1996

A conceptual plan for the provision of reception facilities in the Philippines

Elson Estioko Hermogino
WMU

AUPRI

WORLD MARITIME UNIVERSITY
Malmö, Sweden

A CONCEPTUAL PLAN FOR THE PROVISION OF RECEPTION FACILITIES IN THE PHILIPPINES

By

ELSON ESTIOKO HERMOGINO
Republic of the Philippines

A dissertation submitted to the World Maritime University in partial fulfilment of the requirements for the award of the degree of

MASTER OF SCIENCE

in

GENERAL MARITIME ADMINISTRATION
&
ENVIRONMENT PROTECTION

1996

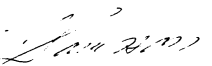
DECLARATION

I certify that all the material in this dissertation that is not my own work has been identified, and that no material is included for which a degree has previously been conferred on me.

The contents of this dissertation reflect my own personal views, and are not necessarily endorsed by the University.

Signature: 

Date: 18 October 1996

Supervised by: 

Name: **Prof. Theodore Sampson**

Office: Course Professor, General Maritime Administration and Environmental Protection Course

World Maritime University

Assessed by: 

Name: **Prof. Tore Langjord**

Office: Professor, Maritime Safety Administration Course

Institution/organization: World Maritime University

Co-assessed by:

Name: **Mr. Per H. Olson**

Office: Senior Port Specialist

Institution/organization: Swedish National Maritime Administration

ACKNOWLEDGEMENTS

I wish to express my gratefulness to the Philippine Coast Guard Command for giving me the rare opportunity to complete this specialised study. Also, I extend my deepest gratitude to the Sasakawa Peace Foundation of Japan for its benevolent support in sponsoring my fellowship at WMU. Likewise, I offer my profound recognition to the World Maritime University, the Rector, Vice-Rector, resident professors, academic and non-academic staff, and the visiting professors for their professional and unselfish effort in imparting their valuable knowledge and expertise.

I am especially thankful to Prof. Ted Sampson for his invaluable guidance and supervision which proved helpful in the successful completion of this project.

This work would also not have been possible without the assistance of Nelly Balboa who shared her valuable time in securing the information I needed from various agencies in the Philippines.

I extend too, my appreciation to the Filipino community in Malmo for making my stay more pleasurable and worthwhile.

My utmost love to my wife, Rutchel, who painstakingly endured my absence and singlehandedly managed matters at home.

And finally, to the **Almighty**, for guiding my spirit and giving me strength to face all the challenges and obstacles.

ABSTRACT

This dissertation synthesizes a conceptual plan for the provision of reception facilities to improve marine environmental protection in the Philippines. The study is premised on the perception that the various pollution control measures formulated by the Philippine Coast Guard, which are mandated to address ship source pollution, are not being implemented due to the absence or severe inadequacy of the needed reception facilities in ports.

The extent of maritime activities is presented while the various legislation, rules and regulations adopted by the Government concerning marine environmental protection in general, and the provision of reception facilities in particular, are examined. In the same manner, existing operations of port reception facilities and waste management practice in the Philippines are also examined.

The operational modalities of reception facilities of selected countries are considered and evaluated for their adaptability within the Philippine setting and especially the particular aspect of financing and cost recovery which is considered a critical issue. With the foregoing, strategic considerations were formulated for the provision of reception facilities that should be initiated by the Philippine authorities in participation with the private sector.

The concluding chapter summarizes the necessary approaches for the provision of reception facilities, which has been considered an important complimentary provision of MARPOL 73/78, in the Philippine setting. It is hoped that the plan will guide and influence concerned authorities and private enterprises to achieve total marine environmental protection, parallel with the IMO's objective of "Safer Ships and Cleaner Oceans".

