is defined as the ratio of the aggregate cargo to the total number of berth days.

Average Output per Ship Berth Day (OSB) at the Major Ports for the year 2005-06 is listed in Table 4.4 of Appendix 4. The low values for OSB indicate lower productivity and there is enough scope for improving the same by way of minimizing the Non-Working Time.

3.3.5. Efficiency Parameters – Inter-Dependency

The port efficiency parameters, namely Turn Round Time (TRT), Pre-Berthing Time (PBD), Output per Ship Berth Day (OSB) and Non-Working Time (NWT), are inter-dependent and factors affecting one parameter will have cascading effects on the others. The main parameter of TRT can be fairly taken to indicate port efficiency since it reflects all the other components effectively. To make understanding explicit, a pictorial representation of the components involved in TRT is shown below:

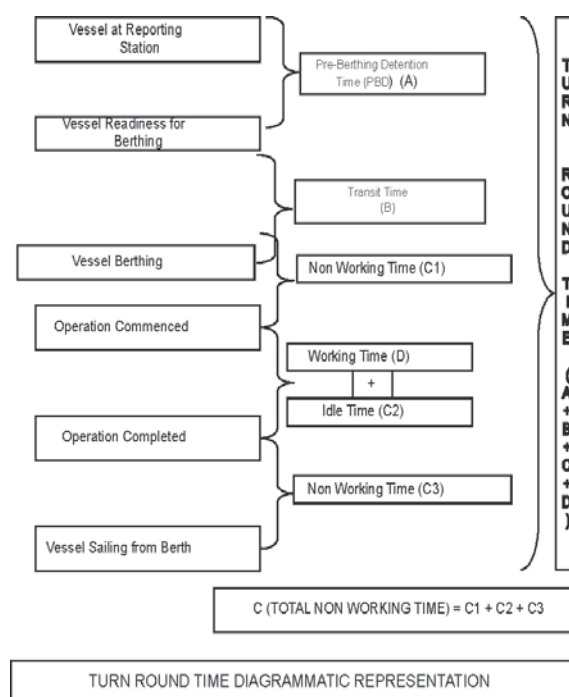


Figure 3.3.5. Turn Round Time Diagrammatic Representation

In terms of time distribution, TRT is the sum of PBD, time spent at the working berth that includes the vessel Working Time (WT) and Non-Working Time (NWT) at berth and operational transit time (time taken for berthing).

The values of the various components involved in TRT (overall) at the Major Ports for the year 2005-06 are given in Table 4.5 of Appendix 4. TRT is taken as an indicator of the overall port efficiency.

A comparative analysis of facilities at international and Indian ports has been carried out in chapter 4. Chapter 5 provides a detailed analysis of various factors attributable to the port, as also other stakeholders, which are contributing to the dwell time of vessels / cargo and also those affecting port efficiency parameters. Initiatives already taken by the Department of Shipping have been listed in chapter 6. Specific recommendations to address the issues involved have been listed with target dates for implementation by the ports and other stakeholders in chapter 7.

4. International and Indian Ports – A Comparative Analysis

4.1. Standards at some International Ports

To make a comparative analysis, the performance of our ports and some of the international practices adopted in port operations for achieving higher efficiency and quick turn round time of resources were studied.

Ports are large entities, whose characteristics are defined by the demands of the local economy. It is observed that the Port of Rotterdam is predominantly an industrial complex comprising of industries and a port to cater to the demands of domestic as well as continental trade. It handles a wide range of cargo mix with separate state-of-the-art terminals for containers, liquid bulk, dry bulk and break bulk. On the other hand, Singapore, which is along the world's busiest maritime route, has four container terminals that handle close to 23 million TEUs of which 85% is transshipment container traffic and only 15% is domestic consumption. Port officers deputed to study these ports confirmed the vast difference in the quality of infrastructure and superstructures characterized by state-of-the-art facilities ably supported by the IT infrastructure available at these ports in comparison to Indian ports. There is a large disparity in the volume of cargo handled at the Ports of Rotterdam and Singapore as shown in Table 4.2.3.1 and the volume of cargo collectively handled at all Indian Major Ports.

International seaports are transportation gateways that are run as commercial enterprises the private sector and supported for infrastructure by public bodies wherein market forces play a large part in their success. The success of these enterprises is not confined to

the port owners only but by entire regional economies since strong ports stimulate trade and help attract inward investment. Further, these ports are complemented by excellent transport connections through barge / feeder vessels and road / rail networks. To make a direct evaluation of the prevailing situation in international ports, two separate study teams visited the Port of Rotterdam and Port of Singapore. In general, successful international ports are characterized by optimized business process flows complemented by electronic information exchange amongst the stakeholders through the latest in information technology, higher levels of mechanization, huge volumes of cargo and vessel traffic, intermodal connectivity and vast space for storage and processing. Another key feature is the presence of huge industrial complexes within the port premises. Thus, the growth of both the port and industries complement each other.

4.2. International Ports - Overview

4.2.1. e-Environment with ERP for Port Operations

The entire business process at the port is conducted in an e-environment, which is characterized by no manual intervention whatsoever. The leading ports have been successful in simplifying or eliminating complex and cumbersome import procedures, policies and practices and have evolved practices that are in tune with the ever-changing and dynamic nature of international trade. With globalization and a highly competitive environment, international ports have ensured that their core function of seaport operations is cost effective, maximizes

profit and, at the same time, ensures quicker turn round of ships and encourages investment.

International ports are bound by the International Maritime Organization's (IMO) convention on the facilitation of International Maritime Traffic (FAL) of 1965. The purpose of the FAL convention is to facilitate maritime transport by simplifying and minimizing the formalities, documentary requirements and procedures associated with the arrival, stay and departure of ships engaged in international voyages. United Nations has established CEFACT, known now as UN/CEFACT, which is its Center for Facilitation of procedures and practices for Administration, Commerce and Transport. The focus is worldwide facilitation of international transactions through simplification and harmonization of procedures and information flow. With the advent of widespread use of information technology, electronic data interchange has come to be referred as "best practice" technology for improving trade facilitation.

Seaports are Customs-bound areas where goods can be released after undergoing certain procedures, including revenue collection. At international ports, Customs procedures are highly simplified and rationalized with emphasis on the speed of clearance of goods to reduce delays in delivery to overseas and local customers. This leads to an overall improvement in import duty administration & clearance of goods. Consequently, cargo clearance will be facilitated resulting in increased revenue as well as supply of relevant trade data for planning purposes. International ports have integrated their business process flows successfully with Internet information technology.

The entire gamut of information exchange amongst the stakeholders involved in seaport

operations has been streamlined through adoption of the Port Community System. The core workflow of port logistics is described in the diagram given below:

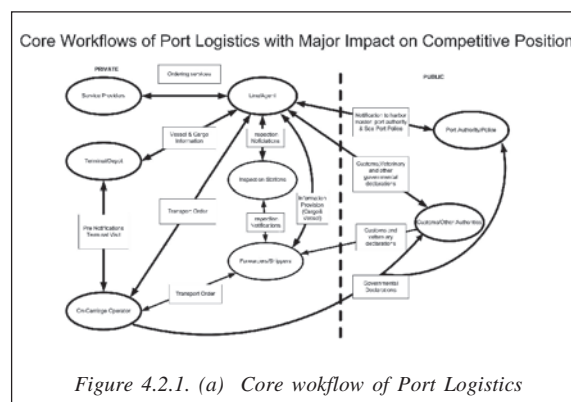


Figure 4.2.1. (a) Core workflow of Port Logistics

The Port Community System run by M/s Port Infolink at Port of Rotterdam and M/s Portnet at Port of Singapore facilitates the chain integration of the entire process of information exchange amongst stakeholders and maintains their competitive positions in their respective areas. With continuous growth of cargo flows, the availability of a Port Community System is a prerequisite for the successful development of a port. In international ports, Port Community Systems are identified as typical Public-Private Partnership (PPP) investments which have:

- A PCS platform forming ICT infrastructure
- Neutrality
- High investment costs and risks (depending on the scale and complexity of the port)
- A large number of users from different transport sectors which need to share information to perform. Without the initiating/controlling role of the government, only bilateral solutions will be developed.

PCS is characterized by a central platform,

which enables the reuse and integration of data. Information is stored, changed, shared and reused by a great number of customers. A central platform enables powerful and seamless data integration between all major port players and throughout the port logistics chain, communication via both messages and ASP Internet services. A central platform also offers central functionality for all services.

Implementation of the above has led to improvement in the businesses of clients of the port which, in turn, enhances the competitive position of the port by:

- Faster and more efficient transport & handling
- High service levels by less retyping with less mistakes and more focus on service delivery

- Lower staff and administration cost

International ports that have implemented PCS have experienced a significant improvement in their competitive position in the following areas:

- Value for money
- Throughput time & capacity

The document flow for import and export process is given below in the diagram:

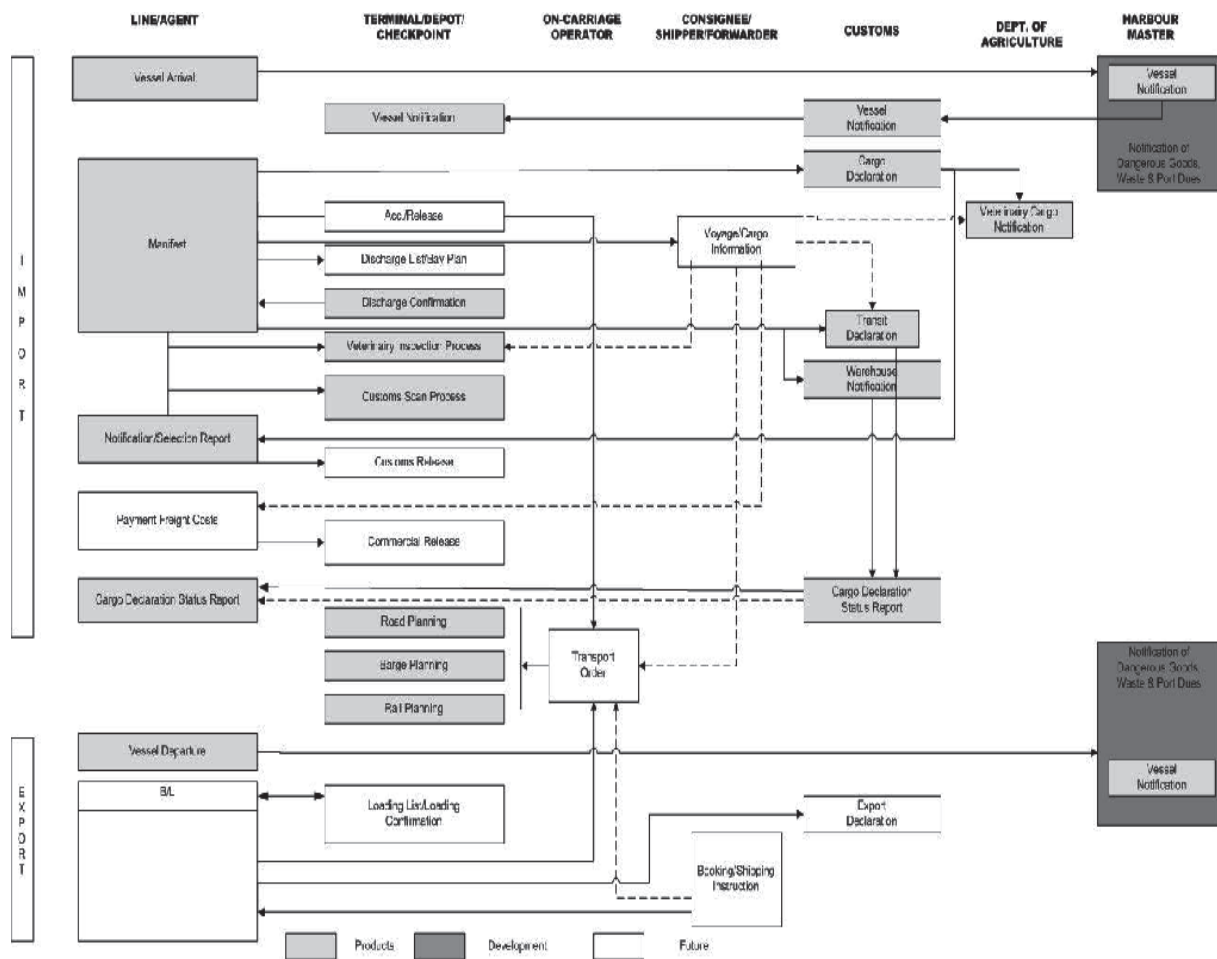


Figure 4.2.1. (b) The document flow for import and export process

- Operational cost
- Service levels & customer focus
- Security

All the formats and message exchanges are designed according to the international norms and standards issued from time to time by UN/CEFACT.

4.2.2. Port Infrastructure and Superstructures

International ports are characterized by sufficient port infrastructure in terms of modern resources, port superstructure and services. The draught available in these ports ensures that neither the size of the vessels nor the nature of cargo is a constraining factor. The norm is that the resources wait for servicing the vessels / cargo.

The infrastructure available at the Port of Rotterdam is:

Feature	Port of Rotterdam
Port Area	10,500 ha
Area of Water	3,500 ha
Total Port Length	40 km
Pipelines	1500 km
Quay Length	77 km
Tank Storage	33.3 million m ³
Terminal (all private)	59
Oil Jetties	122
Dry Docks	16

The superstructures available at international ports are powerful and have the latest technologies implemented. The Quay Cranes are capable of reaching across 22 rows of containers while the yard cranes can reach upto 9m high and are supported by automated systems.

Comparison of Cargo Traffic with International Ports for 2005 (In '000 Tonnes)

Port	Period	POL	Iron* Ore	Fertilizer		Coal		Container		Others	Total
				Finished	Raw	Thermal	Coking	Tonnage	TEUs		
Indian Ports	2004-05	126442	76195	3846	5831	33322	19237	54761	4233	64112	383746
	2005-06	142087	79171	6624	5570	37658	21101	61980	4613	69376	423567
Port of Singapore	2004 Jan-Dec	129300	These above commodities are included in the category others.						21300	264100	393400
	2005 Jan-Dec	137800							23200	285500	423300
Port of Rotterdam	2004 Jan-Dec	135400	42300	These above commodities are included				82500	8292000	92300	352600
	2005 Jan-Dec	144300	40800	in the category others.				91200	9287000	93900	370200

Source: IPA and information brochures of the Port of Rotterdam & Singapore

Table 4.2.3.1.: Comparison of Cargo Traffic of Indian Ports with International Ports –2005

4.2.3. Quantum of traffic

4.2.3.1. Cargo traffic

In general, international ports have high volumes of cargo traffic with a varied cargo mix. In addition, they cater to huge volume, of transshipment traffic. During 2005, the Ports of Rotterdam and Singapore handled 370 million tonnes and 423 million tonnes of cargo, respectively. Analysis of the cargo mix at these ports indicates that 85% of traffic at Singapore is transshipment for containers. Both these ports are considered to be hub ports of Europe and Asia, respectively.

4.2.3.2. Vessel Traffic

Vessel traffic at international ports is very high. At the Ports of Rotterdam and Singapore, on average, more than 1,50,000 vessels of different sizes, and with different cargoes, call on the port. The draught available range from 12m to 23m, which enables the port to handle even the latest container vessels and tankers. The number of ship movements amount to over four lakhs at each of these ports.

4.2.4. Dwell Time Comparison with International Ports

A comparative statement showing the average dwell time of Indian Major Ports with international ports like Rotterdam and Singapore is listed in the table below.

It is observed that the dwell time for containers at Major Ports is comparable with that of international ports. At Port of Rotterdam, the port is a component of an industrial complex similar to Special Economic Zones (SEZ) in India. At such ports, dwell time is not a matter of concern.

4.2.5. Level of Mechanization

There is a high degree of mechanization of the facilities involved in port operations especially in cargo handling and information exchange. The workforce is skill intensive and technology driven. The terminal operators and the port authority ensure that terminals are equipped with highly productive cargo handling systems in line with the objectives of the port and demands of the trade. The discharge / loading rate is very high. For instance, the liquid bulk terminal has a discharge of about 1-1.25 lakh tonnes per day. The dry bulk terminal also discharges 1-1.25 lakh tonnes per day. The

Overall Comparison with International Ports

(In Days)

Cargo Type	Major Ports		Rotterdam \$		Singapore		Jurong	
	Import	Export	Import	Export	Import	Export	Import	Export
Dry Bulk	38	27	14-30	14-30	-	-	-	-
Break Bulk	15	17	60	60	*0.85	*0.85	2	*0.9
Container	1.88	3.78	4	3	*0.6	*0.6	*0.8	*0.8
							**2	**2

\$ Dwell Time here is not constraint *Transshipment **Local day

Table 4.2.4.: Comparison with International Ports

number of quay cranes deployed per vessel is around 3-4 and the productivity of these cranes is between 25-30 moves per hour. The container parking yard is equipped with sufficient number of yard cranes and other accessories. The port gates at Singapore have an automated system in place, which facilitates a flow through system. Further, the cargo handling systems are supported by modern technologies. At Rotterdam, a container terminal is fully automated extensively using information technology, especially robotics.

4.2.6. Space not a constraint

Space is not a constraint as the ports have sufficient space for cargo storage and allied activities and thus, congestion is not a factor. In Rotterdam, the port occupies only 60% of the huge industrial complex and the remaining 40% comprises of various industries. The port meets the industries' logistics requirements for movement of goods. In Singapore too, the port complements the various industries that have established themselves adjacent to the port.

4.2.7. Evacuation of Cargo

Successful international ports are transshipment intensive points and evacuation is mostly by feeder vessels in case of Singapore

and barges in case of Rotterdam. Intermodal connectivity of seaside with landside is seamless. At the Port of Singapore, a highly innovative flow through gate system is in place that has eliminated the problem of congestion at the port gates. The detail of the Flow Through Gates are in Appendix-9. Delivery and admittance of containers is by appointment and a highly automated gate system ensures hassle free entry / exit in and out of the port. Even the Port of Rotterdam has cargo evacuation by appointment that is a saving for all concerned in the trade. Further, the port evacuates liquid cargo by pipeline.

4.2.8. Regulatory Practices

Ports, as mentioned earlier, are Customs-notified areas and are, therefore, bound by Customs regulations for cargo clearance. Unlike Indian ports, international ports have minimal but effective customs clearance procedures that do not inhibit port operations.

4.3. A Comparative analysis of International Ports viz-a-viz Indian Major Ports

An analysis of the facilities available at international ports as compared to Indian ports shows the following major differences.

Indian Ports vis-à-vis Port of Rotterdam

Sl.No.	Indian Ports	Rotterdam Port
1	Evacuation / Aggregation of cargo Cargo is predominantly by road and rail only.	Most of the bulk cargo and container movement through barges accounts for 50-60% transportation because of excellent inland water networking. Intermodal connectivity by rail / road is seamless.
2	Level of Mechanization The extent of mechanization is less in Indian Major Ports	The level of mechanization is very high with the latest technologies applied in all spheres.
3	Location of Port based Industries Most of the manufacturing firms are located away from the ports.	Most of the manufacturing units are located within the Port, thereby the evacuation is very fast.

Indian Ports vis-à-vis Port of Rotterdam

Sl.No.	Indian Ports	Rotterdam Port
4	<p>Availability of storage space Land is very scarce in Ports. Hence, evacuation has to take place.</p>	As so much of land is available at the Rotterdam Port, the more the number of days cargo lies inside the Terminal, the higher the revenue to the Terminal Operator.
5	<p>Availability of Resources We have dedicated terminals with less number of berths.</p>	There is no concept of pre-berthing detention as the berths are waiting for ships and they have longer quay lengths.
6	<p>Information Exchange EDI implementation is partial. Too many human interfaces and manual exchange of documents.</p>	The total EDI networking is complete and total and hence, there is no physical movement of paper from any place. Human intervention is almost nil. All payments are also done electronically.
7.	<p>Customs' regulations for cargo clearance: All Customs formalities have to be completed in the respective port / CFS itself.</p>	Under the European Union Customs formalities, Customs clearance need not take place at the Port itself, it may be done beyond the port premises.
8.	<p>Work Processes: Work flow is manual and partly computerized and ERP is being envisaged for implementation.</p>	The entire processing is computerized and enterprise resource planning software was implemented years back.

Indian Ports vis-à-vis Port of Singapore

Sl.No.	Indian Ports	PSA Singapore
I	<p>Availability of Physical Infrastructure:</p>	
1	The total number of Terminals for handling containers at India's biggest container port - JNPT - is three, having linear quay length of 600 Mtr., adequate for nine vessels at a time.	PSA Singapore has four terminals having quay length of 11,754 mtrs which can accommodate about 41 container vessels at a time.
2	The area available at JNPT for the three terminals is about 133 hectares.	The area available at Singapore Port for the four terminals is about 425 hectares.
3	For expansion of area, JNPT is dependant on acquisition of land behind the terminal and the same is fraught with problems of land acquisition and resettlement/rehabilitation.	Though land is scarce in Singapore, expansion of terminal is done by reclamation of land from sea and therefore though costly, can be well planned and is not limited by the constraints of land acquisition.
4	The draft at JNPT is (-) 12m and there is limitation on latest generation vessels.	Maximum draft is more than (-) 16m. and there is no limitation on the most modern and latest generation container vessels.
5	There are draft limitations in the channel.	There are no draft limitations in the channel and the biggest ships in the world can visit Singapore Port at any point of time.
6	The total number of quay cranes is about 8	The number of quay cranes at the four terminals at PSA Singapore is 131.

Indian Ports vis-à-vis Port of Singapore

Sl.No.	Indian Ports	PSA Singapore
II Level of Mechanization:		
1	The level of mechanization at Indian Ports is limited and many cargoes are handled by conventional means. In container stream, the number of quay cranes, reach stackers, trailers etc. are far limited.	The level of mechanization is very high and sophisticated with infusion of latest technology in every sphere of handling of cargo.
2	The equipments are handled by staff deployed at site. The average move per hour is about 20/25. Due to less deployment of cranes, the crane rate (total number of containers loaded/unloaded from a ship in one hour) is about 60/70. This leads to late turn round of vessel and subsequent high dwell time.	The cranes are operated both by staff at site as well as by automation through the Terminals control centre. The moves per hour is about 25-30. They have the maximum reach across the biggest and widest generation vessels. Due to adequate deployment of cranes, the crane rate achieved is 100 per hour. This leads to quick turn round of vessels and, subsequently, a lower dwell time.
III Cargo handling characteristics:		
1	The total volume of cargo handled at Indian Ports in 2005-06 is 423.567 million tonnes. In this, the total number of containers handled is only 4.6 million TEUs of which JNPT, India's biggest container port, handled 2.6 million TEUs in 2005-06.	The total volume of cargo handled at Singapore in the calendar year 2005 was 423.3 million tons of which total containers handled was 23.2 million TEUs. The volumes therefore are simply not comparable.
2	The containers handled are mostly for consumption (import stream) and originating (export stream). The evacuation and aggregation of containers is heavily dependant on the road and rail connectivity and often containers lie in the yard simply because of connectivity problems leading to high dwell time.	Containers handled are mostly transshipment containers and therefore do not leave the terminal. They are at best subjected for inter-terminal transfer and there are no connectivity problems regarding evacuation and aggregation.
3	Cargo for local domestic consumption is generally unloaded from the vessel and stacked in the yard before despatch to adjoining CFS. CFSs are not free trade zones and therefore delays take place for transactions (procedures & payments).	Most containers handled at Singapore are for transshipment and containers for local consumption at Singapore are unloaded from the ship to the prime movers (trailer truck) and is delivered from the hook point itself and dispatched to adjoining Keppel Distripark (CFS, Cargo Distribution Complex). The KD is a free trade zone and therefore no delays take place for transactions (procedures and payments). The KD is also a multi storied CFS with adequate infrastructure for seamless transfer of containers from truck to CFS and vice versa. The KD is located near the PSA terminals and containers can reach any of the four terminals within 5-10 minutes from KD.
4	Containers arriving at JNPT and other Ports in India have to wait at the gate for considerable time for transaction of formalities & congestion. At JNPT the three terminals do not operate as one seamless terminal.	At PSA Singapore, four terminals perform as one seamless terminal with complete horizontal integration. A unique "Flow through gate system" introduced in 1997 permits the trucks to enter the Port terminal within 25 seconds. By this method, about 8000 trailers are handled per day at an average of 700 trailers per peak hour. It is a fully automated and paperless process and is linked electronically to the Port's computerized system (Portnet).
5	For handling multipurpose break-bulk cargo, transit sheds are provided in Indian Ports. Warehouses are not permitted inside the prohibited area and only transit sheds exist near the berth for temporary storage of break bulk cargo. This necessitates double handling and extra cost.	At Singapore (PSA, Jurong), Multipurpose terminals with ample storage and warehouses exist in continuation to the berth for stacking of cargo on short and long term basis. Warehouses are given on long lease to different Logistic Companies to set up different distribution centers. Warehouses are operated as centers for consolidation, packaging, distribution and also designated as free trade zone.

Indian Ports vis-à-vis Port of Singapore

Sl.No.	Indian Ports	PSA Singapore
IV Work Processes:		
1	Much of the bulk and break bulk cargo at Indian Ports is handled by conventional means due to poor infrastructure, deployment of manual labour and archaic methods of handling resulting in low productivity. The workflow is manual with low level of IT penetration. For container handling, an adequate electronic environment with ERP is yet to be computerized in a full-fledged manner. The EDI between Port, customs, shipping lines and users is yet to be commissioned on a common platform. Paper transactions exist in many streams of bulk, break bulk and containerized cargoes.	The entire operation and management of terminals is conducted in an electronic and EDI environment. EDI ensures that there is no paper transaction. The portnet enables ordering of berth and pilot services, documentation, enquiry and tracking, linkage to Govt. and Port authorities systems as well as Port Users existing system, billing etc. Typically, planning begins 72 hours before a vessel arrives when a shipping line applies for a berth and files the stowage plan and connection instructions (transshipment data) through Portnet.
2	All the above contribute to high Turn Round Time of vessel and high dwelling time of cargo/container.	The turn-round time of vessels and cargo/containers is therefore incomparable between Indian Ports and Singapore.
3	There are many human interfaces and manual exchange of documents.	There are no human interfaces and no paper transaction.
4	Indian Ports play both commercial and regulatory roles.	Singapore Ports and Terminals operate purely on commercial basis as corporate entities and the Port Terminal operator does no regulatory function.
V Customs:		
1	Customs formalities have to be completed in the Indian Ports and duties are collected before receipt/despatch of cargo.	At Singapore, the cargo is mostly handled through transshipment and therefore no customs formalities are necessary at the Port.
2	No free trade zone facility is provided at Indian Ports.	The adjoining Distriparks and Warehouses both inside and outside the Port are given the status of Free Trade Zone and therefore no customs formalities are necessary and thus no payment of duty and detention thereof arises.
VI Human Resources:		
1	At Indian Ports, cargo is handled manually with high manning scales for loading & unloading. Multi-skilling is more or less absent. Labour force is not conducive and receptive to mechanization.	Labour force is extremely adaptable and alpha-numeric literate with high degree of IT awareness. The labour is multi-skilled and better disciplined.
2	Labour in Indian Ports is mostly provided/facilitated by the Port and deployed by Stevedoring Agents.	Labour is supplied by Stevedoring Agents who operate under licence provided by the Port and local Govt.

4.4. Business Process Flow at Indian Container Terminals

Indian Major Ports have reengineered their business flow processes for containers incorporating the best practices in international ports, and at the same time, abiding by complex regulatory practices. There is scope for further optimizing the processes. A comparison of the process flow amongst the major terminals such as Jawaharlal Nehru Port Trust (JNPT), Gateway Terminals India (GTI), Chennai Container Terminal Private Limited (CCTPL) etc. indicate that the flow is almost similar in these container terminals due to the fact that their operations are run based on terminal operating systems such as NAVIS, CETOS etc. Such systems are basically designed on the best practices adopted from international ports and, hence, the basic framework of operations is the same along with certain customizations to meet specific needs of the terminal. Given below is the workflow at the following three terminals – JNPT, GTI, CCTPL.

The workflow adopted by Jawaharlal Nehru Port Trust for their export containers is:

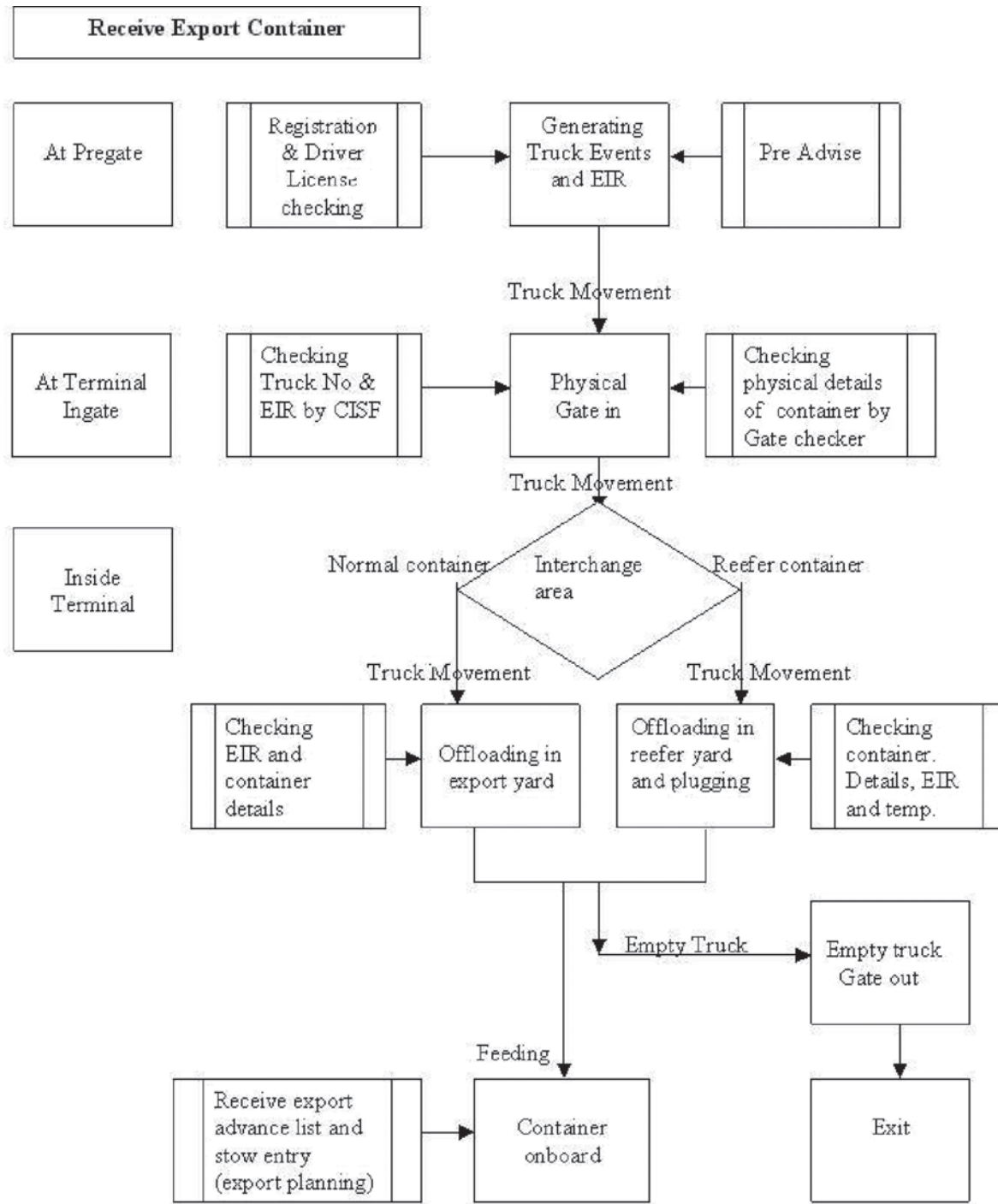


Figure 4.4. (b) Workflow adopted by JNPT – Export Containers

GTI Workflow:

Process Flow Delivery Container (Full/Empty)

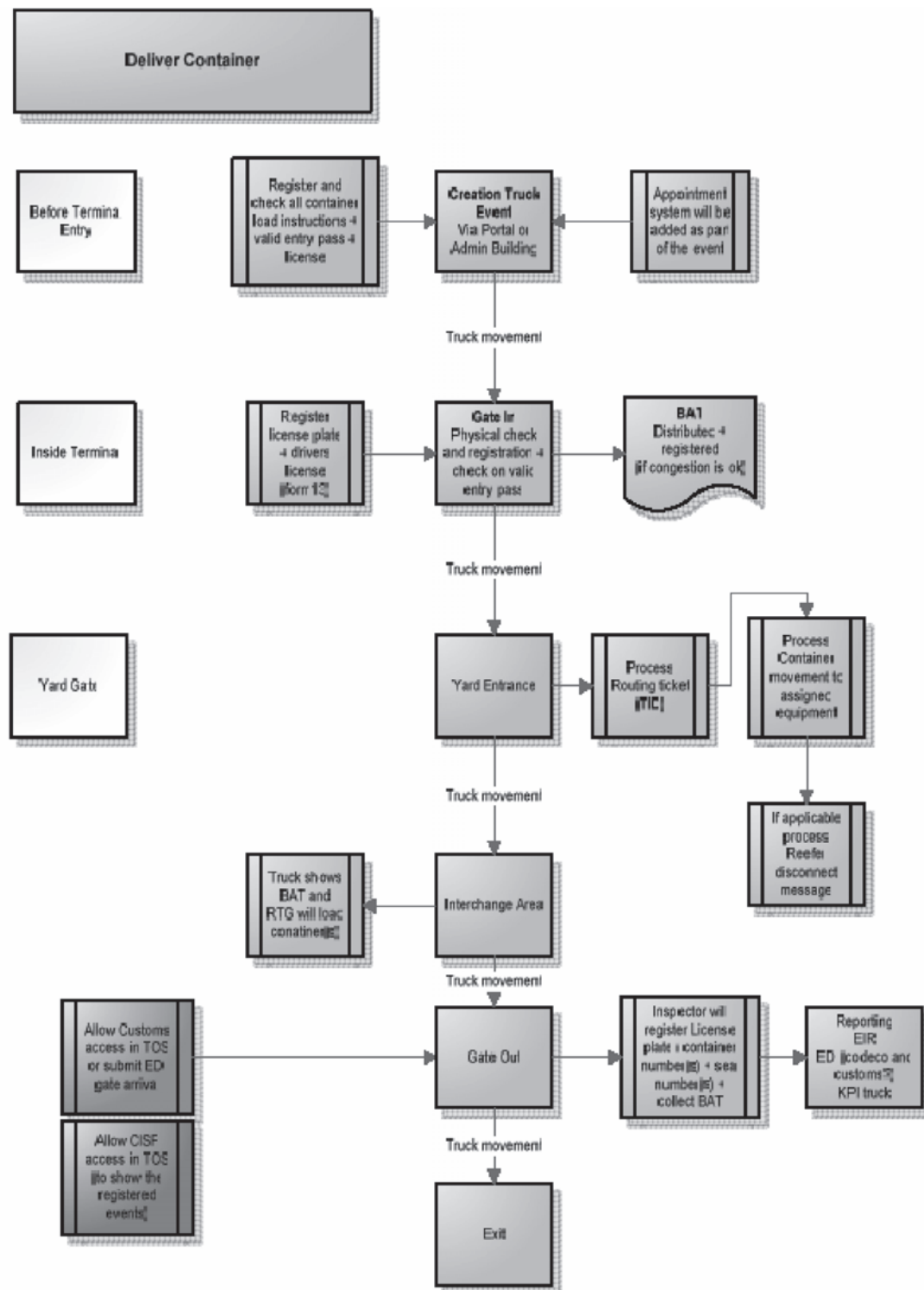


Figure 4.4. (c) Process flow Delivery Container - GTI

Process Flow Gate In Container

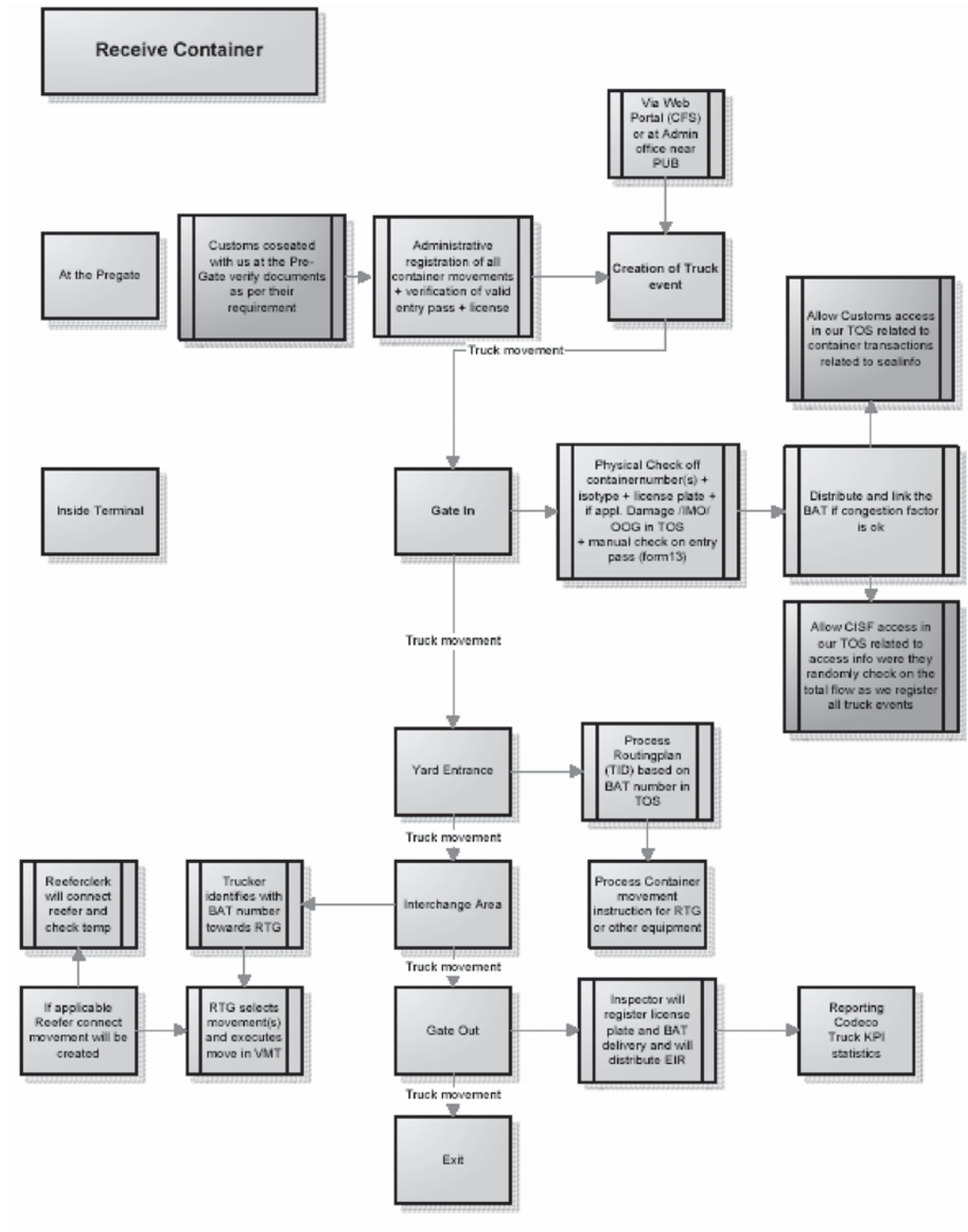


Figure 4.4. (d) Process flow Gate In Containers - GTI

CCTPL Workflow:

Import Procedure Flow Chart

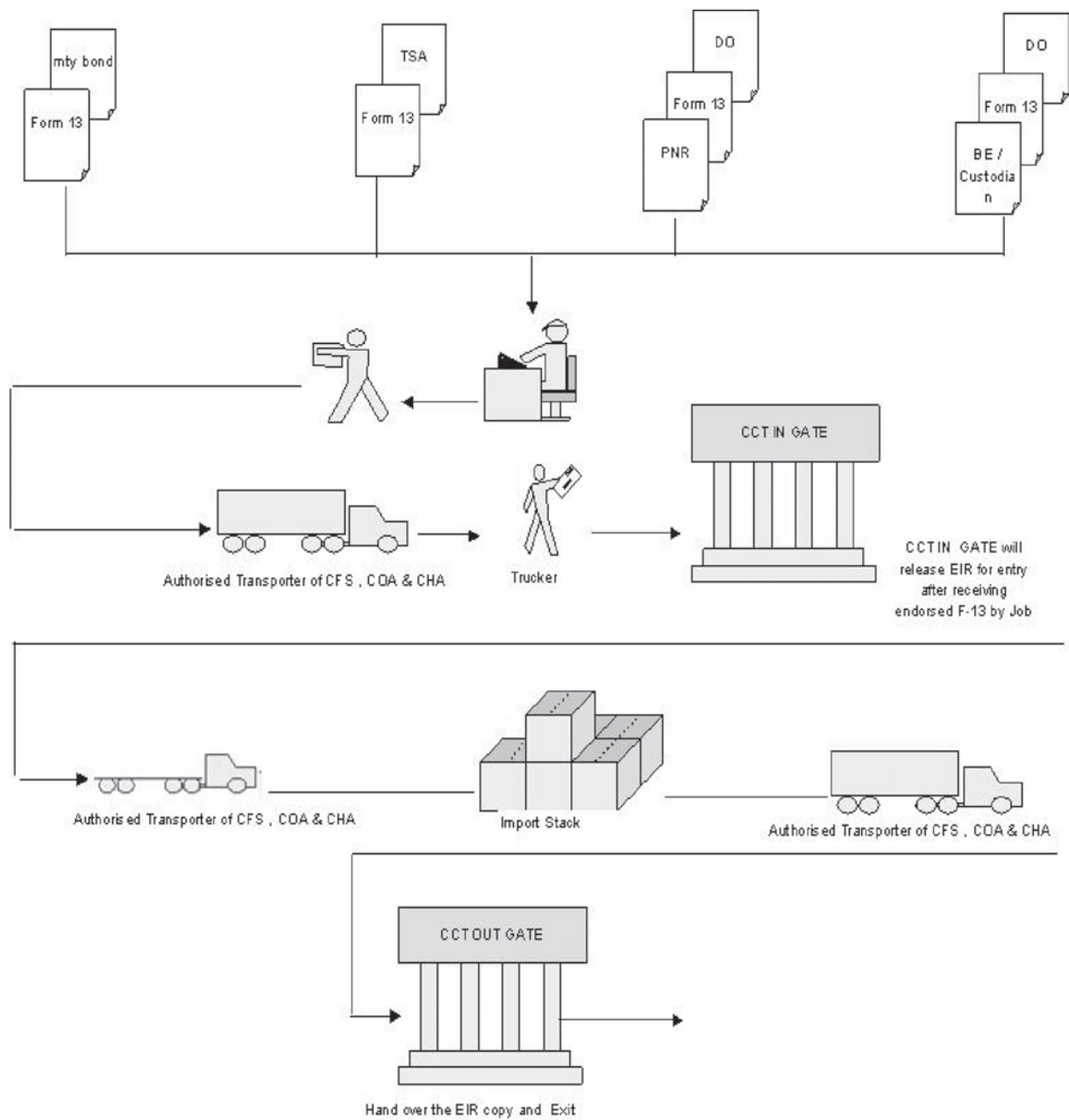


Figure 4.4. (e) Import flow of Containers at CCTPL

Export Procedure Flow Chart

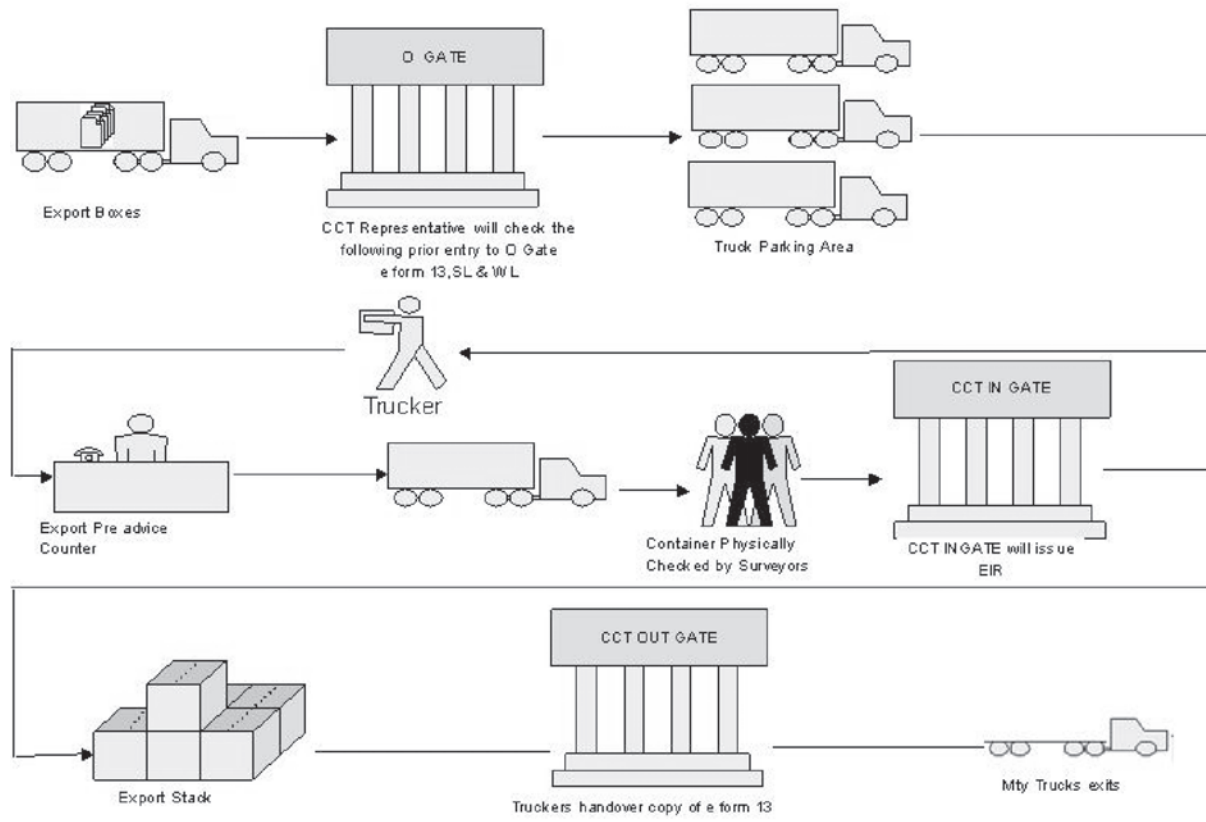


Figure 4.4. (f) Export flow of Containers at CCTPL

4.5. Constraints in achieving the international norms

In comparing the dwell time at international ports such as Singapore and Rotterdam with those of Major Ports in India, it is observed that there are vast differences in the availability of infrastructure, connectivity and electronic information exchange. Therefore, the implementation of the recommendations may not bring the average dwell time of cargoes and efficiency at Major Ports at par with international standards because of the following reasons:

- The aggregation / evacuation of cargo at international ports is very quick due to seamless connectivity with other modes of transport, the excellent state of the rail / road network, inland waterways, higher carrying capacity of wagons / road carriers, the level of mechanization in the various cargo handling subsystems etc. Most of the international ports handle bulk cargoes like coal, iron ore etc. via conveyor / mechanized systems from the mines to the port, which implies a very low aggregation time.
- International ports do not face the constraints of space and congestion within and outside the port.
- Due to the presence of adequate infrastructure, planning of vessels and cargo is done 72 hours in advance and through electronic means by shipping lines, haulers, freight forwarders, shippers and government agencies. The Port Community System allows ordering of berths and pilot services, documentation, enquiry / tracking and billing. The berth system, ship system, yard planning system and resource allocation system along with the flow through gate is operated electronically. This can be introduced and put into operation at Indian ports only after a comprehensive introduction of EDI which will facilitate paperless business transaction.