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

ASEAN	- Association of South East Asian Nations
BIMCO	- The Baltic and International Maritime Council
BOT	- Build Operate Transfer
CFR	- Code of Federal Regulations
CG	- Coast Guard
CMAA	- Chief Master at Arms
DENR	- Department of Environment and Natural Resources
DOTC	- Department of Transportation and Communications
ECC	- Environmental Compliance Certificate
ECP	- Environmental Center of the Philippines
EEZ	- Exclusive Economic Zone
EIA	- Environmental Impact Assessment
EMB	- Environmental Management Bureau
EO	- Executive Order
GDP	- Gross Domestic Product
GEF	- Global Environmental Facility
GESAMP	- Joint Group of Experts on Scientific Aspects of Marine Pollution
GNP	- Gross National Product
GRT	- Gross Registered Ton
HELCOM	- Helsinki Commission
IACEP	- Inter-Agency Committee on Environmental Protection
ICS	- International Chamber of Shipping
IMO	- International Maritime Organisation
INTERTANKO	- International Tanker Owners Association
ISM	- International Safety Management
ISPP	- International Sewage Pollution Prevention
JICA	- Japan International Co-operation Agency
LC	- London Convention
LGU	- Local Government Unit
LOI	- Letter of Instruction
MAPMAS	- Master Plan on Maritime Safety
MARAD	- Maritime Administration
MARINA	- Maritime Industry Authority
MARLEN	- Maritime Law Enforcement
MAROPS	- Maritime Operations
MARPOL	- Marine Environmental Protection
MARPOL 73/78	- International Convention for the Prevention of Pollution from Ships
MARSAR	- Maritime Search and Rescue
MC	- Memorandum Circular
MEPO	- Marine Environmental Protection Office

MICT	- Manila International Container Terminal
MSO	- Maritime Safety Office
MT	- Metric Ton
NEDA	- National Economic and Development Authority
NGO	- Non-Government Organisation
NLS	- Noxious Liquid Substance
NOCOP	- National Operation Centre for Oil Pollution
NPCC	- National Water and Air Pollution Control Commission
OILPOL	- International Convention for the Prevention of Pollution of the Sea by Oil
OPCON	- Operational Control
OPRC	- International Convention on Oil Pollution Preparedness, Response and Co-operation
PCG	- Philippine Coast Guard
PD	- Presidential Decree
PDO	- Port District Office
PFDA	- Philippine Fisheries Development Authority
PMO	- Port Management Office
PPA	- Philippine Ports Authority
PSSD	- Philippine Strategy for Sustainable Development
RA	- Republic Act
SIDA	- Swedish International Development Agency
UK	- United Kingdom
UN	- United Nations
UNCLOS	- United Nations Convention on the Law of the Sea
UNDP	- United Nations Development Programme
UNEP	- United Nations Environment Programme
US	- United States
WCISW	- Wider Caribbean Initiatives for Ship-Generated Wastes

CHAPTER I
GENERAL INTRODUCTION

Pollution of the world's ecosystem has become a matter of global concern. There is now an increasing public awareness of destruction of the environment. The need to preserve the environment has been recognized, which has subsequently led to the formation of international organizations and study groups to address the situation (Gosovic, 1992, pp 3-5). The discovery of the hole in the Earth's ozone layer and the concern of increasing temperature over the years, or the "greenhouse effect" further heigthened the feeling of anxiety among the general populace (Steger & Bowermaster, 1990, pp 1-5). Non-government organizations sprang up and public awareness has been increased by the media activities of these groups which are more popularly known as environmental groups. Most vocal and notable of these groups is "Greenpeace".

In the marine environment, most of the pollution comes from land based sources that include effluents of various industrial establishments, run-off from agricultural activities and chemical products and sewage discharges from population centers. However, a significant amount comes from marine exploration, petro-chemical and shipping operations and accidental oil spills from crude carriers (Wardley-Smith, 1979, pp 1-10).

Sea pollution caused by ships has become one of the world's most visible and critical problems and requires a solution as soon as possible. Although oil spills constitute only a small percentage of the total marine pollutants, they are normally featured as significantly contributing to the destruction of the marine environment. This is mainly because of its visible and immediate effects on animal life and coastal

shores. Other ship sourced pollutants are perceived to be similar to that of the oil spills. Growing demands for the prevention of sea pollution have resulted in a series of international conventions being adopted.

The Philippines, as an archipelagic country, covers a vast marine territory in its area of Exclusive Economic Zone (EEZ). As such, it has valuable marine coastal resources. However, the advent of increased marine pollution makes these vulnerable to long term effects of damage, which are sometimes irreversible. The country has many coastal municipalities that are heavily dependent on the sea and coastal areas for existence. This marine environment provides many significant contributions in the aspects of nutrition, energy, employment, transportation, recreation, social and cultural activities.

It is in this regard that government policies, guidelines, rules and regulations in marine environmental protection must be reviewed and updated for the benefit of the greater interests of the people. Correspondingly, a focus on the increasing shipping and maritime activities is necessary to forestall any further damage to the marine ecosystem.