5. Analysis of Factors Contributing to Dwell Time and Port's Efficiency

In this report, the factors contributing to dwell time and those affecting efficiency parameters at Major Ports are grouped into two categories, namely factors attributable to the port and those to other stakeholders.

5.1. Analysis of Factors Attributable to Port

The following factors affecting dwell time and port efficiency parameters are attributable to the port.

5.1.1. Infrastructure Constraints

5.1.1.1. Inadequate Port Capacity

The total cargo handling capacity of Indian Major Ports for 2005-06 has been estimated at 660 million tonnes as against 397.5 million tonnes in the year 2004-05. The total cargo handled at these Ports for 2005-06 and 2004-05 was 423.13 million tonnes and 383.66 million tonnes, respectively. While the cargo handled was within the overall capacity available at the ports, a closer analysis reveals that in some of the most important streams of cargo, ports are handling more than their designed capacity. The growth in cargo has been phenomenal whereas the concurrent growth in capacity has not been able to keep pace with it. The details about the capacity and cargo handled are given in Table 4.6 of Appendix-4. The growth in container traffic and the lack of corresponding growth of capacity can be cited to illustrate this point. Further, the ports are projected to handle increased volumes of traffic in view of the anticipated GDP growth of 8%. Therefore, immediate enhancement of port capacity is imperative. Inadequate port capacity leads to

congestion thereby resulting in increased TRT and dwell time.

5.1.1.2. Inadequate Navigational Aids and Facilities:

Certain ports like Mumbai are already equipped with Vessel Traffic Management System (VTMS), whereas most of the others are lagging behind in this regards. At most of the international ports, VTMS facilities are used for regular berthing / deberthing of ships.

Most ports have a sufficient number of marine crafts like Tugs and Launches and marine crew / pilots for handling the present vessel traffic. These may not be sufficient to meet the increased vessel traffic in the coming years. Therefore, there is a need for replacing the existing crafts with sophisticated and modern marine crafts and augment the fleet strength to meet the projected growth in traffic.

At international ports, the floating crafts and their services are privatized but remain under the command of the Harbour Master.

5.1.1.3. Bunching of Vessels

The bunching of vessels may arise due to:

- **Entrance Channel Restrictions:** Channel width restrictions leading to unidirectional vessel movements cause waiting of vessels for service.
- **Non-availability of berth:** Due to want of suitable draught or the available berth being occupied by another working vessel, the vessels calling at Indian ports have to wait for want of berths. The number of dedicated berths available

for handling specialized cargoes / containers are limited, e.g. berths with pipeline for handling liquid cargo, mechanized ore handling plants for iron ore etc.

5.1.1.4. Poor Road Network within the Port

The roads within most of the ports are narrow and are not designed to handle the present kind of traffic and load. This results in traffic congestions leading to delays in feeding / evacuation of cargo, which in turn lowers the productivity of vessels. Lack of route planning for optimization of existing road network with suitably located weighbridges, along with excessive criss-crossing of roads, result in multiple congestion points.

5.1.1.5. Low Cargo Handling Capabilities

In general, the cargo handling capabilities of ports is low. Productivity at berth is very low in many ports on account of a combination of the following factors:

5.1.2.1. Inadequate Cargo Handling Equipments / Machinery

The cargo handling equipments / machinery at the ports were commissioned years ago and have outlived their designed lifespan. The

productivity of these equipments does not conform to the requirements of the modern vessels now calling at ports. Further, the right type of cargo handling accessories like container spreader, special gears for handling wood pulp, newsprint, logs etc., required by the trade are either not available or are insufficient.

Sophisticated container handling equipment like Quay Gantry Crane (QGC) is available only in few ports like Chennai, Cochin, Mumbai, Vizag and JNPT and the rest of the ports are left to handle containers with conventional cranes or those belonging to vessels. Further, other types of container handling equipment at the terminal like Rubber Tyred Gantry Crane (RTG), Rail Mounted Gantry Cranes (RMGC), Top Lift Trucks (TLTs) and Reach Stackers (RS) are yet to be provided in sufficient numbers at most of the ports.

For example, the QGC productivity on container vessels at Indian and international ports are as under:

For ports predominantly handling dry bulk cargoes, productivity depends on the capacity of wharf cranes and the grabs. These are insufficient to cater to the needs of all the users. It may not be economical to procure all

Details of QC Productivity and vessel rate

Port	Quay crane productivity (No. of moves/hr.)	Vessel rate (No. of Container/hr.)
Indian Ports	20	40 @ 2 QC/Vessel
Port of Rotterdam	25	70 @ 3 QC/Vessel
Port of Singapore	25-30	100 @ 4 QC/Vessel

Table 5.1.2.1.: Details of QC Productivity and vessel rate

equipment, but depending upon demand, the port can either procure or outsource the same.

5.1.2.2. High Down Time of Equipments

The equipment available at ports suffers from frequent breakdown due to poor maintenance policies, i.e. reactive instead of preventive maintenance. The large response time, non-availability of spares, dependence on proprietary parts and cumbersome purchase procedures result in large down time of equipment.

5.1.2.3. Low Labour Productivity

A one-to-one comparison with each of the Indian ports or with other international ports for labour productivity is not possible as it depends on various factors like degree of mechanization, infrastructure, working conditions etc., which vary from port to port. The manning scale for handling various commodities is based on fixed gang composition at all ports. Further, the manning scale of the gangs is disproportionate to the requirements, enforcement of discipline amongst the unionized workforce is difficult and poor work ethics such as the tendency to report late / break early at the point of posting lowers individual as well as the gang's productivity in the shift.

Labour productivity is measured in terms of output per gang shift which is the tonnage achieved by one gang per shift. Average output per gang shift for all Indian Major ports is 493 tonnes for the year 2005-06.

5.1.2.4. Shortage of Storage Space

Ports are facing acute shortage of storage space to implement their expansion plans for handling additional cargo as economic activities around most of the ports have increased to a large extent, burdening the city infrastructure. As a consequence, cargo aggregation / evacuation is

seriously affected. The lack of storage space affects the discharge / loading rate of the vessel.

5.1.2.5. Regulatory restrictions on operation time

The time lost in meeting the basic needs of workers during the shift in spite of introducing the concept of reliever causes delays in operations. Major Ports in the country are not working 24 X 365 on account of statutory holidays, time lost during shift changeovers etc. Safety regulations further restrict the handling of certain commodities only during daylight hours like hazardous cargo and over-dimensional project cargoes.

5.1.3. Low IT Application

5.1.3.1. Insufficient IT implementation in port operations

Resources at the disposal of the port are distributed and underutilized in the absence of an enterprise resource planning system. This results in some resources being extensively used while others are idle, waiting for the availability of other resources. Further, problems are multiplied due to partial automation of the processes, voluminous documentation, inconsistency in data, redundant data entry, associated delays in processing and human errors of judgment / calculation. The information exchange to different levels of operational tiers continues to be manual leading to duplication of work and redundant bookkeeping. The importers / exporters do not avail the facility of advance online filing of documents with Customs. Consequently there is lower productivity and longer Non-Working Time at berths. International ports like Singapore and Rotterdam are supported by IT resource planning system along with a vibrant Port Community System such as Portnet, Port Infolink etc., resulting in higher productivity levels.

5.1.3.2. Partial Implementation of EDI

On paper, all Electronic Data Interchange (EDI) messages with Customs are being exchanged at many Indian ports. However, some ports do not possess the software infrastructure to utilize / generate messages so as to benefit in terms of electronic information exchange even with at least one stakeholder, namely Customs.

Implementation of EDI, in essence, should facilitate seamless information transfer amongst all members of the port community including exporters, importers, Customs House Agents, Shipping Lines, Shipping Agents, Stevedores, transport operators, banks, ports, terminal operators, Customs and other organizations / companies in the maritime logistics chain using the Internet. It will enable each member to transfer vital information to its counterpart so as to perform their functions effectively and to improve the overall efficiency of maritime trade and transportation cycle. The above solution should be an integrated port information system characterized by a common / distributed database eliminating redundant data entry, multiple data entry points and the need for frequent data verification. The details of EDI Implementation are given in Tables 8.1.4 & 8.1.5 of Appendix-8.

Internationally, commercial transaction messages exchanged by business partners of the port community are in standards such as UNEDIFACT. Though information technology has facilitated the instant access and transfer of information through EDI, in India, real time implementation of EDI is minimal and consists of the proprietary message exchange format formulated by Customs. This is not compatible to any of the international standards, i.e.

UNEDIFACT. The port community information exchange is a combination of paper and electronic components with a mismatch in speed causing communication gaps amongst the stakeholders. This information bottleneck is estimated to contribute to about 40% of the documentation.

The present status of EDI at Major Ports and the types of message exchanges between the stakeholders, including Customs, have been enumerated in Appendix-8.

5.1.3.3. Too many Manual Documents

Paper based systems with manual processing results in redundant record keeping, delayed information transfer and voluminous documents. Each stage of documentation is closely associated with the corresponding documentation of Customs. Unlike other stakeholders in the supply chain, the activities of the port are subjective to the completion of certain activities of other statutory bodies since the port is only a custodian of cargo. There are 12 Pre-Arrival Documents while the import and export processes have 16 and 13 major documents, respectively, that are to be completed before cargo can exit the port premises. Various documents involved in clearance / shipment of goods are listed for each activity with the names of agencies involved and time taken for completion of respective activity in Table 1 of Appendix-5. Further there are certain mandatory / statutory documents like import manifest, bill of entry, import license (for restricted items), shipping bill, commercial invoice, packing list etc. which are also required by Customs. Though some of these documents like IGM, B/E, S/bill are filed electronically through Customs EDI system, manual copies are demanded.

5.1.3.4. Systems and Procedures

The systems and procedures in vogue at the ports need simplification to facilitate e-environment transactions. At present, they are characterized by cumbersome physical data verification, modifications and artificial checks & balances leading to a delay in the processing of documents and completion of business transactions. The system is burdened with a scope for personal interpretation instead of simple logic. The process of filing of documents, calculation of port charges, anomalies in the classification of cargo, procedures for refund etc. are some of the issues that need to be addressed. Further, the overlapping roles of various departments have forced various stakeholders to file documents with multiple departments of the port and Customs as well as with other stakeholders. Though many ports have introduced single window processing for providing services under a single roof, the user still has to interact with different departments individually. The entire process is time consuming and can be done away by introduction of an e-environment.

5.1.3.5. Limited Time for Payment and Documentation

For most of the services, the documentation and payment have to be completed during working hours of administrative sections, i.e. 1000 – 1700 hours, which renders services being unavailable for a minimum of 17 hours each day. This constrains the process of cargo delivery / admittance.

5.2. Factors Attributable to Other Stakeholders

The following factors affecting dwell time and

port efficiency parameters are attributable to other stakeholders.

5.2.1. Cargo Evacuation / Aggregation Constraints

5.2.1.1. Non-Aggregation of Cargo in time

Shippers are unable to declare cargo readiness in spite of the arrival of vessels at anchorage due to non-aggregation of cargo on account of constraints like want of space, congestion on the land-sea interface, non-supply of cargoes by the exporters etc.

5.2.1.2. Slow evacuation of cargoes from the areas leased / licensed to Users

At certain ports, land is made available by the port to shippers / importers on rental for aggregating / storage of cargo. Importers tend to retain the cargo at the allocated plots or tank farms till a suitable buyer is found. In short, the port area is used as a warehouse of the trader resulting in unavailability of precious space for freshly discharged cargo. Want of storage space in such rented areas to accommodate the entire manifested / booked quantity (mainly due to non-clearance of earlier vessel's cargo) forces the Agents to keep vessels idling at anchorage as well as at berths. At international ports such as Rotterdam, there are no constraints of space.

5.2.1.3. Document Readiness

Agents are unable to make the vessel ready for want of completion of Pre-Arrival Documents like filing of Import General Manifest, advance payment of port charges, ISPS declaration etc. Multiple documentation to fulfill the mandatory obligations of various regulatory bodies like Police, Customs, PHO also causes delay.

Though the Customs ICES system provides the facility of advance filing of documents, importers / exporters do not avail of the same.

5.2.1.4. Mismatch at transfer points

The speed at which vessels load / discharge cargo at the berth does not match with the rate of aggregation / evacuation of cargo by consignees from storage point to the hook point and vice versa. For example, for steam coal, the discharge rate of vessels at Chennai Port is 500 T/Hr while trucks of only 10 tonnes capacity are deployed, i.e. at least 50 T/Hr to remove the discharged cargo. The number and capacity of trucks deployed by handling agents for the aggregation / evacuation of cargo are insufficient to meet the requirements. The transporter desists from using trucks with greater productivity to move cargo to and from the transit area.

5.2.2. Statutory Inspection and Procedures

5.2.2.1. Procedural Formalities of Regulatory Authorities

The fumigation of plant products, PHO clearance and independent sample collection by different agencies in an uncoordinated manner forces the vessels to wait at anchorage. Plant Quarantine Authorities report only during the daytime at some ports. The delay in the completion of formalities like Customs examination / clearance hampers the discharge and delivery of cargo, especially in respect of cargo meant for direct delivery.

5.2.2.2. Limited working hours by Customs and other Government Agencies

Assessment and appraisal units of Customs work only for five days a week from 0915 hours

to 1745 hours. The appraiser at the docks, the examination staff as well as the bank where duty payment is made work for only 5½ days a week. Thus, for regular weekends, containers / cargoes are stranded for want of statutory agencies for the processing work.

5.2.2.3. Lack of inspection / testing facilities for Plant / Drugs / Edible items at the port

For edible items, testing facilities with Customs, PHO etc. are inadequate and hence, such items are sent to specialized laboratories which take more than two weeks to issue the certificate and, consequently, delay cargo clearance. Plant quarantine and drug controlling officers are not available near the port vicinity and are to be brought from distant places, which also causes delay.

5.2.2.4. Restrictions by Local Bodies

Restrictions imposed by local bodies affect free movement of heavy vehicles carrying containers / cargo. Cargo laden vehicles are prohibited to commute on the city roads during daylight hours, thereby restricting the movement of cargo in and out of the port.

5.2.3. Deployment of Private Cargo Handling Equipments

Ports have permitted cargo handling agents (Stevedores) to deploy their own cargo handling equipment. Cargo handling agents do not engage high performance equipments for the discharge / loading of cargo from vessels to cut cost. This results in poor performance of vessels at berth.

To take advantage of freight earnings, agents hire very old vessels, especially for bulk cargoes like fertilizers, that are equipped with poor

quality and low performance gears resulting in a very low discharge / loading rate. There are instances of the ship gears crumbling while in operation at berth.

5.2.3.1. Delay in mobilization of equipment & trucks by Stevedores

- **Cargo handling equipment:** Delays in the mobilization of specialized equipment / gears by the Agents increases waiting time.
- **Transportation:** Delays in the mobilization of suitable trucks in required capacity and numbers for the transportation of cargo on the landside increase waiting time.

5.2.4. Inadequate IT implementation

The supporting services offered by private agencies suffer from an inadequate IT infrastructure and generation of information in incompatible form to handle swift information transfer amongst the business partners. Thus, there is delay in processing of documents due to incomplete message exchange.

5.2.5. Shortage of Railway Wagons / Rakes / Heavy duty trucks

Shortage of rail rakes for movement of containers / cargo results in reduced allocation of rakes to different ports and ICDs. This adversely affects quick evacuation of containers / cargo. Prevalence of low axle load wagons and trucks results in less cargo being carried per wagon / truck. The cargo carrying capacity of connecting transport (road or rail) is well below the requirement. This affects the quick movement of goods.

5.2.6. Manual Customs Examination of Containers

Customs inspection and examination process mandates the opening of containers, examination of goods and resealing of containers. This is a time-consuming process adding to the dwell time.

5.2.7. Poor / Inadequate Hard infrastructure (Road / Rail Network)

The road and rail network, and highways in general, are inadequate to handle the kind of volumes of the cargo / containers envisaged, leading to the stretching of meager resources. The carting time for cargoes becomes very high due to poor road / rail infrastructure. Further, congestion in the approach roads to the ports / terminals delays the arrival of export cargo in time. This results in cargo missing the vessels and its forced accommodation by other vessels along with the connected documentation delays. To meet the expectations of the international maritime industry and to reduce the time mismatch between road / rail with sea transports, it is imperative to upgrade the hard infrastructure in the country to reduce the carting time to a great extent.

5.2.8. Other Factors

5.2.8.1. Onboard Stowage of Cargo

The improper cargo stowage in vessels calling at ports results in additional operations due to the shifting of cargoes meant for other ports. Further, this decreases productivity levels at berth and increases time for cargo completion.

5.2.8.2. Draught Survey

The process of conducting draught surveys for bulk vessels by different agencies before the commencement of cargo operations increases the TRT of vessels, especially for vessels carrying cargo for different consignees, resulting in lower productivity.

5.2.8.3. Cargo unlashing and lashing

Vessels that are calling at Indian ports are generally old and have inadequate provisions for secure lashing and unlashing facilities.

Therefore, the time taken for completing this process is more. This is highly relevant for break bulk cargo and more so in the case of exports.

5.2.8.4. Delays in Confirmation of loading / unloading plan

Vessels wait at anchorage for want of confirmation of the loading / unloading plan for liquid bulk cargoes from oil companies.

5.2.8.5. Ballasting / Deballasting

A long time is taken for Ballasting / De-Ballasting due to out-dated equipments onboard the vessel. This delays the vessel's readiness for cargo operations.

5.2.8.6. Liquid bulk vessels delayed for want of Ullage, Flushing and Survey

Storage tanks of oil companies have limited capacity and non-clearance of cargoes before arrival of the next vessel results in the vessels waiting in queue. Pipelines need to be cleaned by flushing and cleared by the receiver's surveyor when the same line handles multiple liquid bulk commodities.

6. Initiatives Undertaken by the Department of Shipping

1. The Inter Ministerial Group (IMG) noted that the Department of Shipping has already undertaken certain significant steps in the area of enhancing port capacity, facilitation of trade and simplification of procedures. The Indian Ports Association performs periodic analysis of the performance of the Major Ports.
2. The Department of Shipping has already initiated the following actions with the overall objective of improving the efficiency at Major Ports and simplification of procedures for the facilitation of trade.
 - i. The process of developing the Port Community System has been commenced in right earnest. National Informatics Centre has completed the feasibility study and the software application developer has commenced the process development.
 - ii. The Major Ports have been advised to install IT infrastructure for exchange of EDI messages with Customs and other stakeholders.
 - iii. Directions have been issued to the Major Ports to undertake process reengineering to discontinue redundant documents, simplify and merge essential documents and facilitate web-enabled services to other stakeholders, e.g. Steamer Agents file the Vessel Arrival Intimation through a port user interface available on the respective ports' websites.
 - iv. Ports have been advised to undertake study of their internal yard planning to enhance the efficiency of rail movement within the port.
3. The Department of Shipping has formulated projects to be implemented by Major Ports through public and private participation for the creation of new port infrastructure facilities to enhance port capacity, procurement of new cargo handling equipments and mechanization of handling systems to increase productivity at Major Ports.
4. Proactive measures have been adopted in imparting training to the workforce to enable multi-skills and multi-tasking.
5. Attractive VRS schemes have been extended to bring down the labour strength to optimum level.