The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978, generally known as MARPOL 73/78, requires all contracted countries to provide adequate reception facilities for the treatment of waste matter from ships. Although MARPOL 73/78 does not cover the disposal of residues and effluents from reception facilities, the disposal of the contents of such facilities is very important.

This has imposed a heavy burden both technically and economically on each country's government. Many states, including the Philippines, have not ratified MARPOL. Many factors need to be considered before ratification can take place. However, each government should make every effort to find a workable solution which is at least compatible with the operation of existing resources.

This study is designed to institutionalize a general working plan for the provision of the reception facilities in the Philippines in the light of growing

awareness of the need to protect and preserve the marine environment as well as in the context of following the provisions of MARPOL 73/78.

In the succeeding sections, Chapter II presents the factual aspects of the maritime transportation situation of the country to give an idea of the extent of its maritime activities and infrastructure. In order to project a plan, it is important to have a clear picture of the existing problems and conditions. This would enable the proposed plan to be adapted to the real-world situation that exists.

Chapter III portrays the current situation in terms of marine environmental protection activities with an emphasis on the legal, administrative and enforcement processes being undertaken. It aims to present an analysis of the government's efforts to address the problem of ship generated wastes.

Chapter IV focuses on the importance of providing reception facilities as part of the overall effort to minimize marine pollution and discusses the impediments of providing such facilities which confront the Philippines.

Then, in Chapter V the current situations in countries which have developed reception facilities are described. This section examines the mode of operation pertaining to the administration of reception facilities and evaluates the various positive features and the requirements that are imposed. It also includes a brief discussion of the promotion of waste management with regard to ship generated wastes.

Based on the preceding sections, Chapter VI presents a conceptual plan necessary for the Philippine setting. The aim is to provide a tool for the concerned agencies in their future planning and formulation of objectives for the control of marine pollution. This section also provides a commentary on the future prospects to provide reception facilities in the country.

Finally, Chapter VII will enumerate the recommendations which the government and private sectors should adopt in order to achieved the objectives as stipulated in the national environmental policy.

CHAPTER II
GENERAL VIEW OF
PHILIPPINE MARITIME TRANSPORTATION

2.1 Introduction

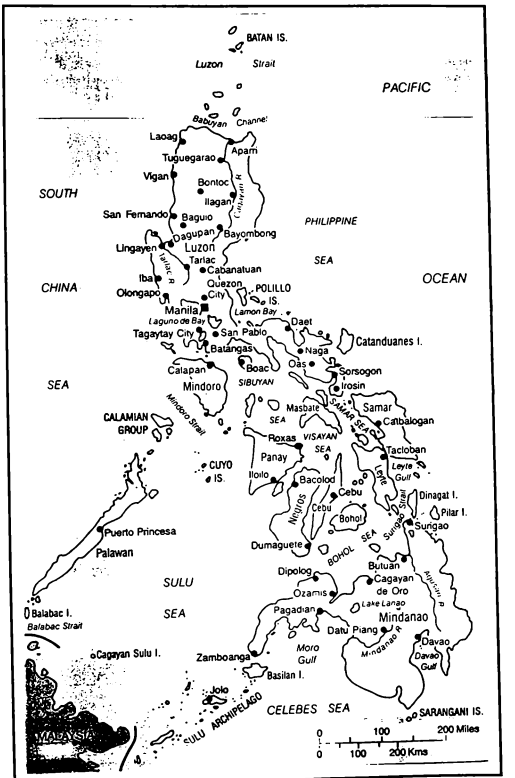
This chapter describes the extent of maritime activities in the Philippines and the need of the Philippine shipping industry in the establishment port reception facilities. The information is essentially focused on providing a baseline in assessing the rates of generation of ship-generated wastes and identifying concentration areas in relation to the ship's traffic pattern. This section also aims to present basic statistical information on maritime transportation in the Philippines which are essential in the formulation of a general plan to develop appropriate mechanisms for port waste reception facilities.