7. Recommendations

A series of recommendations are made for all stakeholders to improve network capacity by deploying advanced technologies that increase gate throughput, expedite cargo / container clearance time and enhance navigation efficiency as well as information transparency at ports. There is a need for a strategy that involves cost-shared deployment of automated communications systems that help enhance capacity utilization and cargo-handling capability, provide real-time information on vehicle / cargo location and improve overall transportation productivity. In general, capacity and throughput improvements involve an array of infrastructure-based solutions that remove access bottlenecks, often involving regional corridor planning, and incorporate a mix of technological, infrastructure modernization, and institutional solutions. The recommendations are made with the objective of reducing dwell time and improving the efficiency of ports, which can be categorized with short term and long term measures.

7.1. Short Term Measures - Port Account

7.1.1. Reduction of Non -Working Time and improvement of Output per Ship Berth Day

There is scope for improvement of the efficiency parameters. The transit time from the anchorage to berth, and vice versa, for ships is inevitable. The delays on account of port such as want of pilots, tugs etc. can be minimized.

The Turn Round Time for the vessels ranges from 1.77-4.82 days. Analysis of the same indicates that the Non-Working Time at ports is

very high and must be reduced. Any reduction in the Non-Working Time has a direct bearing on the Turn Round Time of vessels.

As an illustration Appendix-7 contains a Ready Reckoner showing the impact of 25% reduced NWT and 10% increased OSB, TRT and dwell time.

Some measures that may be adopted to reduce the dwell time are:

Optimization of Cargo Handling Systems & Equipments

In the servicing of vessel and handling of cargo, especially loading and unloading from vessels, the lack of state-of-the-art equipments affect the rate of handling, thereby leading to high Turn Round Time of vessels and high dwell time of cargo. It is therefore necessary to procure more sophisticated and efficient equipments to achieve enhanced efficiency in cargo handling. The draft working group report for the XIth Five Year Plan has a number of projects on the modernization of equipments at ports. The particulars are in Appendix-11.

Synchronization of landside and seaside operations such as optimizing rail operations, removal of road congestion within ports by efficient management of traffic flow etc. is essential. Ports may acquire more dumpers and payloaders if necessary.

(Action: All Ports)

Time Frame: 31.12.2007

Maintenance management of the cargo handling equipments: The ports should develop proper

maintenance schedule to ensure 'zero' breakdown of equipments during the operations.

(Action: All Ports)

Time Frame: 31.12.2007

7.1.2. 24 X 365 – Round the clock port working

Round-the-clock (24 X 365) navigation, operations and documentation is absolutely necessary to ensure higher productivity and eliminate delays owing to restricted working hours and holidays.

Deployment of VTMS and AIS Systems is required at all ports where it is found necessary.

(Action: All Ports)

Time Frame: 31.12.2008

Implement hot seat exchange system to eliminate time lost in shift changeovers and recess hours. Non-Working Time will reduce from 3 hours to ½ hour each day, TRT will reduce by 10%, i.e. 12 hrs for dry / break bulk and 5 hrs for containers.

(Action: All Ports)

Time Frame: 31.12.2007

Each port should undertake a specific study to assess navigational infrastructure requirements and implement the optimum design to ensure round-the-clock navigation.

(Action: All Ports)

Time Frame: 31.03.2008

7.1.3. Strengthen the roads to and within the Ports

Make it mandatory for ports to invest in four lane RCC roads laid using state-of-the-art technology within the port area.

Ports to immediately implement unidirectional

traffic flow to eliminate criss-crossing and traffic congestion.

Approach roads to ports to be of six lanes with no surface crossings.

(Action: MOS / All Ports)

Time Frame: 31.12.2009

7.1.4. Improve labour productivity

Increase the number of hoppers used for handling bulk, especially foodgrains and fertilizers, at all ports which handle dry bulk in conventional methods.

Time Frame: 31.03.2008

Equip workforce with multi-skill & multi-tasking: The workforce to be trained for multi-skills for optimum deployment. All ports to draw a training calendar and implement the training schedule.

(Action: All Ports)

Time Frame: 31.03.2008

7.1.5. IT as a strategic weapon in the Port Sector

Introduce e-environment to eliminate physical interface

The presence of physical interfaces in the import-export process hinders the smooth flow of information transfer leading to lower productivity. Introduce an e-environment based on paperless office to eliminate the physical interfaces in filing of port documents, assessment and payment of charges, flow through gates etc.

(Action: All Ports)

Time Frame: 31.12.2007

Standardisation of Port processes

Ports follow different sequences of action while

processing the requests related to activities carried out therein. In many instances they may not be the most efficient method of carrying out the specified task. Ports will identify best practices for various activities and such processes will be standardized for implementation at all Major Ports. This will be a part of the Enterprise Resource Planning (ERP) system which all ports shall endeavor to implement to enable the efficient utilisation of resources. This would facilitate intra-port information transfer.

(Action: IPA , All Ports)
Time Frame: 31.12.2007

Implement Port Community System

At international ports, although IT services are privatized, the port remains the guiding factor in its implementation. In India, Customs have implemented a proprietary message exchange format to cater to their specific needs. The Department of Shipping is funding the development of a centralized Port Community System through IPA. At the Port of Singapore, a single window environment giving users access to all the statutory bodies is provided. The user files a single document online and the same is communicated to the various statutory bodies for approval online, i.e. one-stop-shop solution for traders that fulfils all export, import and transit related regulatory requirements at a single entry

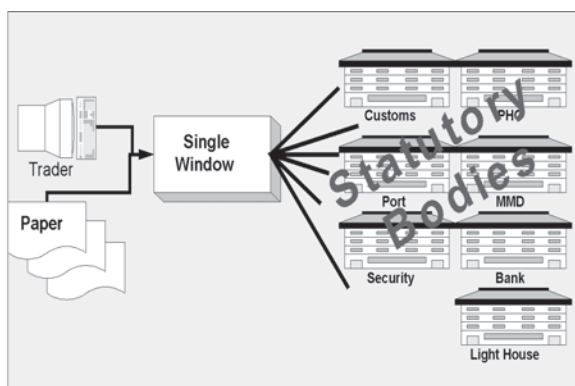


Figure 7.1.7. Single Window Environment for Port Users

point - thus reducing Turn Round Time and labor costs. The diagram above depicts the concept of a single window environment.

The extension of this Port Community System is recommended for implementing a single interface for stakeholders to interact with all Government agencies with uniform standards abiding by UNEDIFACT.

The Port Community System should enable the:

- Ordering of berth and pilot services
- Documentation
- Acceptance of digitally signed documents
- Enquiry and tracking
- Linkage to Government and port authorities systems, as well as Port Users existing systems
- Billing

Exercising IT as a strategic weapon would enhance the visibility of the port and eliminate 23 person-to-person interfaces along with 50 minutes in Pre-Arrival, 23 hours in import and 15 hours in export documentation.

(Action: IPA, NIC)
Time Frame: 31.12.2007

7.1.6. Norms for Stevedoring License

A minimum set of equipments and gears is to be made mandatory for granting Stevedoring License.

A minimum set of transport vehicles of higher capacity are to be owned / hired by stevedore to ensure the transfer of larger volumes in shorter time and also to decongest the ports.

(Action: MOS)
Time Frame: 31.12.2007

7.1.7. Creation of Off-Dock Facilities for Bulk / Break Bulk Cargoes

To create more off-dock storage and bonded

warehousing facilities outside the port limits for storage of bulk and break bulk cargo to decongest city based ports in a phased manner.

(Action: All Ports)

Time Frame: 31.12.2008

7.2. Short Term Measures – Non-Port Account

7.2.1. 24 X 365 – Round the clock port working

To make 24 X 7 working effective, governmental agencies - like Customs, Plant Quarantine, PHO etc. - and other stakeholders - like shipping lines, importers, exporters etc.- must engage in 24 X 365 working through the deployment of a mechanism to install a skeletal system which can perform all the activities, round-the-clock, on all days. For example, Customs have identified 13 major locations for 24 X 7 Customs clearance, which needs to be extended to 24 X 365 on a routine basis including the facility for examination, duty assessment and payment, Out of Charge etc.

(Action: All Stakeholders)

Time Frame: 31.03.2008

7.2.2 Augment Marine Resource Handling Capabilities

Marine resources, like floating crafts, tugs and crews, are just adequate to sustain the present vessel traffic. But to meet the projected escalation in traffic, it is recommended that superior and higher bollard pull capacity tugs (40 tonne bollard pull) may be acquired to improve the operational efficiency in pilotage and towage. Availability of pilot staff is sometimes an impediment in ensuring just-in-time service. As a matter of policy, pilot cadre should be strengthened. Alternatively, entire services of the pilotage can be outsourced / privatized to

provide just-in-time service for ships.

(Action: MOS, All Ports)

Time Frame: 31.12.2009

7.3 Estimated Reduction

Dwell time of cargo is impacted by a number of factors working concomitantly. These factors have been clearly stated at the beginning of the report. The recommendations enumerated in the previous section would bring considerable reduction in dwell time. The expected reduction is shown in the table below. The reduction estimated will be achieved only if all recommendations are executed in the stipulated time frame. It is not possible to establish a mathematical cause and effect relationship between any recommendation and its impact on dwell time. The expected time frame for implementation of the decision has been indicated in the preceding section.

- The reduction is to be achieved within 3 years.
- Envisaged reduction in dwell time for vessels (TRT) - by 0.9-1.3 days.

7.4 Milestones for implementation of the Recommendations

Measures proposed for Expected Reduction in Dwell Time by 30.06.08

- 1) Synchronisation of operations at landside and seaside.
- 2) Maintenance schedule for cargo handling equipments ensuring zero breakdown.
- 3) Implementation of hot seat exchange system.
- 4) Increase the number of hoppers wherever necessary in the cases of ports handling bulk cargo specially food grains.
- 5) Equipping work force with multi skills for

Expected Reduction in Terminal Dwell Time

(In Days)

Cargo Type	Present		Expected		Expected		Expected	
			by 30.06.08		by 30.06.09		by 30.06.10	
	Import	Export	Import	Export	Import	Export	Import	Export
Dry Bulk	3.23	3.57	2.68	2.82	1.97	2.11	1.60*	1.70*
Break Bulk	5.62	6.6	5.12	6.10	3.31	4.10	1.50*	3.30**
Container	1.88	3.78	1.67	3.57	1.33	2.75	1.00	1.50

* Importers to complete documents and obtain Custom Out of Charge within one day of landing of cargo at the terminal.

** Exporters to complete documents and obtain Let Ship Order from Customs / readiness of ship to receive cargo, within one / two days from the date of receipt of cargo at the terminal.

Table 7.4.: Expected Reduction in Terminal Dwell Time

improved productivity and optimum deployment. Ports to draw training calendar for the workers.

- 6) Introducing e-environment to eliminate physical interface.
- 7) Implementation of Port Community System.
- 8) Setting up Norms for Stevedoring License to improve efficiency.
- 9) 24 X 365 round-the-clock working.

Measures proposed by 30.06.09

- 1) Deployment of VTMs and AIS systems at all ports
- 2) Improving the bulk cargo handling system – increasing number of hoppers
- 3) Training calendar prepared for the workers to be implemented to impart skills enhancing their efficiency
- 4) Creation of off-dock storage & Bonded Warehousing Facilities
- 5) Round-the-clock navigation

Measures proposed by 30.06.10

- 1) Procurement of equipment and optimal

utilization of cargo handling systems (details provided in Appendix-11) have been identified in the XIth Five Year Plan. The endeavour will be to implement a majority of these schemes by the above-mentioned date.

- 2) Optimizing the rail operations in coordination with Indian Railways
- 3) Improving connectivity to the port & strengthening the roads within the port by following measures
 - i) Four lane RCC roads within the port
 - ii) Implementing unidirectional traffic flow to eliminate criss crossing
 - iii) Approach roads to ports to be six lanes
- 4) Augmenting Marine Resource Handling Capabilities
- 5) Standardisation of processes in the Ports through Enterprise Resource Planning System

Other recommendations to improve the efficiency of ports are shown in Appendix-10 since they are not directly related to the terms of reference for this committee.

8. Benefits

8.1. All Stakeholders to be benefited

Implementation of the recommendations is expected to benefit all stakeholders to a large extent by way of reduction in transportation costs and also the country to sustain growth in the economy.

Given below are the benefits expected to accrue for the Nation and Stakeholders:

8.2. Nation

The reduction in dwell time will reduce the transportation cost of Indian goods. This, in turn, will make Indian goods competitive in global markets. The image of an efficient maritime infrastructure will enable the country to attract increased maritime trade, thereby improving the nation's share in the same.

8.3. Ports & Terminals

Any reduction in dwell time will increase the capacity of ports and help in the optimization of port capacity. This will enable the ports to utilize infrastructure in a better and more efficient manner. Consequently, Turn Round Time for vessels will reduce, allowing ports to attract and handle more vessels.

8.4. Importer / Exporter

Reduction in dwell time will directly reduce the transit time for cargo. This will reduce both transportation as well as inventory costs. Further, the timely delivery / receipt of goods to clients will garner greater goodwill enabling the furtherance of business.

8.5. Transport Operators

Turn Round Time for the transporter fleet will reduce in the event of reduction in dwell time. This will result in higher productivity of the fleet and higher revenues. There will be reduction in the waiting time for trucks with matching savings in fuel.

8.6. Other Stakeholders

All stakeholders in the supply chain will be beneficiaries of the reduction in dwell time. Overall, the profitability of one and all will increase owing to higher productivity and efficiency.

Appendices



Appendix-1

Cargo Traffic at Indian Ports

1.1. Break-up of cargo handled at Indian Major Ports for 2005-06

(In '000 Tonnes)

Port	POL	Iron* Ore	Fertilizer		Coal		Container		Others	Total
			Finished	Raw	Thermal	Coking	Tonnage	TEUs		
Calcutta	4934	101	-	-	-	-	3234	203	2537	10806
Haldia	17689	7939	324	508	3408	5371	1911	110	5187	42337
Paradip	910	10273	-	1568	12529	3758	45	4	4026	33109
Visakhapatnam	16941	16171	2295	891	2740	7068	630	47	9065	55801
Ennore	244	537	-	-	8387	-	-	-	-	9168
Chennai	13113	9527	701	371	1914	1183	11757	735	8682	47248
Tuticorin	774	42	484	958	6146	-	3428	321	5349	17139
Cochin	9641	-	81	598	199	-	2488	203	880	13887
New Mangalore	22392	9307	662	-	-	513	149	10	1428	34451
Mormugao	833	25314	228	-	378	2895	105	9	1935	31668
Mumbai	27781	-	171	434	1844	-	2145	156	11825	44190
J.N.P.T.	2545	-	-	-	-	-	33777	2667	1514	37836
Kandla	24290	2	1678	252	113	313	2311	148	16948	45907
All Ports	142087	79171	6624	5570	37658	21101	61980	4613	69376	423567

Source: IPA

Table 1.1.: Cargo Traffic at Major Ports during 2005-06

1.2. Traffic handled at Minor and Intermediate Ports during 2005-2006

(In '000 Tonnes)

Port	POL Crude + Product	Iron Ore	Cement & Clinker	Coal	Fertilizer & FRM	Container Tonnage	Others	Total
Gujarat	64705	5204	10968	10299	2152	3929	6889	104146
Maharashtra	-	5086	1495	1718	-	-	2863	11162
Goa (Panjim)	-	11428	-	333	-	-	1	11762
Tamil Nadu	538	-	-	-	56	-	116	710
Karnataka	NA	2600	10	NA	NA	NA	1304	3914
Kerala	12	1	7	NA	NA	NA	114	134
Pondicherry	NA	NA	51	NA	NA	NA	45	96
Andhra Pradesh	9464	3522	849	200	1962	NA	2301	18298
A&N Islands	124	NA	101	NA	12	204	474	915
All Ports	74843	27841	13481	12550	4182	4133	14107	151137

Source: IPA

Table 1.2.: Traffic handled at Minor and Intermediate Port during 2005-06

Appendix-2

Stakeholders and their Roles

Customs

Assessment and collection of Customs duties on import and export cargoes as per Customs laws (Customs Act, 1962 and Customs Tariff Act, 1975); Enforcement of the various provisions of the Customs Act governing imports and exports of cargo, baggage, postal articles and arrival and departure of vessels, air crafts etc.; Discharge of various agency functions and enforcing various prohibitions and restrictions on imports and exports under Customs Act and other allied enactments; Prevention of smuggling including interdiction of narcotics drug trafficking; and international passenger processing.

Port Trusts

Provide infrastructure facilities like berths, equipment, storage space, navigational channels and road / rails network within the port area; Perform vessel operations like berthing / un-berthing of vessels, container / cargo handling operations like landing of containers/cargo from vessel, movement to storage yard, stuffing/de-stuffing of containers facilitating the process of examination through movement of containers to CFSs, delivery / aggregation of containers/cargo; Provide berthing facilities, cargo handling facilities including manpower and equipment, cargo storage space in the form of open land or shed space etc., assessment and recovery of port related charges and documentation formalities for import / export goods.

Port Health Organization (PHO)

The agency that is responsible for the inspection

of hygiene in the ship and amongst the crew, so as to control the spread of infectious diseases from incoming vessels and aircrafts; Inspecting food/agricultural products entering the port, for wholesomeness, fitness and compliance with Indian legislation; Some of the cargo samples like edible oil are inspected by PHO and permitted for domestic use based on lab certification.

Plant Quarantine Organization

To prevent the entry, establishment and spread of exotic pests in India as per the provisions of the Destructive Insects & Pests Act, 1914 and the notifications issued thereunder. The authorized officer of the PQ department has to inspect timber and grains in the shiphold before permitting discharge. Inspection of empty shipholds is carried out immediately upon arrival of vessel at the designated port before granting permission for loading of the grain into the vessel. The agency is also responsible for the inspection of import cargo before allowing discharge of the same. They also supervise fumigation of cargo on board the ship, in the shed and subsequent degassing.

Immigration Authorities

The agency that is responsible for applying the immigration laws of the country and providing the needed documents for foreign crew and passengers to disembark and embark.

Terminal Operator

Manages the terminal operations both at the

wharf & the yard and acts as the custodian of the cargo / containers. Most of the functions performed by the terminal operator and port trust are common.

Vessel Operating Agent (Steamer Agent / main line operator)

The authorized representative in a specified territory acting on behalf of a steamship line or lines and attending to all matters relating to the vessels owned by his principals. The steamer agent liaises with the port and other agencies like customs for the completion of formalities related to the various agencies. They compile the vessel plan and co-ordinate with the stevedores and the port operator for loading / discharge operations.

Container Operating Agent (NVOCC / VOCC)

They represent the container Lines and provide the steamer agent with details of the containers belonging to them in the vessel. They also give the delivery order to the Clearing Agent / Importer for clearing the container. Similarly, the liner gives the authorization for loading containers on a vessel to the clearing agent. They recover terminal handling charges and container detention charges as also issue Bill of Lading and Agent's delivery order to the consignees.

(NVOCC – Non Vessel Operating Common Carrier)

(VOCC – Vessel Operating Common Carrier)

Stevedore

A Stevedore manages the operation of loading or unloading a ship. A stevedore owns gears and equipments used in the loading or discharge

operation and engages labour who actually load and discharge cargo under the direction of a stevedoring company.

Importer / Exporter / Customs House Agents (CHA)

Importers / exporters are the owners of goods being imported / exported. They are mainly responsible for completion of Customs and port formalities either themselves or through a CHA. CHA is a person engaged in providing any service, either directly or indirectly, connected with the clearing and forwarding operation. They are licensed to enter the customs premises and clear the goods through Customs / port after payment of all duties and port charges on behalf of the importer. Similarly, the CHA brings in the export cargo and completes all documentation for loading on behalf of the exporter.

Transport Operators (Railway / CONCOR / Private)

Road

The cargo cleared for delivery from the port or received for export in the port is transported to / from the consignor / consignees' premises by the private transporter.

Railways

The Railways provide the permanent way and rolling stock for the transportation of rail bound cargo. The availability of these resources may have an effect on the dwell time of cargo. The Container Corporation (CONCOR) handles the rail bound containers. Lack of infrastructure or other resources with the CONCOR / other private operator affects the dwell time of containers.

Container Freight Stations (CFS) / Inland Container Depots (ICD)

Receipt and dispatch / delivery of cargo; stuffing and stripping of containers; transit operations by rail / road to and from serving ports; Customs clearance; consolidation and dis-aggregation of LCL cargo; temporary storage of cargo and containers; reworking of containers; and maintenance and repair of container units.

Security Agencies

Government security agencies like the CISF or private security agencies are entrusted with the safe keeping of cargoes inside the port premises. They are required to prevent pilferage / damage of cargoes. The regulatory measures imposed by these authorities may affect the dwell time of cargoes within the port.

External Agencies

The actions of other agencies like local police, governmental agencies etc. sometimes affect the movement of cargoes / containers to and from the port. Traffic restrictions, levy of tax, cess etc. and the accompanied documentation also affects the dwell time of cargoes / containers.