2.2 Geographical Features

The Philippines consists of 7,107 islands with a total land area of 299,765 square kilometers and a coastline of approximately 18,000 kilometers. Luzon, Visayas and Mindanao are the three primary geographical divisions. Luzon, located in the north, is the largest island, followed by Mindanao which is located to the south. Visayas sits in the central part and is comprised of groups of smaller islands (see Figure 2.1). The irregular configuration of the archipelago, the great extent of mountainous country, the narrow and interrupted coastal plains, and the generally north-south orientation of the river systems comprise the salient physical features of the country (Philippines, 1996, page 898).

FIGURE 2.1

MAP OF THE PHILIPPINES



SOURCE: Taylor, 1991, page 306

The Philippines is divided into 14 regions with 73 provinces and 60 cities and has a current total population of approximately 69 million. In order to service the thousand of islands and a population that is growing at the rate of 2.5% annually (Philippines, 1996, pages 898-916), the country needs to rely on effective maritime transport. The government has taken steps to strengthen this sector of the transportation industry for the last two decades with some promising results. Accompanying its development however, is the associated problem of marine pollution brought by shipping operations which need to be addressed vis-a-vis developmental actions.

2.3 National Economic Structure

The economy is predominantly agricultural with well developed light manufacturing, agro-based and resource-extractive industries. From a sustained growth rate of nearly 6% throughout the 1960s and 1970s, the economy suffered a negative growth in the 1980s (JICA, 1992, p 1-1). The beginning of the 90's saw a number of incidents which caused the Philippine economy to suffer: a destructive earthquake; the Mt. Pinatubo eruption; typhoon Ruping which brought destructive floods and damaged booming growth centers in the Visayan region; the acute power shortage; spill-over of political instability of the 80's and the Middle East Crises. The combined recessionary effects of these natural and man-made calamities caused the economy to struggle and resulted in slower business activities and reduced productivity.

In 1991, NEDA (National Economic and Development Authority) projected the GNP growth to range between 1.5% - 2.5% (JICA, 1992, p 1-1. And in 1993, the economy started to recover and show signs of promising growth in almost all sectors. This developed primarily due to the improved power situation, perceived political stability, and a better economic climate.

2.4 Maritime Transportation System

The economic structure of the maritime transportation system consists of the private and public sectors. The former supplies the prime carriers and allied activities thus providing the dynamic element of the industry, while the public sector provides the static elements comprised of the necessary infrastructure for shipping, including administrative and system support.

The two sectors have to closely coordinate and cooperate to ensure an efficient maritime system. This is necessary to understand the needs, opportunities and problems that might come out in the delivery of the required services. Any gap or conflict between the two sectors can only lead to a deterioration of the maritime transportation system. Subsequently, any desire to improve things for the benefits of the society and environment will prove difficult.

Primarily, the private sector includes shipping companies which invest heavily in vessel fleets, equipment and other operationally related expenditures. From the private sector perspective, they basically want the minimum amount of regulation possible to ensure the attainment of a certain level of revenue.

The public sector consists of the various government organizations which administer and regulate the shipping industry. This is in terms of:

- licensing or permitting entry into the shipping industry
- controlling and supervising of tariff rates
- franchising of the routes, and
- enforcing operational requirements, safety rules and regulations

2.5 Maritime Infrastructure

The government endeavors to ensure the provision of a maritime infrastructure as one of the necessary support services for the nation. Maritime infrastructure, as defined in the JICA Report (1992, p 2-6), is the supporting assets,

hardware, and services that are required for safe and efficient operation at sea. It is important that these elements are developed in an integrated manner.

The infrastructure for maritime transportation includes (1) port facilities and sea routes; (2) telecommunications system; (3) aids to navigation, charting, weather advisory, and traffic control systems; and (4) search and rescue capability, in the case of accidents (JICA, 1992, p 2-12). The ports and sea routes will be described in greater detail as they have a direct relevance to this study.

2.5.1 Ports and Facilities

The maritime ports system in the Philippines is composed of national ports, municipal ports, private ports and fishing ports. This consists of 20 base ports (major ports), 57 sub-ports (terminal ports) and 85 other national and municipal ports. There are also about 225 private ports operating in the country. The responsibility for management of these ports is divided into five Port District Offices (PDO) and nineteen Port Management Offices (PMO). Table 2.1 illustrates the extent of the ports system.

National Ports. These are all commercial ports, owned by the government and supervised by the Philippine Ports Authority (PPA).

Municipal Ports. Most municipal ports are not commercially viable but they are considered important and, as such, usually incur losses from their operation.

Private Ports. Private ports are organized as independent corporations or units, within the organization of private enterprizes such as the oil, wood, fishing, mining and cement industries, among others. These ports are neither developed, maintained, nor administered by the PPA however, the PPA imposes charges on traffic passing through these ports and keeps a record for statistical purposes.

2.5.2 Shipping Routes

The domestic shipping routes are classified as primary, secondary, tertiary and developmental routes. The classification of routes are defined as follows:

Table 2.1
PHILIPPINE PORTS AUTHORITY
PORTS SYSTEM

Port District Office	Port Management Office a/	Subports b/	NMP c/	Private Ports
Manila	South Harbor	1	-	-
	North Harbor	3	1	10
	MICT Field Office	-	-	-
Luzon	Batangas	5	7	19
	Legaspi	6	-	5
	Puerto Princesa	2	1	-
	San Fernando	3	2	7
Visayas	Cebu	7	20	30
	Dumaguete	3	5	16
	Iloilo	3	6	25
	Tacloban	8	16	6
Northern Mindanao	Cagayan de Oro	-	3	26
	Iligan	2	2	19
	Nasipit	2	-	20
	Surigao	3	16	3
Southern Mindanao	Davao/Sasa	1	5	24
	General Santos	-	-	2
	Jolo	2	1	-
	Polloc	2	-	-
	Zamboanga	4	-	13
Total	**20**	**57**	**85**	**225**
Total Number of Ports				**387**

a/ Port Management Offices are base ports, considered the major or main public ports of the country

b/ Sub-ports or terminal ports

c/ National or municipal ports, under the jurisdiction of PPA, and include ports on small islands

Source: Philippine Ports Authority

(a) **Primary Route.** This is defined as having a transportation volume of national significance, both for domestic passengers and freight. Generally, the route is characterized by an existing volume demand that is very high and links major (primary and secondary) ports. It also serves the main population of the country and commercial and industrial centers.

(b) **Secondary Route.** On these routes transportation of domestic passengers and freight volumes are found to be of regional significance. The route has a sizable volume demand and links main commercial centers of regional or inter-regional systems (secondary and tertiary ports).

(c) **Tertiary Route.** This is considered a feeder route, along which is transported passenger and cargo traffic that have been consolidated along the way and are destined for a primary or secondary port. Going the other way, the passenger and cargo traffic are destined for various smaller ports, along the route.

(d) **Developmental Route.** This is a route with a low volume of domestic passenger and cargo traffic, destined for a limited number of specialized areas (e.g. mining/manufacturing activities). Shipping services along these routes are necessary if the area has agricultural potential or if it needs for its economic viability to be linked with developed regions. Operations along this type of route are economically desirable but may not be financially viable.

The primary routes have Manila as one terminus and are linked to the principal ports of Cebu, Tacloban, Iloilo, Bacolod, Catbalogan, Puerto Princesa, and the major ports in Mindanao such as Cagayan de Oro, Davao, General Santos and Zamboanga.

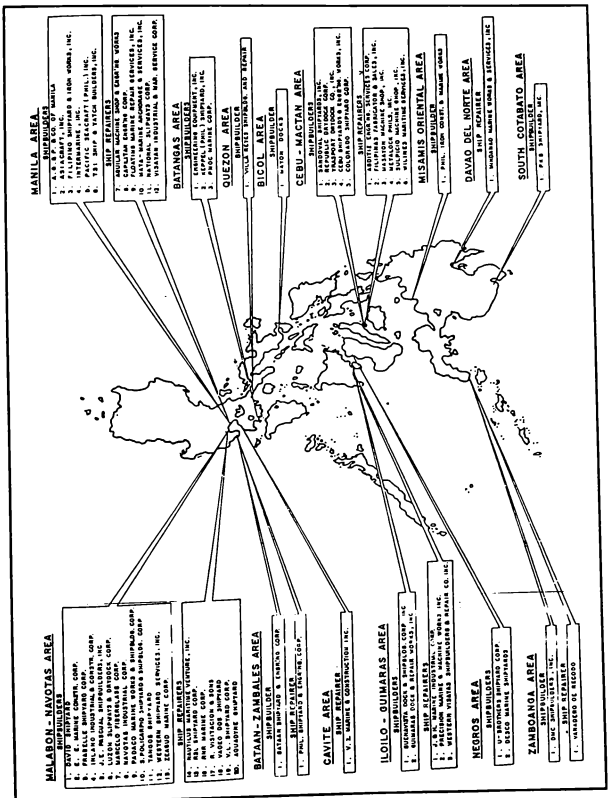
There about twelve secondary routes, nine of which connect Cebu to neighboring islands, two routes which connect Batangas, on Luzon to Calapan, Oriental Mindoro and San Jose, Occidental Mindoro, and the ferry route that connects Iloilo and Bacolod. There are more than a hundred tertiary, feeder and developmental routes which do not, at this time, have liner services, but are served by small watercraft, e.g. motor bancas and wooden hulled vessels.