Appendix-3

Import – Export Procedures

3.1. Flow Chart for Import Bulk / Break Bulk

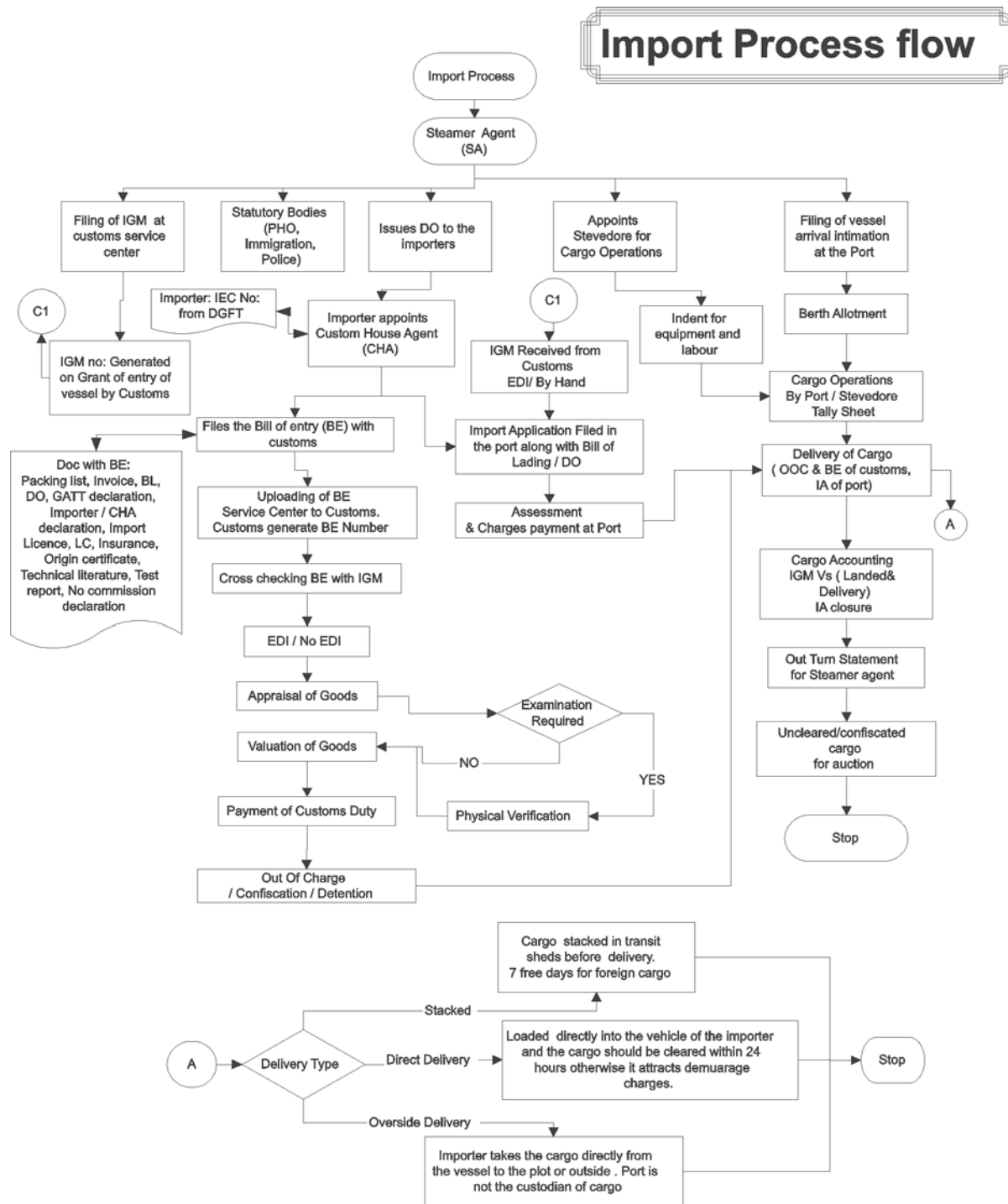


Figure 3.1. Flow chart for the General Import Process

3.1.1. General Port Procedure for Import - Bulk / Break Bulk Cargo

- The Steamer Agent files the Vessel Arrival Intimation seven days prior to the expected arrival of the vessel
- The steamer agent files IGM manually or electronically.
- The port allocates the berth and the vessel is berthed.
- Customs, PHO, Plant Quarantine, Immigration etc officials board the vessel and entry inward is granted.
- Port / terminal operator commences the cargo operations.
- The steamer agent pays the Vessel Related Charges in advance.
- Bill of Entry filed by the CHA / Importer and BE number is obtained.
- BE is cross checked with IGM and tallied.
- BE is sent for assessment and payable duty is arrived at.
- Duty is paid by the importer or CHA.
- Stevedore indents for labor and equipment.
- Unloading of cargo operation starts with tally.
- CHA files import application along with the Delivery Order. Port cargo related charges are paid. IA is verified with IGM.
- Selected packages are opened and Customs examines the cargo.
- On obtaining the Out of Charge from the Customs the CHA approaches the port for delivery of cargo with BE and IA.
- The documents are cross-verified, vehicle ticket is issued and delivery is effected. The delivered goods pass the port gate after physical examination and document check at the gate.

3.2. Flow Chart for Import Flow of containers

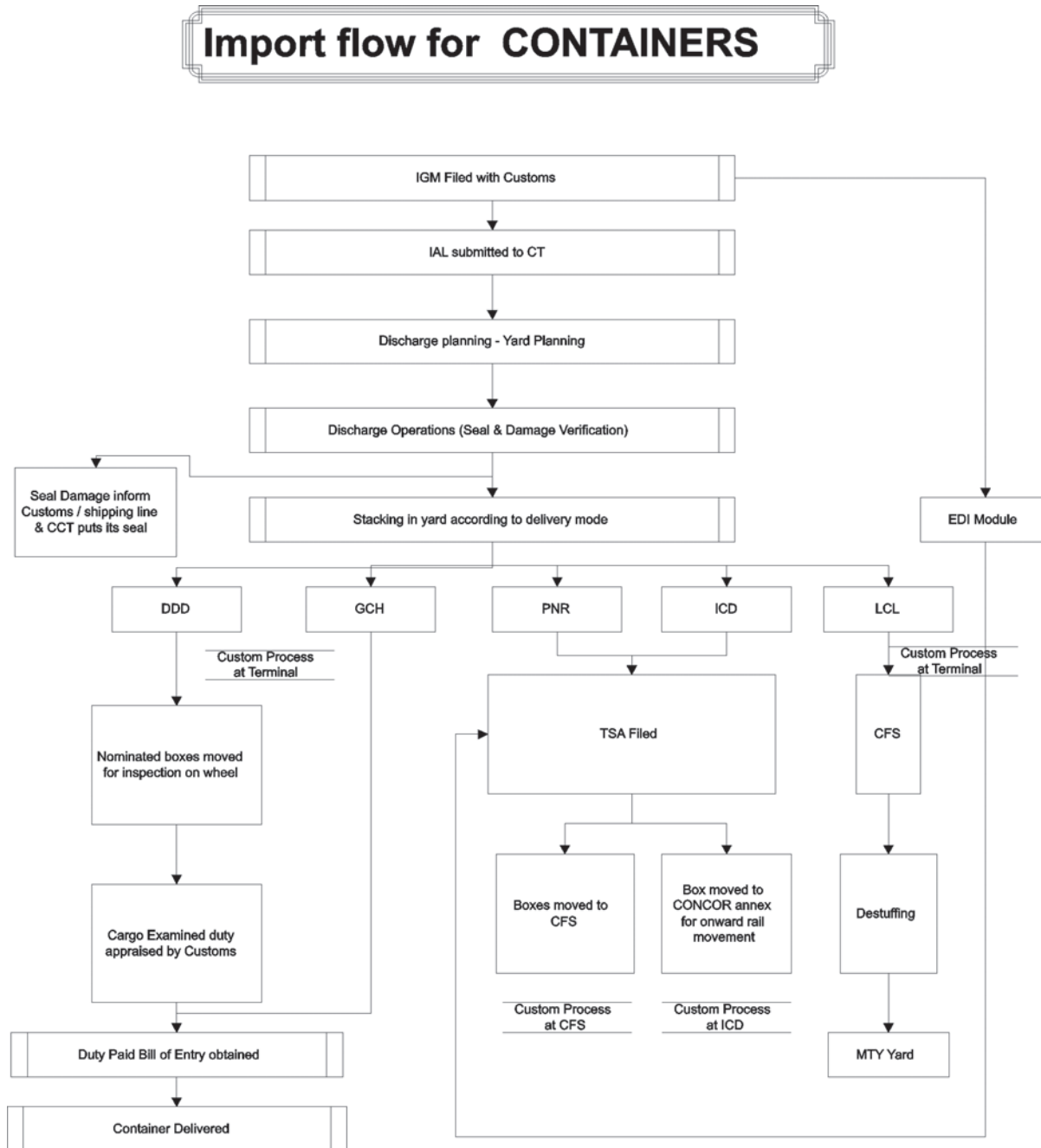


Figure 3.2. Flow Chart for import flow of containers

3.2.1. General Procedure for Import - Containers

- Vessel Operating Agent (VOA) issues Vessel Identification Advice (VIA) to the port / terminal and Customs. VIA is registered.
- VOA files IGM with Customs.
- The VOA registers the Vessel details like vessel profile, stack height, reefer points etc., with the terminal.
- VOA requests berth allotment to the port and the vessel is berthed. Immigration / Customs / PHO complete their formalities.
- Discharge starts and containers are moved to the yard / delivery point.

Delivery procedures for direct delivery containers

- VOA issues container arrival notice to Container Operating Agent (COA).
- COA issues Delivery Order to CHA.
- At the same time, BE is registered and duty is paid. The request for delivery of containers is then made to the terminal by the CHA.
- The terminal operator issues job order intimating the location of the container to the CHA.
- The hauler enters the terminal with requisite documents.
- Container is located and equipment interchange request is prepared by the terminal operator.
- Container is loaded and the container is moved out of the terminal with gate pass and Customs-endorsed EIR.

Delivery procedures for CFS designated containers

- Delivery order issued by VOA to COA.
- COA nominates CFS and container list is issued to the CFS / Terminal.
- Request for movement by PNR is made to the terminal.
- PNR approved and permission given for movement of containers.
- Location of the containers is intimated to the hauler by the terminal operator.
- Copy of the job order and copy of EIR is given to the Hauler.
- Container is located and loaded on to trailer and moves out of the terminal.

Delivery Procedures for ICD Containers

- Delivery order issued by VOA to COA.
- COA submits Transshipment Advice to Customs.
- COA requests movement of container to ICD terminal.
- Containers are moved to ICD through EIR.
- Containers are received at ICD terminal and EIR is endorsed.
- Containers loaded to trailers / wagons. At the same time, Inland Waybill is prepared and containers move out.

Delivery Procedures for LCL Cargo (Delivery to Terminal / CFS)

- Terminal operator moves the LCL containers to CFS.

- Permission to open the container obtained from the Customs by CHA and Open Chit generated.
- DO issued and terminal charges paid.
- BE registered, duty paid,
- Container de-stuffed under tally.
- Hauler enters terminal / CFS gate.
- Cargo loaded onto the hauler. EIR generated.
- Receipt for cargo obtained from CHA.
- EIR endorsed by Customs and cargo moved out of the terminal / CFS.

3.3. Flow Chart for Export Bulk / Break Bulk

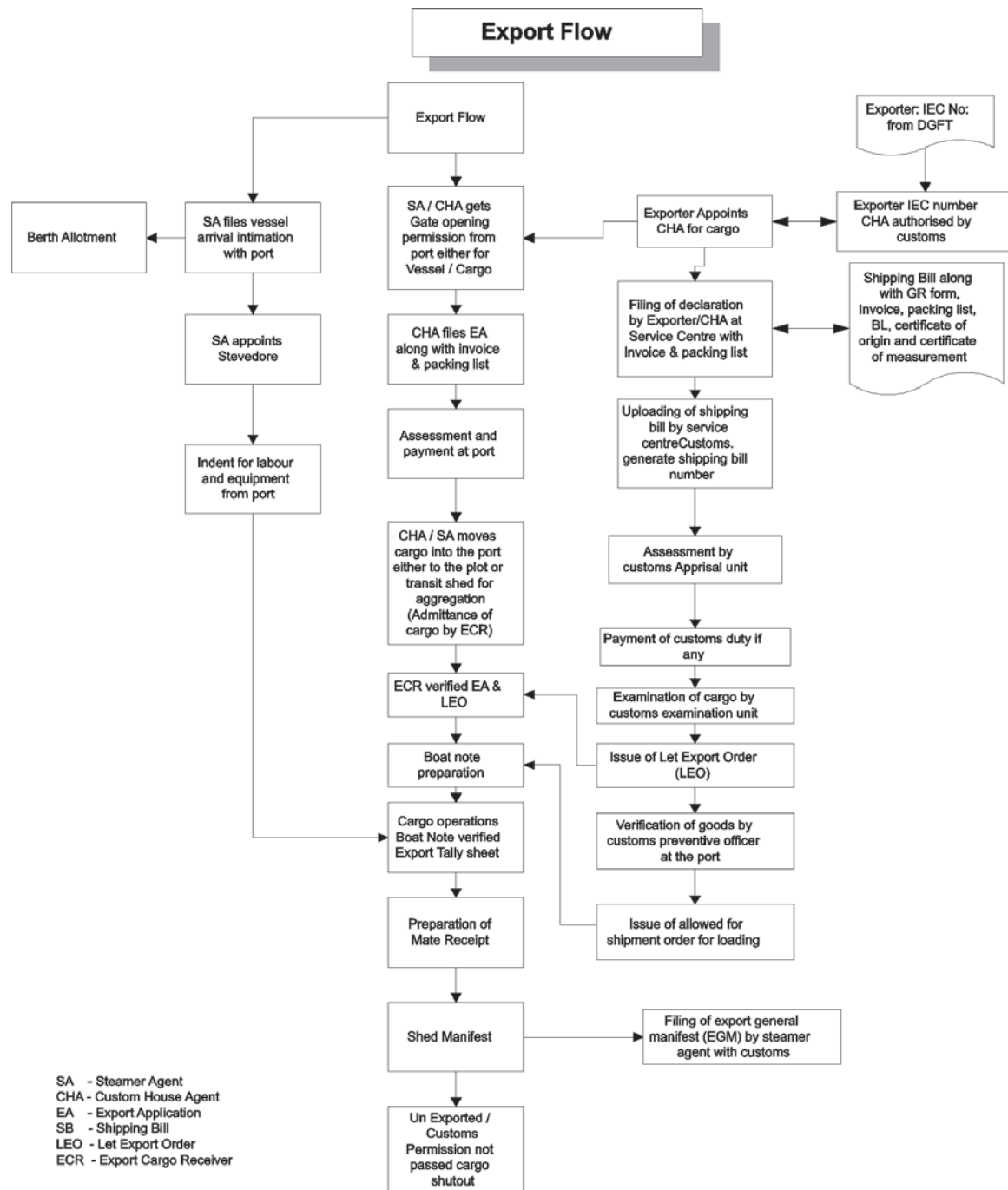


Figure 3.3. Flow Chart for Export Bulk / Break Bulk

3.3.1. General Procedure for Export - Bulk / Break Bulk Cargo

- Exporter / CHA requests the Traffic Manager for moving the cargo into the port and based on the permission given the cargo is moved into the port with cart chit.
- Exporter / CHA submits Shipping Bill to Customs along with supporting documents like packing list, letter of credit etc.
- Customs give a serial number to the shipping bill.
- CHA files Export Application along with invoice, packing list etc.
- Steamer Agent files the Vessel Arrival Intimation seven days prior to the expected arrival of the vessel.
- The port allocates the berth and the vessel is berthed.
- Steamer Agent files for Entry Outward.
- After the passing of the Shipping Bill by the customs export department, goods are presented for appraisal and examination.
- Vessel Related Charges are paid in advance by the steamer agent.
- Customs officer verifies the contents /cargo and permit clearance by giving Let Export and Customs-passed Shipping Bill.
- Stevedore indents for labor and equipment.
- CHA submits the Export Application along with Allowed for Shipment by the Customs to the port. The documents are compared and boat note issued.
- Cargo is loaded with proper tally and Mate's

receipt is received. The consolidated cargo exported by the vessel is filed as EGM with Customs.

3.4. Flow Chart for Export Flow of containers

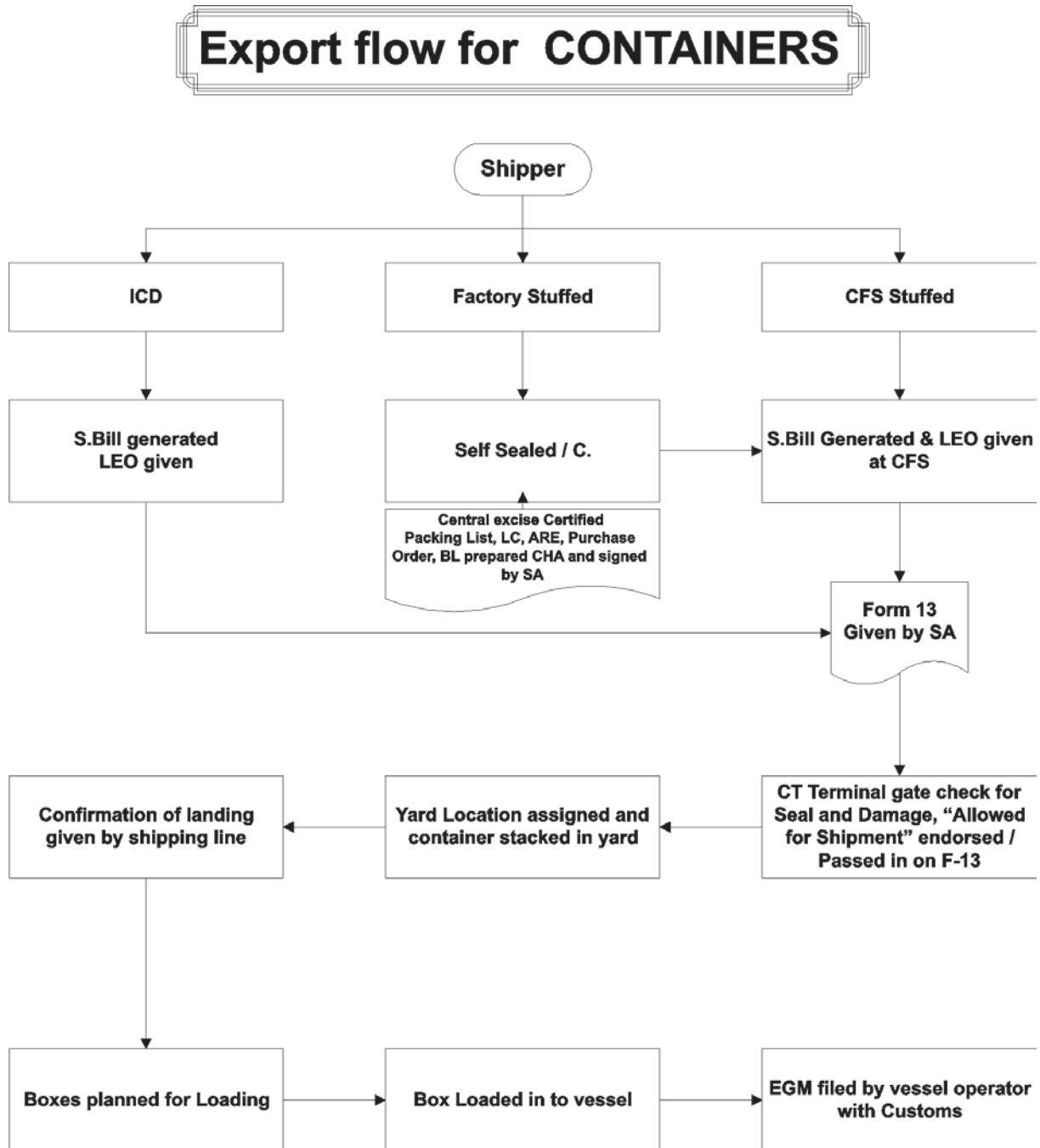


Figure 3.4. Flow Chart for Export Flow of Containers

3.4.1. General Procedure for Export - Containers

Prior to Loading of Container

- VOA issues Vessel Identification Advice (VIA) to Customs / port terminal.
- VIA is registered at port and VIA Number is received.
- VOA registers the vessel details like Vessel Profile, Stack height, Reefer Points, Hatch configuration at the terminal.
- VOA submits the berthing application to the port.
- The Hauler moves the container through the port gate.
- On receipt of Allowed for Shipment from Customs, the Hauler moves the container to terminal.
- Export containers received at the port / terminal with Export Application, Weighment Certificate, IMO IMDG Code etc. - to the terminal operator.
- Terminal operator moves the container to the assigned yard and offloads it with an endorsement of exact location on EIR.
- VOA plans container loading operation with the terminal operator.
- Immigration, Customs and PHO board the vessel on arrival and the crew list, store list, restricted item list, boarding set (ship's crew details) and PHO standards are verified.

Export Container Received From ICD By CONCOR

- On arrival of the container at the CONCOR yard, the container Inland Waybill is

submitted by COA to CONCOR for movement of container.

- The Pre-Advice Form, weighment certificate / IMO IMDG Code etc. is issued by Hauler to terminal for verification.
- To off-load the container to the correct slot in the yard, EIR marked with the container location is given by the terminal operator to CHA.
- The containers are moved to the yard.

Containers Stuffed at CFS

- Request for carting cargo into the terminal, Cargo Carting Order / Shipping Bill filed by CHA / shipper submitted to CFS.
- For Movement of cargo into the CFS, Endorsed Carting Order is submitted by Hauler to CFS.
- Examination completed by Customs and Let Export Order issued.
- Stuffing Order is issued by COA to CFS.
- Survey is conducted and survey remark on Pre-Advice Slip is issued by the Surveyor to the CFS.
- For stuffing of container, a tally / Stuffing Report / CLP is issued by CFS to COA.
- Customs seals the container.

Loading of Container on to the Vessel

- VOA submits the loading sequence list to the terminal for the movement of container from pre-stack to ship-side.
- After loading the container on to the vessel, the terminal operator gives the tally sheet to the shipping agent.

- The VOA facilitates the issuance of Mate's Receipt by the master of the vessel and gives it to the terminal.
- On receiving the Port Charges Receipt, the request for port clearance is given by the terminal to VOA.
- For sailing of vessel, the application for port clearance is applied by VOA to Customs.
- On receiving port and Customs clearances, the vessel sails.
- EGM is filed with Customs.