2.6 Local Shipbuilding and Shiprepairing Industry

The shipbuilding and shiprepairing industry is one of the maritime allied industries providing support in the overall operation of the vessels. This sector is of significance in the context of the study since its facilities are considered destinations of vessels when due for repair and maintenance. There are about 70 land based shipyards and 75 afloat ship repairers registered and licensed with the MARINA as shown in Table 2.2. The location and distribution of the land based shipbuilding/repair enterprises are presented in Figure 2.2. It can be noted that the

FIGURE 2.2

LOCATION OF SHIPBUILDERS/SHIP REPAIRERS



SOURCE: JICA, 1991, page 2-2

bulk of this industrial activity is concentrated in only a few areas. The significance of this will be discussed in the later portion of the study.

Table 2.2
Total Number of Shipbuilding and Ship Repair Enterprises in the Philippines

Category	Number	Classification		
		A	B	C
Shipbuilder	3	-	-	3
Ship Repairer	14	-	-	14
Shipbuilder and Ship Repairer	53	10	6	37
Afloat Ship Repairer	75	-	-	75
TOTAL	145	10	6	129

Classification - refers to drydocking capacity:
A - 3,000 GRT and above; **B** - 1,000 GRT to 2,999 GRT; **C** - 1,000 GRT and below
Source: Hernandez, 1995, page 76

2.7 Maritime Traffic

Increased movements of goods and people has been seen in the country's ports in keeping with the growing economy, as has been noted in section 2.3. Port traffic indicators achieved considerable gains as cargo throughput, shipcalls and passenger traffic increased accordingly. The fact that the Philippines is an archipelagic country made inter-island shipping assume a greater role in the movement of goods and people.

2.7.1 Cargo Throughput

The overall cargo traffic of the country has been increasing annually despite experiencing economic disturbance. Although the recorded growth rate is erratic as indicated in Table 2.3, it is expected to maintain an increasing yearly cargo throughput.

With regards to port classification, private ports maintained their dominance over government ports in terms of the volume of cargoes handled. Despite their being fewer in number compared with government ports, private commercial ports absorbed more than half of the cargo throughput during the recorded period (refer to Table 2.4).

Table 2.3
Cargo Traffic Volume

Year	Cargo Throughput (in million metric tons)	Volume Increase (in million metric tons)	Annual Growth Rate (%)
1990	98.90	-	-
1991	105.57	6.67	6.75
1992	110.83	5.26	4.99
1993	115.71	4.88	4.28
1994	123.91	8.20	7.08
1995 (Jan-June)	66.85	-	-

Source: Philippine Ports Authority, modified by the Author

Table 2.4
Comparative Volume of Cargoes Handled per Type of Port

Year	Private Ports (million metric ton)	Share (%)	Base Ports (million metric ton)	Share (%)	Terminal Ports (million metric ton)	Share (%)	Other Govn't Ports million MT	Share (%)
1990	-	-	-	-	-	-	-	-
1991	62.57	59.27	34.66	32.83	6.22	5.90	2.12	2.00
1992	62.88	56.74	38.89	35.09	6.81	6.14	2.25	2.03
1993	65.77	56.84	39.91	34.49	7.57	6.54	2.46	2.13
1994	68.11	54.97	44.94	36.27	7.74	6.25	3.11	2.51
Average		56.96		34.67		6.21		2.17

Source: Philippine Ports Authority, modified by the Author

2.7.1.1 Commodity Throughput

On the average, about 94% of commodity traffic was handled at the berthing areas, while a nominal 6% was handled at the anchorage areas. Commodity traffic at berth was dominated primarily by shipments of refined petroleum products, other general cargo, crude minerals, crude petroleum and mineral fuel. These account for over half of the annual commodity traffic handled at berth.