Appendix-3A

Time Study for Port's Role in Handling Containers

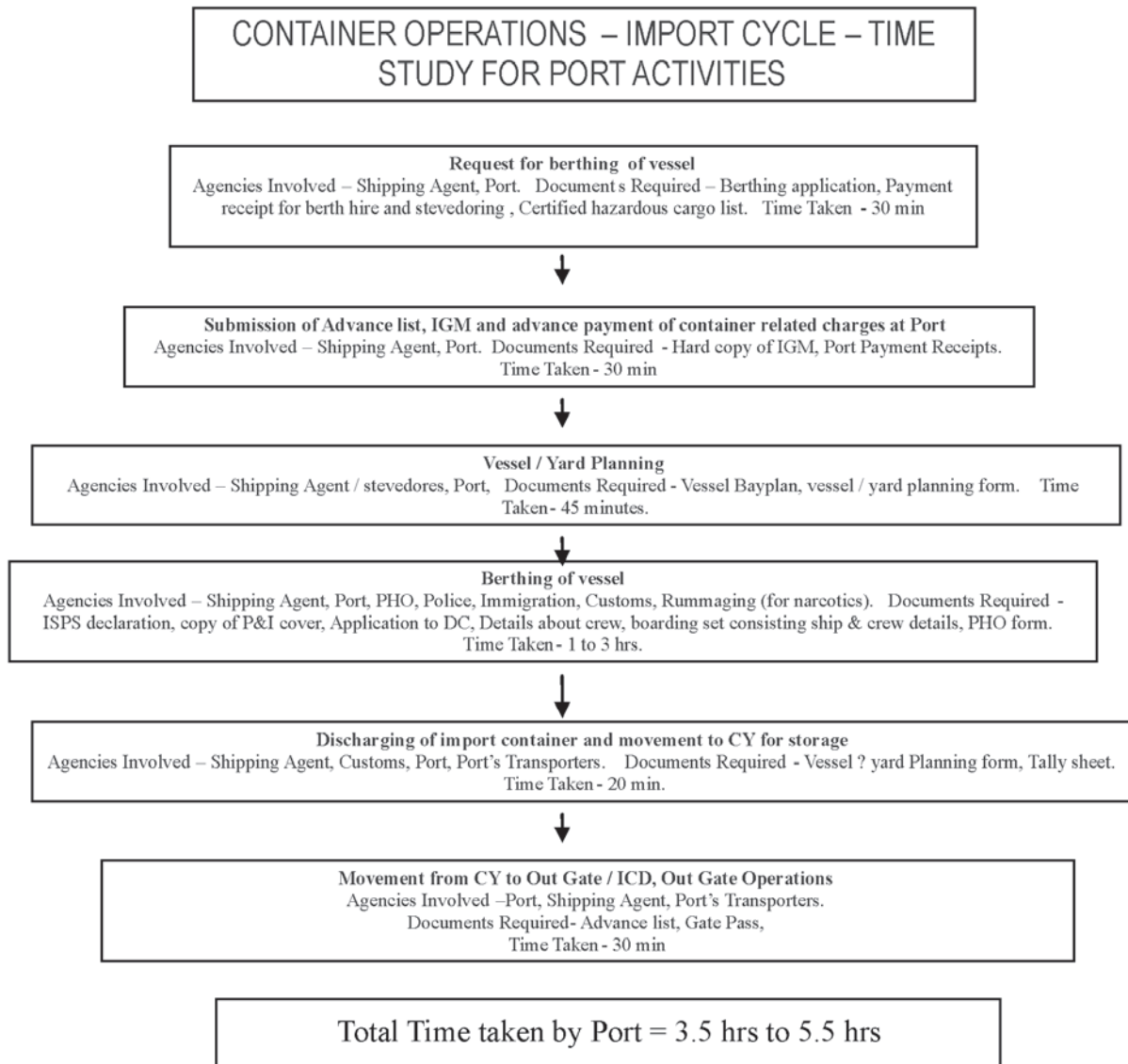


Figure 3A (a) Time study for Port's role in handling containers - Import

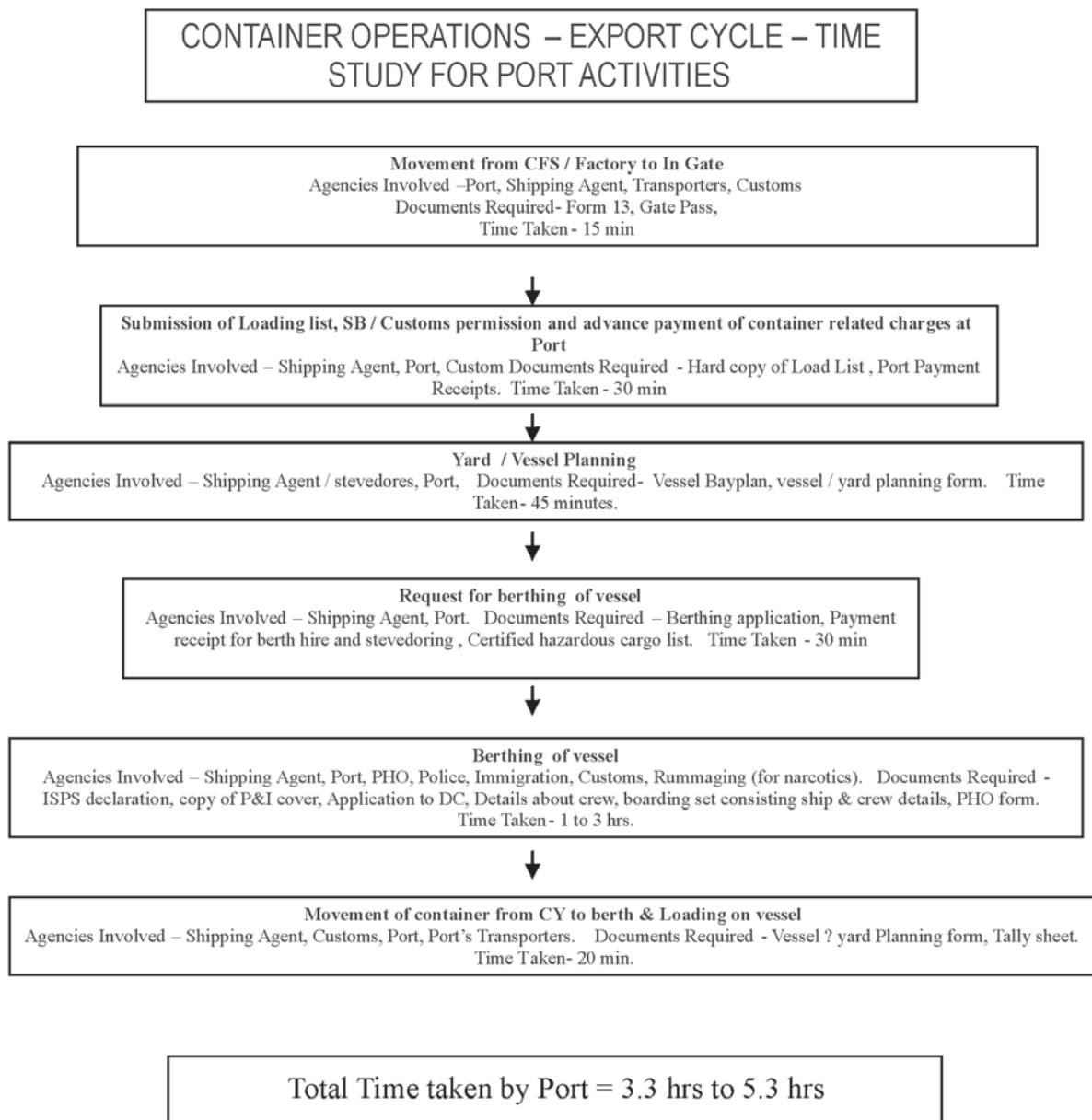


Figure 3A (b) Time study for Port's role in handling containers - Export

Appendix-4

Port Efficiency Parameters

4.1. Pre-Berthing Detention Time (Port Account and Non-Port Account)

(In Hours)

Average Pre-Berthing Time – 2005-2006													
Port	Dry Bulk				Liquid Bulk		Break Bulk		Container		Total		
	Port A/C		Non-Port A/C		Port A/C	Non-Port A/C	Port A/C	Non-Port A/C	Port A/C	Non-Port A/C	Port A/C	Non-Port A/C	Total
	M	C	M	C									
Kolkata	Na	Na	Na	14.03	0.09	13.17	0.14	7.76	0.08	8.57	0.09	9.62	9.71
Haldia	42.5	79.43	21.36	23.49	14.76	26.85	36.43	29.83	4.24	5.08	30.37	21.37	51.74
Paradip	1.31	1.69	32.13	20.9	1.09	11.72	1.64	17.31	2.11	1.43	1.48	23.61	25.09
Vizag	0.46	2.92	30.8	30.88	1.02	19.46	0.42	19.45	0.79	1.21	1.54	23.33	24.87
Ennore	0.36	Na	4.08	Na	Na	Na	Na	Na	Na	Na	0.36	4.08	4.44
Chennai	1	1.3	80.1	8.3	1	25.8	0.8	7.7	0.7	5.3	0.9	14.7	15.6
Tuticorin	6.65	15.83	1.91	7.4	2.23	7.87	1	25.2	0	11.21	3.06	14.4	17.46
Cochin	10.03	0.73	13.97	8.99	5.75	19.22	1.19	4.4	1.23	7.25	2.94	10.81	13.75
N.M.P.T.	0.24	2.88	11.04	17.52	0.48	21.12	0.96	4.56	0	3.36	0.96	17.76	18.72
Mormugao	9.88	46.4	74.57	4.63	14.51	3.04	99.48	16.04	4.28	0.42	17.56	33.01	50.57
Mumbai	Na	1.92	Na	22.8	6.48	21.12	4.08	17.28	2.4	14.64	4.8	19.2	24
J.N.P.T	Na	Na	Na	Na	14.09	16.92	8.53	22.59	5.45	15.63	7.4	14.65	22.05
Kandla	Na	37	Na	22.28	5.04	19.44	34.04	28.12	9.84	4.32	19.68	19.92	39.6
All Ports	10.66	19.09	30.38	20.98	6.08	20.25	9.01	18.44	2.82	9.05	8.77	18.38	27.15

Na – Not Applicable. PBD(A) referred to in the pictorial representation of TRT at Figure 3.3.5

Factors contributing to Port Account:

1. Non-availability of working berth as the berth is occupied by another working vessel
2. Non-availability of working berth as berth is out of commissioned
3. Non-availability of working berth for any other reason
4. Non-availability of berth as all other berth are fully occupied
5. Discharging/loading in midstream due to non-availability of berth
6. Berth-don of cargo handling equipment on shore

Factors contributing to Non-Port Account:

1. Documents not ready
2. Cargo not ready
3. Agent's Option
4. Waiting for mother/daughter vessel
5. Lack of storage space in shed/tanks (not/poor clearance)
6. Waiting for barges
7. Mid-stream discharge to meet draft requirement
8. Absence of advance intimation about ETA etc.
9. On ship's account

Source: IPA

Table 4.1.: Average Pre-Berthing Detention Time at Major Ports during 2005-06

4.2. Average Non-Working Time (Port Account and Non-Port Account)

(In Days)

Port Performance Indicators: Category-wise													
Average Non-Working Time (C) to Total Stay at Berth (2005-2006)													
Port	Dry Bulk				Liquid Bulk		Break Bulk		Container		Total		
	Port A/C		NP A/C		Port	NP A/C	Port	NP A/C	Port	NP A/C	Port	NP A/C	Total
	Mech	Conv	Mech	Conv									
Kolkata	0	0	0	0.96	0	1.51	0	2.12	0	0.57	0	1.17	1.17
Haldia	0.18	0.18	0.76	1.35	0	0.44	0.16	1.2	0	0.45	0.07	0.72	0.79
Paradip	0.14	0.16	0.5	0.78	0	0	0.15	0.96	0.03	0.56	0.15	0.67	0.82
Vizag	0.32	0.17	0.37	0.52	0.08	0.32	0.18	0.47	0.06	0.08	0.15	0.39	0.54
Ennore	0.18	0	0	0	0	0	0	0	0	0	0.18	0	0.18
Chennai	0	0	1.1	1.5	0	0.3	0	1	0	0	0	0.9	0.9
Tuticorin	0.02	0.04	0.53	0.96	0.02	0.35	0.04	1.08	0	0.05	0.02	0.6	0.62
Cochin	0.48	0.68	0.9	1.49	0.06	0.17	0.12	0.67	0	0	0.2	0.45	0.65
New Mangalore	0	0.02	0.37	0.58	0.01	0.24	0.01	1.01	0	0.28	0.01	0.37	0.38
Mormugao	0.08	0	0.27	0.54	0	0.27	0	0.63	0	0.08	0.03	0.3	0.33
Mumbai	0	2.02	0	0	0.4	0	1	0	0.33	0	0.7	0	0.7
J.N.P.T	0	0	0	0	0.3	0	0.16	0	0.06	0	0.08	0	0.08
Kandla	0	0.02	0	0.5	0.01	0.37	0.01	0.38	0.01	0.23	0.01	0.39	0.4

NWT (C) referred to in the pictorial representation of TRT at Figure 3.3.5

Factors contributing to Port Account:

1. Vessel waiting for a working berth after completion of unloading and before commencement of loading
2. Break-down / non-availability of handling equipment
3. Non-availability of port labour gangs
4. Early break-up late reporting of DLB/Port Labour
5. Spillage/grizzly cleaning/chute jamming
6. Ragging / Stitching

Factors contributing to Non-Port Account:

1. For want of cargo / containers
2. For customs formalities-prior / after to commencement / completion of work
3. For unloading/loading instructions from Chief Officer / SA
4. Shed congestion/non or poor clearance of cargo
5. Want of wagons/lorries/trailers for clearance
6. Draught hooking/survey
7. Ship's positioning /wharping/trimming
8. Break-down of ship gear
9. Due to ship bunkering/waiting for bunkering / repairs at berth / ballasting / cleaning
10. Non- availability of private labour
11. For sailing instruction/boat note
12. Due to weather conditions
13. Due to Pollution
14. Want of barges
15. Document not ready

Table 4.2.: Average Non-Working Time at Major Ports during 2005-06

4.3. Turn Round Time (Port Account & Non-Port Account)

(In Days)

Average Turn Around Time (2005-2006)																		
Port	Dry Bulk						Liquid Bulk			Break Bulk			Container			Total		
	Port A/c		Non-Port A/c		Total		Port	Non-Port	Total	Port	Non-Port	Total	Port	Non-Port	Total	Port	Non-Port	Total
	M	C	M	C	M	C	A/c	A/c	Total	A/c	A/c	Total	A/c	A/c	Total	A/c	A/c	Total
Kolkata	0	3.09	0	1.54	0	4.63	2.01	2.06	4.07	3.94	2.44	6.38	2.16	0.93	3.09	2.55	1.57	4.12
Haldia	4.63	6.9	0.76	1.35	5.39	8.25	1.71	0.44	2.15	4.92	1.2	6.12	1.15	0.76	1.91	3.28	0.72	4
Paradip	1.86	3.41	1.34	0.87	3.2	4.28	1.34	0.49	1.83	4.19	0.72	4.91	1.36	0.05	1.41	2.57	0.59	3.16
Vizag	1.66	3.73	1.88	1.94	3.54	5.67	1.27	1.13	2.4	3.46	1.3	4.76	0.42	0.13	0.55	2.35	1.45	3.8
Ennore	2.06	0	0.17	0	2.23	0	0	0	0	0	0	0	0	0	0	2.06	0.24	2.3
Chennai	2.4	5.2	3.4	0.6	5.8	5.8	1.9	1.1	3	3.4	0.5	3.9	1.2	0.2	1.4	2.6	0.7	3.3
Tuticorin	3.42	4.34	0.07	0.31	3.49	4.65	1.7	0.33	2.03	2.97	1.05	4.02	0.56	0.46	1.02	2.23	0.6	2.83
Cochin	7.47	5.96	0.9	1.49	8.37	7.45	1.82	0.28	2.1	1.88	0.53	2.41	0.19	1.13	1.32	1.82	0.31	2.13
N.M.P.T	1.5	3.37	0.82	1.34	2.32	4.71	1.36	1.13	2.49	3.2	1.19	4.39	0.89	0.43	1.32	1.87	1.13	3
Marmugao	1.25	7.57	3.38	0.73	4.63	8.3	1.56	0.4	1.96	9.86	1.29	11.15	1.34	0.1	1.44	2.41	1.67	4.08
Mumbai	0	9.06	0	3.05	0	12.11	0.7	2.14	2.84	3.97	1.18	5.15	1.71	0.83	2.54	2.92	1.17	4.09
J.N.P.T.	0	0	0	0	0	0	2.27	0.71	2.98	3.44	0.93	4.37	1.34	0.64	1.98	1.36	0.6	1.96
Kandla	0	4.88	0	1.55	0	6.43	1.6	1.32	2.92	4.49	1.66	6.15	1.92	0.5	2.42	3.04	1.35	4.39
All Ports	2.55	4.66	0.89	1.32	3.44	5.98	1.66	0.93	2.59	3.65	1.19	4.84	1.3	0.47	1.77	2.52	0.98	3.5

4.71

Factors contributing on port account and non-port account towards the TRT are the combination of all the factors mentioned for PBD and NWT.

Source: IPA

M-Mechanical: C-Conventional: NA-Not Applicable

Table 4.3.: Turn Round Time at Major Ports during 2005-2006

4.4. Average Output per Ship Berth Day (OSB)

(In Tonnes)

Port Performance Indicators : Category-wise					
Average Output Per Ship Berthday (2005-2006)					
Port	Dry Bulk		Liquid Bulk	Break Bulk	Container
	Mech	Conv			
Kolkata	0	2079	9484	627	4147
Haldia	9575	6223	18151	2233	3000
Paradip	21535	7714	10414	961	2796
Vizag	28452	7133	19565	1584	8097
Ennore	33662	0	0	0	0
Chennai	30999	7346	18281	1892	17150
Tuticorin	13250	6834	5295	1178	12659
Cochin	2649	3589	18284	1349	5273
N.M.P.T	23578	8499	23232	1560	3528
Mormugao	58181	3950	7292	1390	2313
Mumbai	0	1303	19545	2273	4162
J.NP.T.	0	0	6415	3459	17861
Kandla	0	5258	19801	2926	5633
All Ports	20820	6494	17439	1844	9270
	*13657			** 538 TEUs	

* Avg OSB for dry bulk both for mechanical and conventional methods of handling is 13,657 tonnes.

** 13.4 tonnes per TEU is conversion factor for containers.

Source: IPA

Table 4.4.: Average Output per Ship Berth Day at Major Ports during 2005-06

4.5. TRT (Overall) for the Major Ports for the year 2005-06

Components of TRT						
Port	PBD	Transit	NWT	WT	TRT (In Days)	OSB (In Tonnes)
	(A)	(B)	(C)	(D)		
Kolkata	0.40	0.083	1.17	2.46	4.12	3984
Haldia	2.16	0.083	0.79	0.97	4.00	8755
Paradip	1.05	0.083	0.82	1.21	3.16	11316
Vizag	1.04	0.083	0.54	2.14	3.80	10557
Ennore	0.19	0.083	0.18	1.85	2.30	33622
Chennai	0.65	0.083	0.90	1.67	3.30	10378
Tuticorin	0.73	0.083	0.62	1.40	2.83	5392
Cochin	0.57	0.083	0.65	0.82	2.13	7767
New Mangalore	0.78	0.083	0.38	1.76	3.00	15048
Mormugao	2.11	0.083	0.33	1.56	4.08	16834
Mumbai	1.00	0.083	0.70	2.31	4.09	6552
J.N.P.T	0.92	0.083	0.08	0.88	1.96	15821
Kandla	1.65	0.083	0.40	2.26	4.39	8700
All Ports	1.13	0.083	0.58	1.70	3.50	9267

PBD - (A), NWT - (C) WT - (D) as referred to in the pictorial representation of TRT in Figure 3.3.5. The transit time is reckoned as 2 hrs on an average for all ports.

Source: IPA

Table 4.5.: Components of Turn Round Time

4.6. Port Capacity

Commodity-wise Capacity of Major Ports - 2004-05 & 2005-06									
Port		Tonnage							
		POL		Cont.		Others		Total	
		2004-05	2005-06	2004-05	2005-06	2004-05	2005-06	2004-05	2005-06
Kolkata	Capacity	3.60	3.60	3.40	4.00	2.80	5.00	9.80	12.60
	Handled	5.53	4.93	2.35	3.23	2.92	1.78	9.94	10.80
Haldia	Capacity	17.00	17.00	1.20	3.00	15.90	22.20	34.10	42.20
	Handled	16.41	17.72	2.00	1.71	23.80	16.78	36.21	42.21
Paradip	Capacity	7.50	6.00	Na	Na	31.50	45.40	39.00	51.40
	Handled	0.84	0.90	0.03	0.05	32.23	29.16	30.10	33.10
Vizag	Capacity	16.75	16.90	1.00	1.00	31.90	37.05	49.65	54.95
	Handled	14.62	16.94	0.64	0.63	40.55	32.57	50.14	55.80
Chennai	Capacity	10.50	11.25	6.00	12.00	25.35	25.55	41.85	48.80
	Handled	11.69	13.20	9.86	11.75	25.69	18.85	43.80	47.24
Ennore	Capacity	Na	Na	Na	Na	12.00	13.00	12.00	13.00
	Handled	0.10	0.24	Na	Na	9.06	9.24	9.48	9.16
Tuticorin	Capacity	2.30	2.30	3.60	5.00	9.90	13.25	15.80	20.55
	Handled	0.74	0.77	3.20	3.42	13.19	11.62	15.81	17.13
Cochin	Capacity	10.50	11.20	2.00	3.00	3.00	5.15	15.50	19.35
	Handled	10.27	9.64	2.31	2.53	1.35	1.92	14.09	13.93
New Mangalore	Capacity	19.20	21.00	Na	Na	11.10	17.00	30.30	38.00
	Handled	21.43	22.39	0.14	0.15	12.88	11.35	33.89	34.45
Mormagoa	Capacity	1.50	1.50	Na	Na	27.00	28.00	28.50	29.50
	Handled	1.01	0.83	0.12	0.11	30.55	29.72	30.65	31.68
Mumbai	Capacity	32.00	32.00	3.50	3.50	7.40	8.25	42.90	43.75
	Handled	19.33	27.78	2.57	2.14	22.29	5.20	35.12	44.19
Kandla	Capacity	31.00	34.00	Na	Na	14.00	12.00	45.00	46.00
	Handled	22.12	24.29	2.74	2.31	12.89	14.94	41.54	45.90
J.N.P.T.	Capacity	5.50	5.50	27.60	30.60	Na	Na	33.10	36.10
	Handled	2.46	2.49	28.74	33.77	14.70	Na	32.80	37.75
All Ports	Capacity	157.35	162.25	48.30	62.10	191.85	231.85	397.50	456.20
	Handled	126.55	142.12	54.69	61.79	242.10	183.13	383.57	423.34

Source: IPA

Table 4.6.: Commodity-wise Capacity of Major Ports during 2004-05 & 2005-06

Appendix-5

Details of Proposed Reduction of Documents in Ports

Pre-Arrival Documents

Present	Proposed Reduction	Proposed
1 Last 10 Ports of Call	Six Documents Merged as One Common Document "Vessel Arrival Notice"	
2 Ship Particulars List		
3 Arrival Crew List		
4 Sailing Crew List		
5 Pre Arrival Notice		
6 Berthing Application & Registration		1 Vessel Arrival Notice
7 ISPS Certificate and Ships Certificates	2 ISPS Certificate and Ships Certificates	
8 P&I Club Certificates	3 P&I Club Certificates	
9 IMDG General Declaration	4 IMDG General Declaration	
10 Arrival Report	5 Arrival Report	
11 Ship Movement Documents	6 Ship Movement Documents	
12 Vessel Planning Form	7 Vessel Planning Form	