Anchorage traffic, on the other hand, is comprised mostly of commodities in bulk form such as refined petroleum products, wheat, metallic ore/scrap, chemicals and breakbulk products like iron, steel and logs.

2.7.1.2 Commodity Type

The vast array of commodities which pass through the ports annually are classified into 35 commodity groupings according to PPA-adopted commodity classification. Among these groups, refined petroleum and its products has consistently taken the lead accounting for about 20% of the total throughput. This is followed by other general cargo. Other general cargo is an aggregation of various products which do not fall in any of the PPA's regular commodity grouping. The other regular top commodities handled are crude petroleum, metallic ores/scraps, iron and steel and crude minerals.

2.7.1.3 Commodity by Type of Packaging

Commodities loaded and discharged were further classified by PPA according to their form of packaging or by the manner by which they were handled. These were bulk, breakbulk or containerized.

Bulk Cargoes. Commodity shipments in mass or bulk form usually constitute over half of the total cargo throughput annually. Around 90% of the bulk commodity traffic was handled by private ports and a nominal 10% was absorbed by government ports. The consistent top five commodity groups handled in bulk form are as follows (PPA Summary Reports, 1991-1995):

- Refined Petroleum and its Products
- Crude Petroleum
- Metallic Ores/Scraps
- Crude Minerals
- Mineral Fuel

The top PMO's which likewise, consistently handle the higher volume of bulk cargo traffic are as follows (PPA Summary Reports, 1991-1995):

- PMO Batangas
- PMO North Harbor
- PMO Cagayan de Oro

- PMO South Harbor
- PMO Cebu

BreakBulk Cargoes. Domestic products predominate the breakbulk commodity traffic comprising around 80% of the total cargoes. The usual top commodity groups comprising the breakbulk cargoes are as follows (PPA Summary Reports, 1991-1995):

- Iron and Steel
- Bottled Cargo
- Other General Cargo
- Transport Equipment
- Cement

They are primarily loaded and discharged alongside berths. About two-thirds of the traffic passes through government ports, while the private ports capture the rest. The regular top five PMO's absorbing the biggest traffic are the following (PPA Summary Reports, 1991-1995):

- PMO Cebu
- PMO South Harbor
- PMO Ilo-ilo
- PMO Batangas
- PMO North Harbor

Containerized Cargoes. Percentage-wise, domestic containerized cargo outnumbers foreign cargo in a ratio of around 60% to 40% respectively. The top five commodities being loaded in containers are as follows (PPA Summary Reports, 1991-1995):

- Other General Cargo
- Fruits and Vegetables
- Chemicals
- Corn
- Bottled Cargo

Containerized cargoes are handled solely at berthing areas and in ports where container facilities are available. Government ports account for the vast majority of the nationwide containerized traffic at about 92%, private ports handle 8%. The top five PMOs which process the biggest volume of this traffic are as follows (PPA Summary Reports, 1991-1995):

- Manila International Container Terminal
- PMO North Harbor
- PMO Cebu
- PMO South Harbor
- PMO Ilo-ilo

2.7.2 Passenger traffic

As previously described, the archipelagic configuration of the country significantly influences the transportation pattern of the people. Apparently, the volume of passengers traveling in the Visayas area is greater than the volume of passengers traveling in Luzon and Mindanao. This can be gleaned from the four PMOs located in the Visayas region accounting for about 45% of the total traveling passengers. This can be attributed to the geo-physical feature of the Visayan region where it is characterized by scattered island provinces. On the other hand, Luzon and Mindanao are basically single islands where land transportation is fairly well utilized. The passenger traffic has been experiencing steady increases annually with greater increases being posted in the most recent years. This can be inferred from the recorded volume of passenger traffic by PMO as reflected in Appendix 1. It is expected that the upward trend will be sustained.

2.7.3 Shipping Traffic

Consistent with the growth in volume of cargoes handled and passengers transported between ports during the recorded period, the frequency of shipcalls serviced by the ports was likewise on the uptrend during the period. It can be noted

in Appendix 2 that the inter-island or domestic vessel traffic has been experiencing a steady uptrend in the past 3 years. This can be attributed to the increasing number of domestic vessels entering the industry due to the government's effort to deregulate the sea transport and the opening up of inter-island liner routes to competition. Deregulation started in 1992 and since then, the importation of secondhand passengers and cargo vessels as well as the acquisition of fast ferries by local shipping companies for inter-island trade has been on the increase.