Import

Present	Proposed Reduction	Proposed
1 Agents Delivery Order	Two Documents merged as One Common Document	
2 Oversight Delivery Order		
3 Shed Delivery Order	One Document Dispensed	
4 Gate Pass		1 Delivery Order
5 Container Transshipment Application		2 Gate Pass
6 Customs Permission for Transshipment	One Document Dispensed	3 Container Transshipment Application
7 Request for Gang & Equipment		4 Request for Gang & Equipment
8 Tally Sheet		5 Tally Sheet
9 Application for Landing		6 Application for Landing
10 Final Survey Certificate		7 Final Survey Certificate
11 I G M (Custodian Copy)		8 I G M (Custodian Copy)
12 Import Application		9 Import Application
13 Bill of Entry (Custodian Copy)		10 Bill of Entry (Custodian Copy)
14 OOC (Custodian Copy)		11 OOC (Custodian Copy)
15 Open Chit		12 Open Chit
16 Job Order		13 Job Order

Export

Present	Proposed Reduction	Proposed
1 Carting Chit		1 Carting Chit
2 Gate Opening Permission	One Document Dispensed	2 Request for Gang & Equipment
3 Request for Gang & Equipment		3 Export Tally Sheet
4 Export Tally Sheet		4 Final Survey Certificate
5 Final Survey Certificate		5 Export Application
6 Export Application		6 Shipping Bill (Custodian Copy)
7 Shipping Bill (Custodian Copy)		7 LEO (Custodian Copy)
8 LEO (Custodian Copy)		8 Open Chit
9 Open Chit		9 Shed Manifest
10 Shed Manifest		10 Allowed for Shipment
11 Allowed for Shipment		11 Boat Note
12 Boat Note		12 Mate Receipt
13 Mate Receipt		

Table 5: Details of Proposed Reduction of Documents in Ports

Appendix-6

Documents Involved

6.1. Documents involved in each stage of voyage

I. Pre-Arrival Documents					
Sl. No.	Activity	Document	Mode of Filing	Document Flow	
				From	To
1	Cargo Arrival Notice	Letter	M	Steamer Agent	Importer
2	Transfer of BL	BL	M	Owner / Charterer (Principals)	Steamer Agent
3	Bank Guarantee or Corporate Letter of Indemnity	Form		Consignee	Owner
4	Delivery Order Instructions	Form		Owner	Steamer Agent
5	Issue Of Delivery Order	Delivery Order		Agents	Consignee
6	Filing of IGM	Prior IGM	Online / Service Center	Steamer Agent	Customs
7	Arrival Intimation	Vessel Arrival Intimation	Port website	Steamer Agent	Port
8	General Information	Form I	Manual	Master / Steamer Agent	Port / Customs / MMD / PHO / Police
9	Arrival Report	Form III	Manual	Master / Steamer Agent	Port / Customs / MMD / PHO / Police
10	Grant entry Inwards	Grant Entry Inwards for vessel	Online	POCustoms	Customs
11	General Declaration	Form II	Manual	Master / Steamer Agent	Port / Customs
12	Import clearance	Permission to grant entry inwards	Manual	Customs	Steamer Agent
13	Rummaging	Shipping Journal	Manual	Master	Preventive Officer Customs
14	Declaration	Gold / Bullion / Silver	Manual	Master	Customs
15	Declaration	Agency for vessel	Manual	Master	Customs
16	Declaration	Same bottom cargo	Manual	Master	Customs
17	Declaration	No opium certificate	Manual	Master	Customs
18	Declaration	No Arms & Ammunition	Manual	Master	Customs
19	Declaration	Deck Cargo	Manual	Master	Customs
20	Declaration	No Passenger on board	Manual	Master	Customs
21	Declaration	Store list	Manual	Master	Customs
22	Draft survey	Survey certificate	Manual	Surveyor	Steamer Agent
23	Receipt	Store list	Manual	Customs	Master
24	Report of arrival of vessel in port	Emigration Journal	Manual	Master	Immigration Officer

II. Arrival of Vessel to Sailing of Vessel					
Sl. No.	Activity	Document	Mode of Filing	Document Flow	
				From	To
1	Immigration Officer Boards the vessel verifies the list of crew and passengers if any, Issues Immigration Clearance and Issues Shores Passes	Crew, passenger list, clearance certificate and shore pass	Manual	Immigration Officer	Steamer Agent / passenger / crew
2	Delivery Over side	Overside Delivery Order	Manual	Steamer Agent	Master
3	Ships certificates	Receipt	Manual	Steamer Agent	Master
4	Vessel planning	Vessel planning form	Manual	Steamer Agent	Port
5	Tally	Tally sheet	Manual	Port	Stevedore agent
6	Intimation of cargo arrival	Cargo arrival notice	Manual	Steamer Agent	Importer
7	Draft survey	Surveyor certificate	Manual	Surveyor	Steamer Agent
8	Completion of discharge	Discharge completion certificate	Manual	Steamer Agent	Customs
9	Export cargo loading / no discharge	Export Cargo loading / No discharge certificate.	Manual	Steamer Agent	Customs
10	Consignee appoints C&F Agent				
11	Tank inspection by Chief Officer / Surveyor Draft Survey for dry bulk, no survey for general cargo	Inspection report Draft survey report	Surveyor/ Chief Officer		Steamer Agent/ Consignee
12	Statement of Facts for calculation of lay time			Agents	Signed by master and receiver
13	Pilot Called		VHF	Master	Port
14	Delivery Order	Issue of delivery order	Manual	Steamer Agent	CHA
15	Filing of BE	Bill of entry with Invoice, Packing list, Country of Origin Certificate, Analysis Certificate.	Online	CHA	Customs Service Center
16	Filing of Import Application	Import Application	Manual	CHA	Port
17	Print check list	Check list for verification of the BE	Manual	Service Center – Customs	CHA
18	Issue of Challan TR6	Challan TR6		Customs	CHA
19	Duty value assessed	Duty advice	Manual	Customs	CHA
20	Examination	Examination order		AOAppraisal	AODocks
21	Testing for edible items for human consumption	CFTRI Mysore certificate	Manual	PHO	CHA/SA
22	Plant quarantine	Phyto / Fumigation certificate, Plant Quarantine clearance certificate	Manual	Plant Quarantine Officer	Steamer agent
23	Cargo verification	Out of Charge	Manual / EDI	Customs	CHA
24	Request for gate opening	Gate opening Application	Manual	CHA /SA	Port
25	Grant Permission	Permission letter	Manual	Port	CHA / SA

II. Arrival of Vessel to Sailing of Vessel					
Sl. No.	Activity	Document	Mode of Filing	Document Flow	
				From	To
26	Carting orders	Carting chit	Manual	CHA / SA	Transporter
27	Filing of Export Application	Export Application	Manual	CHA	Port
28	Filing of SB	Shipping bill with packing list, Invoice, Exchange Control Declaration (GR) form no. BA	Manual / EDI	CHA	Customs
29	Permission for direct	Permission letter	Manual	CHA	Port
30	Passing Cargo for exports	LEOLet export order	Manual / EDI	Customs	CHA
31	Loading export cargo	Allowed for shipment	Manual	CustomsPO	CHA
32	Filing Labour Indent	Gang Indent	Online / Manual	Stevedore	Port
33	Filing Equipment Indent	Equipment Indent	Online / Manual	Stevedore	Port
34	Filing Labour Indent	Gang Indent	Online / Manual	CHA	Port
35	Filing Equipment Indent	Equipment Indent	Online / Manual	CHA	Port
36	Delivery of imported cargo	Vehicle ticket	Manual	Port	CHA
37	Transport instructions	Form-20A	Manual	CHA	Transporter
38	Receipt of Goods on board	Mate Receipt	Manual	Master	Port / CHA
39	Port Clearance	Port Clearance certificate	Manual	Port	Steamer Agent
40	Port Clearance	Port Clearance certificate	Manual	Steamer Agent	Customs
41	Grant entry outwards	Grant Entry outwards	Online	Customs	POCustoms

Sailing of vessel to closure of the voyage

1	IT returns for the vessel	Authorization letter	Manual	Master	Steamer Agent
2	Bill	Final Marine Bill	Manual	Port	Steamer Agent
3	Export Cargo in vessel	Export General Manifest	Manual	Steamer Agent	Customs
4	Import Cargo lying	Out Turn Statement	Manual	Port	Steamer Agent / Customs

6.2 Documentation - Import Cargo

Agency	No. of Documents	Name of document
Customs	6	Bill of Entry (B/E), Customs out of charge, Customs permission on Transshipment permit TP, Customs NOC for restricted commodities.
Port	4	Tally Sheet, Shed Delivery Order, payment receipt for wharfage & demurrage, Gate pass
Shipping Agent	17	Application for Rotation with vessel details, Application for Registration, Import General Manifest (IGM), Berthing application, docking application, Advance list, payment receipt for berth hire charges and stevedoring charges, Certified Hazardous cargo list, ISPS declaration, Copy of P&I cover, Stowage plan, Bay plan, Hatch Summary, Application to PHO, Agents delivery order, Railway indent, Transshipment permit (TP), Load list.
CHA / Importer	4	Bill of Lading (B/L), Packing list, Invoice, Cargo inspection certificate
PHO / PQ	2	PHO / PQ report (for perishable cargo), PHO NOC of ship (yellow fever zone)
MCGM	2	A, B / N form (for octroi charges)
Total	35	
Customs	8	IGM, Inward entry, Customs permission (for CY to CFS), Bill of Entry (B/E), Customs out of charge (OOC), Customs permission on SMTP, Customs NOC for restricted commodities. Open Chit
Port	6	Tally Sheet, Container Movement challan, Shed Delivery Order, payment receipt for wharfage & demurrage, Gate Pass, EIR
VOA / COA	24	Application for Rotation with vessel details, Application for Registration, Import General Manifest (IGM), Berthing application, docking application, Advance list, payment receipt for berth hire charges and stevedoring charges, Certified Hazardous cargo list, ISPS declaration, Copy of P&I cover, Stowage plan, Bay plan, Hatch Summary, Application to PHO, Container load plan, Agents delivery order, Agents CMC permission, Agents gang delivery order, SMTP, Railway indent, Transshipment permit (TP), Load list, Form -13, D.O
CHA / Importer	5	Bill of Lading (B/L), Packing list, Invoice, Cargo inspection certificate, country of Origin
CONCOR	2	Train summary, Inland way bill (For ICD),
PHO / PQ	2	PHO / PQ report (for perishable cargo), PHO NOC of ship (yellow fever zone)
State Govt.	2	A, B / N form (for octroi charges)
Total	49	

6.3 Documentation - Export Cargo

Agency	No. of Documents	Name of document
Customs	4	Shipping Bill, Let Export Order, Customs NOC for restricted commodities outward entry
Port	2	Tally Sheet, Payment Receipt for Port Charges for wharfage / demurrage charges on Export Cargo.
Shipping Agent	11	Application with vessel details, Application for registration, Application for carting, Berthing application. Advanced payment receipt for berth hire and stevedoring charges, Certified Hazardous cargo list, ISPS declaration, Copy of P&I cover, Mate Receipts, Application for Port clearance, Bill of lading.
CHA / Exporter	3	Check list, Invoice / purchase order, Cart chit
PHO / PQ	1	PHO's Clearance (for Food grains)
Total	21	
Customs	8	EGM, Outward entry, Shipping Bill (S/B), Let Export Order (LEO), Allowed For Shipment, Customs NOC for restricted commodities. Open Chit, Port Clearance
Port	6	Tally Sheet, Pre Advice Slip, Container Movement Challan, payment receipt for wharfage & demurrage, Gate Pass, EIR
VOA / COA	24	Application for Rotation with vessel details, Application for Registration, Export General Manifest (EGM), Berthing application, docking application, Advance list, payment receipt for berth hire charges and stevedoring charges, Certified Hazardous cargo list, ISPS declaration, Copy of P&I cover, Stowage plan, Bay plan, Hatch Summary, Application to PHO, Container load plan, Agents delivery order, Agents CMC permission, Agents gang delivery order, SMTP, Railway indent, Transshipment permit (TP), Load list, Form -13, D.O
CHA / Importer	5	Packing list, Invoice, Cargo inspection certificate, Carting Order
CONCOR	2	Train summary, Inland waybill (For ICD),
State Govt.	2	A, B / N form (for octroi charges)
Total	47	

Table 6: Documents Involved

Appendix-7

Ready Reckoner

7.1. Reduction of TRT and Dwell Time at 25% reduced NWT and 10% increased OSB

The corresponding reduction in TRT is displayed in the table below for reference.

Turn Round Time Analysis - 25% Reduction In Non-Working Time plus 10% increase in productivity

Cargo	Average TRT (Actual) (In Days)						Expected TRT (In Days)					
	Actual	PBD	Transit	Average Non-Working Time	Vessel Working Time	Average Output per Ship Berth Day	10% Inc in Productivity	Corresp Vessel Working Time	Reduction in Vessel Working Time	25% reduction in Non-Working Time	Total Reduction in TRT	Expected TRT
	(A)	(B)	(C)	(D)	(E) = A - (B+C+D)	(F)	(G)	(H) = E x (F / G)	(I)	(J) = (D) x 25%	(K) = (I) + (J)	
Dry Bulk	4.71	1.68	0.083	0.91	2.04	13657	15023	1.85	0.19	0.23	0.41	4.30
Break Bulk	4.84	1.14	0.083	0.95	2.67	1844	2028	2.42	0.24	0.24	0.48	4.36
Containers	1.77	0.49	0.083	0.28	0.92	538	592	0.83	0.08	0.07	0.15	1.62

** Proposed reduction in Turn Round Time is achievable by

- (1) Reducing the idle time by 25%
- (2) Increasing the productivity by 10%

Average Transit time is assumed to be 0.083 days for In and Out operations

Table 7.1.: Turn Round Time Analysis – Overall

Appendix-8

Electronic Data Interchange and Port Community System (PCS)

8.1. Introduction

As ports are gateways to international trade, they face new challenges in meeting the demands for sophisticated data communication solutions. Customers and trading partners expect ports to have the most sophisticated data technology available for moving data around the terminal / berth.

8.1.1. Electronic Commerce (EC) / Electronic Data Interchange (EDI)

Members of the port community depend on the flow of data from other members to perform their functions effectively, since activity in one area will have an impact on the others. If data can be exchanged between them accurately and speedily, efficiency and throughput will be improved. Electronic Data Interchange (EDI) has therefore become an essential element for maintaining the efficient operation not only of ports, but also for the complete trade and transportation cycle.

The EC / EDI implementation is vigorously pursued in the functioning of trade regulating and facilitating organizations like Customs, Ports, Airports, Airlines, Banks, DGFT, AEPC / Texprocil, CONCOR, etc. Implementation of EDI varies from port to port and covers areas like banks, exchange with Customs and fewer messages among fewer users.

Though Indian Major Ports introduced computers for their operations and management quite early, they could not fully establish an

integrated EDI with their trading partners.

Also, in the Indian port community, though some members have computerized their internal operations, it is difficult for them to transfer data electronically to all trading partners. Therefore, exchanging data, getting status updates from trading partners or transacting business with other members of the community all take place manually, resulting in re-entry of data into their internal systems at the cost of speed and accuracy affecting their customers in terms of service levels.

As the dominant players of the community (Customs, ports, banks etc.) begin to adopt electronic exchange of data and e-commerce practices, other members of the community are forced to comply. In the near future, companies that do not reengineer their processes to the demands of trade will either stagnate or perish.

The availability of broadband Internet connections at affordable costs in the country has overcome the barriers of digital divide and provided accessibility / uniform interface to all members.

Hence, electronically integrating all activities across the maritime transport chain (from cargo origin to destination) into a common Port Community System is the need of the hour. Such a System must meet all the requirements of stakeholders and must be dynamic, consistent and easily accessible through the Internet.

8.1.2. Towards Integration - Port Community System

At present, EDI implementation at ports is being carried out in a piecemeal fashion and hence the real benefits have not been realized so far. Therefore, steps have already been initiated to implement a centralized web-based Port Community System (PCS) at all Major Ports to reap the maximum benefits of EC / EDI and move towards a paperless regime.

The Port Community System (PCS) is intended to integrate the electronic flow of information across all trading partners involved in the maritime transport chain through a common interface. The PCS will function as the centralized hub for all Major Ports of India and other stakeholders like Shipping Lines / Agents, Surveyors, Stevedores, Banks, Container Freight Stations, Government Regulatory Agencies, Customs House Agents, Importers, Exporters, Transporters etc. for exchanging messages electronically in a secure manner using the latest technologies.

It will be accessible through a secure and personalized web browser. This central and common facility will definitely save time and money by improving the speed of services. It will also improve track and trace efficiency and shipment / service visibility by automatically posting the current status updates by the system of each member, as and when any significant event occurs. The status will be available for all interested parties for viewing or downloading as required.

Main Objectives of PCS:

- Develop a centralized web-based application, which acts as a single window for community members / stakeholders to exchange

messages electronically in a secure fashion.

- Data repository for research and analysis.

Benefits of PCS:

- User will be able to file documents for any port from anywhere in India;
- User will be able to monitor and track the activities through the web;
- Provides both web forms as well as message exchange options;
- Provides gateways for payment, SMS, e-mail etc., centrally;
- Minimize hardware / software procurement and maintenance costs by avoiding duplication of resources at each port community;
- Better security, redundancy and providing for disaster recovery;
- Building of a repository of information for endless query options and a variety of needs including statistics and research; and
- Over a period of time when the repository of information gets built up, past data can be quite valuable.

The centralized web-based Port Community System (PCS) is likely to be in place by the end of 2007. The ultimate aim is to seamlessly integrate all members of the port community and also to provide an electronic platform to act as a single window for exchanging messages.

8.1.3. Electronic Data Interchange (EDI) at Indian Major Ports

All EDI messages with Customs are being exchanged. However, the port does not possess

the software infrastructure to utilize / generate messages so as to benefit in terms of information exchange with at least one stakeholder, namely Customs. We continue to depend on the corresponding manual documents of Customs for completing port documentation.

8.1.4. Status of EDI and Internal automation

Name	Status
Port – Customs EDI messages exchange	- All Ports except Paradip and Ennore
Port – Bank messages exchange	- Exist to some extent in all ports except Vizag and New Mangalore
Port – User interface	- JNPT/NSICT/PSA/VTPL exchanging UNEDIFACT messages
	- NMPT exchanging vessel information through FTP (File Transfer Protocol)
	- Tuticorin/Chennai /MOPT/COPT exchanging messages which are web based
Port Community System	- Vendor has been selected. Work to commence from August 2006 and likely to complete by Dec 2007

Table 8.1.4.: Status of EDI and Internal automation

8.1.5. Messages for Information Exchange in PCS

Sl.No.	Messages	From	To
VESSEL RELATED MESSAGES			
1	Vessel Profile	SA	Port
2	CALINF : VIA/VCN Registration / Vessel Scheduling	SA	Port
3	Allotment of VIA / VCN Registration / ACK of CALINF	Port	SA
4	BERMAN : Berth Management Message (BERMAN) / Berthing Application / Un-Berthing Application / Resource Request / Movement of Vessel from one Berth to other	SA	Port
5	PAXLST : Passenger / Crew List Message	SA	PHO, Immigration, Port
6	BAPLIE : Bay Plan / Stowage Plan	SA Port / Surveyor	Port (Import), SA (Export)
7	MOVINS : Stowage Instruction	SA	Port
8	IFTDGN : Dangerous Goods Notification	SA	Port, CHA, Importer
9	Requisition for Resources	SA / Stevedores	Port
10	Allotment of resources	Port	SA / Stevedores
11	Un-Berthing / Sailing / Shifting / Re-Berthing Application	SA	Port
12	VESDEP : Vessel Movement / Vessel Departure Message	Port	SA
13	TPFREP : Terminal Performance Report	Port	SA
CONTAINER RELATED MESSAGES			
14	COPRAR : Container Loading and Discharge Order / Advance Container List (Imports and Exports)	SA	Port CONCOR / RAIL OPERATORS, CHACFS Surveyor, Transporter
15	COARRI : Container Loading / Discharge Report	Port	SA
16	COSTOR : Container Stuffing / De-Stuffing Order	SA	Port, CFS
17	Container Load Plan (CLP)	SA	Port, CFS, Surveyor
18	Container special handling order	SA	Port
19	COSTCO : Container Stuffing / De-stuffing report	Port, CFS	SA
20	Gate Open Report / Cut Off Report	Port	Stakeholders

Sl.No.	Messages	From	To
21	CODECO : Container / Cargo Gate-In Gate-Out Report	Port	SA, CHA
22	EIR : Equipment Interchange Report	Port	SA, Transporter
23	COPARN : Empty Container Release Order	SA	Port
24	COEDOR : Container Stock Report	Port	SA / CHA, CFS
25	Request for Carting Permission	SA, CHA	Port
26	Confirmation of Carting	Port	SA, CHA
27	Job Order	CFS	Port, Transporter
28	Stoppage or Release of Containers	Customs	CFS / Port

FINANCE RELATED MESSAGES

29	Request for Assessment	SA	Port
30	Confirmation of Advance	Port	SA
31	PD Account Balance Details / Shortfall Intimation Notice	Port	SA, CHA
32	INVOIC : Invoice for Vessel / Container / Stevedoring / Cargo	Port	SA, CHA
33	PAYORD : Pay Order / Refund Order	Port	SA, CHA
34	CREADV : Credit Advice	Bank	SA, CHA, Port
35	DEBADV : Debit Advice	Bank	SA, CHA, Port
36	Daily Transaction Summary Report	Bank	Port

CARGO RELATED MESSAGES

37	Bill of Lading / Agent Delivery Order	SA	CHA, Port
38	Mate Receipt Return of Mate Receipt	SA Port	Port SA
39	Application for Log Entry / Short landed / Landing remark certificate	CHA	Port / CFS
40	Grant of Log Entry / Short landed / Landing remark certificate	Port / CFS	CHA

Sl.No.	Messages	From	To
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TRANSPORT RELATED MESSAGES

41	COPINO : In-land Waybill / Container Pre-notification message arriving by Rail / Placement Memo / In-Landway bill / Rail Receipt / Export Advance list for Containers arriving by rail	Rail Operator	Port / CHA / Stevedore
42	Rail Receipt	Rail Operator	Port / CHA/ Stevedores
43	Removal Memo from Rack Stevedore	Port CHA / Operator / Port	Rail Operator Rail
44	Pendency of Containers with Respect to Destination	Port Rail Operator	SA, Rail CHA / Stevedore
45	Train Schedule / Summary Certificate	Port Rail Operator	SA, CHA / Stevedores

REGULATORY AUTHORITY MESSAGES

46	Application for Tonnage Certificate	SA	DG Shipping
47	Tonnage Certificate	DG Shipping	SA / Port
48	License for Vessel Application	Ship Owner	DG Shipping
49	Acknowledgment for License for Vessel Application	DG Shipping	Ship Owner
50	Coastal Voyage Registration	Ship Owner	DG Shipping
51	Acknowledgement for Coastal Voyage Registration	DG Shipping	Ship Owner
52	Multimodal Transport Registration	Transporter	DG Shipping
53	Acknowledgement for Transport Registration	DG Shipping	Transporter
54	Cargo Manifest	SA Customs	Customs Port
55	Container Details	SA Customs	Customs Port
56	Allocation of IGM Number	Customs	SA
57	Grant of Entry Inward	Customs	SA, Port
58	Request for Cancellation	SA	Customs
59	Confirmation of Vessel Arrival at Port	Port	Customs

Sl.No.	Messages	From	To
60	Cancellation of IGM Number	Customs	SA, Port
61	Landing / Tally Report	Port / Stevedores	SA, Customs
62	Details of the Containers Landed and Damaged Packages	Port	Customs
63	Excess Landed Cargo	Port	Customs
64	Location of Cargo	Port	Customs
65	Out of Charge	Customs	CHA, Port
66	Containers out of Charge	Customs	CHA, Port
67	Out of Charge-Item Details	Customs	CHA, Port
68	Request for Transshipment	SA	Customs
69	Transshipment Permit	Customs	SA, Port
70	Detention / Confiscation Release Order	Customs	Port
71	Detention / Confiscation Release of Containers	Customs	Port
72	Gate Pass	Port / CFS	CHA, Customs
73	Disposal Order	Customs	Port
74	Item Disposal Order	Customs	Port
75	Cargo Disposal Particulars	Port	Customs
76	Request for Cargo Movement	SA	Customs
77	Cargo Movement Approval	Customs	SA, Port, CFS
78	Arrival of Cargo at CFS	CFS	Customs
79	Transshipment Approval	Customs	SA, Port
80	Acknowledgement Message to Transshipment Request	Customs	SA
81	Application for Rotation Number	SA	Customs
82	Allotment of Rotation Number	Customs	SA, Port
83	Application for Cancellation of Rotation Number	SA	Customs
84	Cancellation of Rotation Number	Customs	SA, Port

Sl.No.	Messages	From	To
85	Shipping Bill Details	Customs	Port
86	Shipping Bill - Item Details	Customs	Port
87	Entry of Goods into Port	Port	Customs
88	Entry of Goods into Port - Container	Port	Customs
89	LEO / Stuffing Report	Customs	SA / CHA, Port
90	Stuffing Report - Container Information	Customs	SA / CHA, Port
91	Details of Shutout Cargo	Customs	Port
92	Container / Package Shutout Cargo Details	Customs	Port
93	Application for Entry Outward prior to Loading U/s 39	SA	Customs
94	Grant of Entry Outwards	Customs	SA, Port
95	Application for Port Clearance U/s 42 (Prior to Sailing)	SA	Customs
96	Grant of Port Clearance	Port, Customs	SA
97	Vessel Sailing Report	Port	Customs, SA
98	Export General Manifest	SA	Customs, Port
99	EGM - Container Particulars	SA	Customs, Port
100	Requisition of Stevedoring activities	All Stakeholders	Stevedores / Port

Sl.No.	Additional Messages	From
1	Submit Bill of Entry	CHA / Importer
2	Submit Shipping Bill	CHA / Exporter
3	ETA	SA
4	Request Back to town	CHA
5	Permission Back to town	Customs
6	Movement Permission from Pre-Shipment to Dock	CHA
7	Movement Order	Port
8	Export Cargo Register	Port
9	Form 13 / Annexure C	CHA
10	Forwarding note	SA
11	Work Order	SA
12	Container departure information	Rail Transporter

Table 8.1.5.: Message for Information Exchange in PCS

Appendix-9

Flow Through Gate System

A unique and innovative system for passage of trucks into the various container terminals has been designed at PSA Singapore. As explained earlier, the four terminals (Brani, Keppel, Tanjong Pagar & Pasir Panjang) operate as one seamless terminal. The horizontal integration of the terminals and seamless transfer of containers is the cornerstone of efficiency at PSA. Since the terminals are contiguous to the city, quick entry into the terminal is essential to keep the connecting roads free and fast flowing so that congestion at terminal and city roads is avoided. A flow through system has been designed to ensure immediate access of trailer-trucks, on arrival, to the terminal.

The Flow Through Gate System, introduced in 1997, is a fully automated system that identifies trucks and gives drivers instructions within 25 seconds.

The Flow Through Gate System handles an average traffic flow of 700 prime movers per peak hour, and 8,000 prime movers per day.

The fully automated and paperless process clears prime movers for entry into the port within 25 seconds using the following steps:

- A manifest is submitted through Portnet 36 hours in advance.
- The truck arrives at the gate and is weighed by the weighbridge.
- The driver taps his ID card on the reader and keys-in an ID number.
- A signal is automatically picked up from the transponder atop the truck's cabin.

- The container number is captured by the Container Number Recognition System via CCTVs at the gate.
- The weight of the truck, driver's identity, truck's identity and the container number is all checked against the manifest and cleared.
- The automatic paging system tells the driver the exact position in the yard where the container will be stacked.

In 1999, the Flow Through Gate System was conferred an Innovation Award at the 11th UK Seatrade Awards for its contribution to the Port's excellence.

Appendix-10

Recommendations to improve Port efficiency

10.1. Other Measures – Port Account

10.1.1. Augmenting capacity at ports

The capacity of ports is dependent on the number of berths, equipment and handling systems.

- **Berths – More Dedicated Facilities**

Berth Occupancy is higher than 65% for berths with dedicated facilities to handle streams of traffic such as iron ore, fertilizers and containers. However, in these specific streams, the capacity to handle vessels should be seen in terms of both berth occupancy as well as Pre-Berthing Detention of vessels. Considering these two factors, more dedicated berths, especially to handle dry bulk and containers, need to be developed with respect to the cargo profile of the port. Furthermore, Single Point Moorings (SPM) are to be developed for catering to crude oil traffic to exploit economies of scale, as the Government is encouraging shore based refineries. To improve the productivity at these SPMs and at oil berths, suitable superstructures for pumping at international norms are to be developed.

(Action: MOS, All Ports)

Time Frame: 31.03.2010

- **Equipments – Higher Capacity superstructures at Berth**

The level of penetration of mechanization in the general / break bulk cargo stream is quite

inadequate when compared to international norms. Further, it varies from port to port and many ports are dependent on the ship's gears to handle cargo. Equipments are also outdated and have notoriously poor levels of productivity and high downtime. Ports are unable to replace their equipment because of an MOS advisory stipulating a minimum lifespan of 20 years.

It is therefore recommended that every multipurpose cargo berth should have at least two back-up shore cranes (Quay shore cranes) or harbour mobile cranes of a minimum capacity of 30 tonnes and above / 35 tonnes for containers, with the ability to fit grabs as well as spreaders for containers. Harbour mobile cranes are versatile in character hence they can be optimally utilized for multi-commodity handling. The codal life of all equipments to be only 10 years as against the existing 20 years.

(Action: MOS, All Ports)

Time Frame: 31.03.2009

- **Handling Systems – State-of-the-art Systems and TQM Implementation**

Handling systems are relevant in bulk streams, which handle oil, iron ore, coal etc. in large quantities. The dedicated handling systems in vogue are quite old in most ports. These need to be modernized with the state-of-the-art handling systems characterized by the ability to handle newly evolving heavy axle wagons (higher capacity hydraulic tippers), a conveyor rate of at least 4,000 tonnes per hour (international benchmark) and a ship loading rate of 4,000 tonnes per hour. Even in some ports

where such state-of-the-art systems have been commissioned, the actual productivity achieved is lesser than the designed capacity due to improper maintenance practices and poor work ethics. Therefore, it is recommended that Total Quality Management (TQM) should be enforced and shift changeovers should be made seamless to reduce Non-Working Time.

At most container terminals, the vessel rate is about 45-50 containers per hour, which is below the international benchmark of 75-100. This is mainly due to the deployment of less number quay cranes per vessel and the nature of vessels calling at Indian ports. It is recommended that in the concession agreement for private terminals, it should be mandated that a minimum of three quay cranes per ship be deployed at all times. This will ensure faster turn round of container vessels, increase windows available for berthing and attract larger vessels to Indian ports.

(Action: MOS / All Ports)
Time Frame: 31.03.2009

- **Uniform national policy for creating a minimum of (-) 14 metres draught at all Major Ports**

Restrictions of draughts at various ports seriously impede the ability to handle vessels of a standardized international scale. Minimum draft of (-) 14m will give Major Ports the capability to handle post-Panamax vessels for dry bulk and mainline mother vessels for containers. At international ports, the Government funds the dredging and maintenance cost of channels. It is therefore recommended that, as a national policy, minimum draft of (-) 14m in all Major Port berths be developed. It is also recommended that the Government fund the cost of maintaining the minimum draught.

(Action: MOS)
Time Frame: 31.03.2012

10.2. Other Measures – Non-Port Account

10.2.1. Additional testing facilities

Permit accredited non-governmental testing laboratories: Government to permit statutory bodies to accept the test certificates issued by accredited testing laboratories, eliminating the need for the samples to be sent to far flung government laboratories only.

(Action: MOS)
Time Frame: 31.03.2008

10.2.2. Create Exclusive Cargo Freight Corridor

Exclusive cargo freight corridor: Road and rail has to be developed in all important ports urgently. Also the rail / road connectivity to all ports has to be expedited. This will enable the transporters to operate their fleet round the clock.

(Action: MOS / Ministry of Railways)
Time Frame: 31.03.2009

10.2.3. Introduce Heavy Axle Trucks / Wagons

Heavy axle wagons and multi axle trucks to be introduced in the transportation sector: This will improve the turn round of trucks and enhance the carrying capacity of vehicles to facilitate expedition / evacuation of cargo.

(Action: Other Stakeholders)
Time Frame: 31.12.2008

10.2.4. Introduce Unified Transmission Form

Implement a unified and secure Transmission Form that is valid across the country to avoid delays at check points.

(Action: Ministry of S, RT & H, Dept. of Road Transport / All State Governments)
Time Frame: 31.12.2008

Appendix-11

List of the Plans for Procurement with Dates

Sl.No.	Name of the Scheme	Nature of Cargo	Year in which to be added	Award/Date of Commencement of Project	Completion of Project
KOLKATA DOCK SYSTEM					
1	Procurement/Replacement/ Refurbishment of Cargo of handling equipment/25.00/32.00 (Spillover Scheme of 10th Plan)*	Primarily Container	0.75 from 2009-10	Project already commenced in 2004-05	2009-10
2	Procurement/Induction of Ship-to-Shore/ MHCs including Yard Development at KDS/ 50.00 (on hiring basis)	Container	1.25 from 2010-11	2009-10	2010-11
3	Procurement/Induction of 1 30 Te ELL Quay Crane/8.00 (on hiring basis)	Break Bulk	0.20 from 2010-11	2009-10	2010-11
4	Replacement / Refurbishment of various Cargo handling equipment (Phase-II)/ 23.50 [Scheme to spillover beyond 2013-14]	Break Bulk Container	No capacity to be added	2011-12	2014-15
5	Construction of Pilotage facilities/14.20 (Spillover Scheme of 10th Plan)*		0	Project already commenced in 2005-06	2007-08
6	Modernisation/replacement of Port Craft viz. Grab Dredger (Midnapore) & Tugs (Hena, Golap) / 50.00		0	2007-08	2011-12
7	Replacement of SD Subarnarekha/ 130.00		0	2009-10	2011-12
HALDIA DOCK SYSTEM					
1	Procurement of 2 RMQCs for container handling (incl. RMQC track and cabling)/ 50.00 (Spillover Scheme of 10th Plan)*	Container	1.5 from 2006-07	2004-05	2006-07
2	Procurement of 4 RTGCs for container handling at CPY/ 24.00 (Spillover Scheme of 10th Plan)*	Container	1.5 from 2006-07	2005-06	2006-07
3	Procurement of 2 Stacker-cum-Reclaimer/ 24.70 (Spillover Scheme of 10th Plan)	Iron Ore, Coking Coal etc.	1.00 from 2008-09	2006-07	2008-09
4	Procurement of 4 ELL Cranes for equipping Berths 8 & 9 / 40.00 (on hiring basis)	Multipurpose Cargo	2.06 from 2009-10	2007-08	2009-10
5	Procurement of two RMQCs and 4 RTGs for Berths 10 & 11 / 100.00 (on hiring basis)	Container	2.34 from 2010-11	2008-09	2010-11
6	Procurement of 7 Mobile Harbour Cranes for equipping various berths & jetties / 105.00 (on hiring basis)	Container	3.40 from 2010-11	2008-09	2010-11

Sl.No.	Name of the Scheme	Nature of Cargo	Year in which to be added	Award/Date of Commencement of Project	Completion of Project
7	Procurement of various shore handling equipment (dumpers, payloaders, reach stackers) in various phases / 106.00 (on hiring basis) Sub-Total of C		2010-11	2011-12	

PARADIP

1	Replacement & Procurement of Locomotive			March 2006/ April 2009	March 2012
2	Procurement of Wharf crane.			August 2007	March 2009
3	Incorporation of 2nd stream existing IOHP.			Nov. 2005	Dec 2007
4	Replacement of Reclaimer (2 nos.)			June 2007/ May 2008	March 2010
5	Replacement of Wagon tippler (2 nos.)			June 2007/ May 2010	March 2012

VISAKHAPATNAM

1	Procurement of barges and launches			May 2001	March 2009
2	Modernisation of Ore handling complex / replacement of stacker, etc.	Iron ore & Pellets		March 2008	Feb. 2010
3	Mechanized cargo handling facilities at GCB at Outer Harbour	Coking coal & Steam coal	(2009-10 :-3.00)	Jan. 2008	Dec. 2009
4	Mechanized cargo handling facilities at 2 berths at Inner harbour	Coal and Iron ore	(2008-09 :-4.00) (2010-11 :-2.00)	Oct. 2007	March 2009
5	Spillover from 10th Plan			Oct. 1999	Mach 2007
6	Mechanized facilities at Inner harbour	Fertilizers and other bulk	(2010-11 :-3.00)	April 2008	March 2010
7	Procurement of Bucket Wheel Reclaimer as a replacement	Iron ore & Pellets	April 2008	Sep. 2009	
8	Replacement of tractor tug Swarna			March 2008	Sep. 2010
9	Replacement of 2 Locos by 1430 HP			Jan. 2008	June 2010
10	Replacement of 10 tonne cranes by 4 Harbour mobile cranes			Sep. 2008	Dec. 2009
11	Replacement of one tug Nethravathi			June 2009	June 2011
12	Replacement of one Loco by 3100 HP			Nov. 2006	Feb. 2007

ENNORE

Nil

CHENNAI

1	Provision of 10-15 MW Windmill	—		March 2008	Oct. 2009
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Sl.No.	Name of the Scheme	Nature of Cargo	Year in which to be added	Award/Date of Commencement of Project	Completion of Project
TUTICORIN					
1	Conversion of Berth 8 as Container Terminal	Container	2009	March 2007	Dec. 2008
2	Procurement of Equipment etc.		2008	March 2007	March 2008
3	Floating Craft Procurement			2008	2010
4	Replacement of Tug Rajaji		Aug. 2006		Aug. 2006
5	Replacement of Tug Kamaraj		March 2008	Dec. 2006	March 2008
6	Conversion of Berth 9 as Container Terminal	Container	2012	Nov. 2009	2011
7	Constn. of separate signal station including Provision of 2 Pilot launch and 3 Mooring boat			Jan. 2009	Dec. 2011
8	3 MVA capacity Power Plant			2008, 2009, 2010	2009, 2010, 2011
9	Procurement of Diesel electric locomotive for shunting purpose		2009	2008	2009

COCHIN

1	Replacement of 2 RTGs & 2 Tugs	Coal & Misc.	May 2008	Sept. 2006	May 2008
2	Procurement of one no. Rail mounted Quay Gantry Crane/Electric level luffing crane	Coal & Misc.		June 2007	June 2009
3	Cargo Handling Equipments	Coal & Misc.		July 2007	March 2012

NEW MANGALORE

1	Procurement of Harbour Crane		2012	2010	2012
2	Procurement of Harbour Tugs		2012	2007	2012

MORMUGAO

1	Replacement of First bucket wheel reclaimer	Iron ore	2008-09	Feb.'08/Feb.'09	Feb. 2009
2	Replacement of Second bucket wheel reclaimer	Iron ore	2009-10	Feb.'09/Feb.'10	Feb. 2010
3	Replacement of one Ship loader	Iron ore	2008-09	Feb.'08/Feb.'09	Feb. 2009
4	Replacement of Second Ship loader	Iron ore	2009-10	Feb.'09/Feb.'10	Feb. 2010
5	Replacement of two stackers	Iron ore	2008-09	April'07/Sept.'08	Sept. 2008
6	Replacement of third stacker	Iron ore	2009-10	Sept.'08/Aug.'09	Aug. 2009
7	Transhippers for Iron ore export	Iron ore	2011-12	April'11/Mar.'12	March 2012
8	Replacement of Barge Unloaders	Iron ore	2006-07	Completed	Completed

Sl.No.	Name of the Scheme	Nature of Cargo	Year in which to be added	Award/Date of Commencement of Project	Completion of Project
MUMBAI					
1	Replacement of caisson gate at HDD.	—	—	March 2007	July 2008
2	Replacement of 3 Dock tugs by Two dock tugs	—	—	Jan. 2007	July 2008
3	Replacement of ELL wharf cranes	—	—	Dec. 2006	Feb. 2008

J.N.P.T.

1	Acquisition of 3 new Super Post panamax size RMQCs / Replacement of existing 2 RMQCs acquired in 1989	Container	2008-09	Jan. 2007	May 2008
2	Acquisition of 6 RTGC			Feb. 2009	Jan. 2010
3	Replacement of one RMGC on line 1&2			Dec. 2008	Dec. 2009
4	Replacement of 3 RMQCS			Oct. 2010	Dec. 2011
5	Replacement of container handling equipment 01 No. RMQC 03 No. RTGCs 01 No. RMGC			Oct. 2011 Dec. 2011 Dec. 2011	Dec. 2012 Dec. 2012 Dec. 2012
6	Acquisition of one Super Post panamax size RMQC at MCB and shifting of existing one RMQC at SDB	Container	2010-11	Oct. 2009	Dec. 2010
7	Replacement of one of RMGC			Dec. 2011	Dec. 2012
8	Acquisition of 4 of RTGCs			Feb. 2011	Jan. 2012
9	Replacement of 3 tugs			Sept. 2007	Jan. 2009
10	Replacement of port craft 3 pilot launches and one utility launches			Sept. 2007	Feb. 2009
11	Replacement of Launches			April 2011	March 2012
12	Acquisition of 2 of RMGCs			July 2005	Feb. 2007

KANDLA

1	Procurement of 3 ELL Wharf Cranes	Dry cargo	2006-07	Feb. 2004	1st Crane - Nov. 2006 2nd Crane - Nov.2006 3rd Crane - Jan. 2007
2	Procurement of 5 ELL Wharf Cranes	Dry cargo	Jan. 2010	April 2007	Jan. 2010

Sl.No.	Name of the Scheme	Nature of Cargo	Year in which to be added	Award/Date of Commencement of Project	Completion of Project
3	Upgradation of Marine Infrastructure/Flotilla for Handling Larger Vessels				
a	One 50 Tonnes Harbour Tug for Kandla (Estimated Cost Rs. 17.91 crores)	N/A	Jan. 2007	Feb. 2005	Jan. 2007
b	Two Pilot Launches - one each for upgradation of flotilla at Kandla and Vadinar (Estimated Cost Rs. 7.10 crores)	N/A	Jan. 2007 1st launch Feb. 2007 2nd launch	Aug. 2005	Jan. 2007 1st launch Feb. 2007 2nd launch
c	Remaining items :-				
	i) Two 50 Tonnes Tugs for Tuna (Estimated Cost Rs. 40.00 crores)	N/A	March 2009	Dec. 2007	March 2009
	ii) One 50 Tonnes Tug for Vadinar (Estimated Cost Rs. 20.00 crores)	N/A	Nov. 2008	Aug. 2007	Nov. 2008
	iii) Three Tugs of 30 Tonnes for Kandla (Estimated Cost Rs. 45.00 crores)	N/A	Nov. 2010	April 2009	Nov. 2010
	(iv) Four Pilot Launches - 2 for Kandla and 2 for Tuna (Estimated Cost Rs. 16.00 crores)	N/A	March 2009	June 2007	March 2009
	(v) Two Mooring Launches for Tuna (Estimated Cost Rs. 8.00 crores)	N/A	March 2009	Dec. 2007	March 2009
4	Mechanisation dry cargo berth - procurement of three ELL wharf cranes of 30 tonnes capacity	Dry Cargo	Sept. 2009	Jan. 2008	Sept. 2009

Table 11: List of the Plans for Procurement with Dates

Appendix-12

Abbreviations

BE	Bill of Entry
BL	Bill of Lading
CCTPL	Chennai Container Terminal Private Limited
CFS	Container Freight Stations
CHA	Custom House Agents
COA	Container Operating Agent
CONCOR	Container Corporation of India
DDD	Direct Delivery
DGFT	Director General of Foreign Trade
DO	Delivery Order
EA	Export Application
ECR	Export Cargo Receiver
EDI	Electronic Data Interchange
EIR	Equipment Interchange Report
GCH	Green Channel Delivery
GPS	Global Positioning System
GTI	Gateway Terminal India
ICD	Inland Container/Clearance Depot
IGM	Import General Manifest
IMDG	International Maritime Dangerous Goods
IRR	Internal Rate of Return
ISPS	International Ship and Port Facility Security
JIT	Just-in-Time
JNPT	Jawaharlal Nehru Port Trust
LC	Letter of Credit
LEO	Let Export Order
MMD	Mercantile Marine Department
MNC	Multi National Company
MT	Million Tonnes
MTA	Empty Available
MTY	Empty
OOC	Out of Charge
OOG	Out of Gauge
OSB	Output Ship Berth day
PBD	Pre-Berthing Detention Time
PHO	Port Health Organization
PNR	Public Notification Reference
POL	Petroleum Oil Lubricants
RFID	Radio Frequency Identification
TEU	Twenty foot Equivalent Unit
TRT	Turn Round Time
TSA	Transshipment Advise
UIL	Under Inbound Load
UN/EDIFACT	United Nations Electronic Data Interchange for Administration, Commerce and Transport
UOL	Under Outbound Load
VIA	Vessel Identification Advice
VOA	Vessel Operating Agent



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