The country's shipping traffic predominantly involves domestic vessels accounting for about 96% and a nominal 4% are foreign vessels. Of these, about 98% are being serviced alongside berths and the minimal 2% are being handled at the anchorage areas (PPA Summary Reports, 1991-1995). In terms of ship service time, the figures suggest an improving productivity and operational efficiency in the country's ports.

Around 78% of the shipping traffic is being serviced at the government ports while the rest (22%) is being handled by the private ports (PPA Summary Reports, 1991-1995).

2.8 Projection of Maritime Traffic

In March 1992, a study was conducted in the Philippines by the Japan International Cooperation Agency regarding the Master Plan on Maritime Safety (MAPMAS). Part of the study was on the estimation of maritime traffic volume in the year 2000 and 2010. The study used the present passenger and cargo volumes and correlated these to the GDP projection by the National Economic and Development Authority (NEDA) and population projection by the National Statistics Office (NSO) covering the same period. Shipcalls were not included in the study.

Table 2.5 shows the result of the correlation as the projection of maritime traffic volume of 1991-2010. Reacting to the significant increases in population

and GDP, traffic volumes of passengers and cargo are expected to increase 2.42 times and 2.77 times, respectively. This translates to an average annual growth rate

Table 2.5
Projection of Maritime Traffic Volume

Year	Passengers Traveled (million)	Cargo Tons Transported (million metric tons)	Population (000)	GDP (million Pesos)
1991	14.2	30.2	62,868	114,676*
1992	15.1	32.3	64,259	118,056
1993	16.1	34.5	65,649	122,369
1994	17.0	36.7	67,038	126,407
1995	18.0	39.0	68,424	130,578
2000	23.4	51.3	75,224	153,693
2005	29.4	65.0	81,591	180,666
2010	36.2	80.3	87,206	212,510

* at constant 1972 prices
Source: JICA Report, modified by the Author

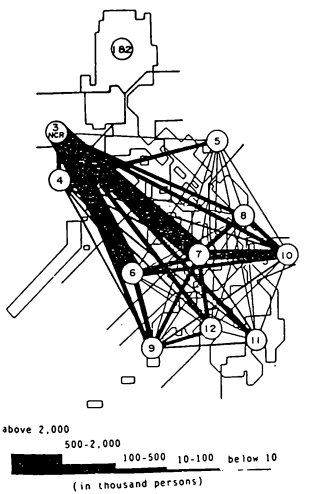
of 4 to 6%. By employing this estimate, projection of the domestic shipcalls can also be attained. Figure 2.3 illustrates the Origin-Destination (OD) pattern of passengers and cargo volumes.

It can be observed, however, that the projected volumes (both passenger and cargo) in 1991 to 1995 were actually exceeded by subsequent collected data as reflected in Table 2.3 and Appendix 1. The growths in population and GDP are not necessarily identical to a similar growth in maritime transport. Movement of people and cargoes may have been affected by other economic factors such as employment opportunities in various regions of the country and improving overall economic conditions resulting in increased production. But, the links would require detailed analysis and thus need further studies. It is important to note that determining the future of maritime traffic is relevant in giving the idea of the magnitude of the expected amount of solid waste to be handled by a port in the future.

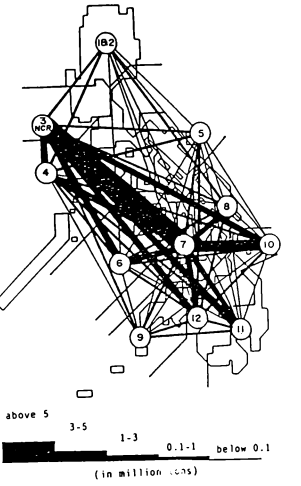
FIGURE 2.3

DESIRED LINES OF ORIGIN-DESTINATION TABLES IN 2000

(Passenger Traffic)



(Cargo Traffic)



SOURCE: JICA, 1992, p 3-21

2.9 Planning for Reception Facilities

It can be deduced from the information presented that the magnitude of foreign and domestic shipping activities in the Philippines is quite substantial. The data even excludes the activities of fishing vessels and pleasure craft due to

unavailable information. Obviously, this has a significant impact on the deterioration of the marine environment considering the potential discharges of ship-generated wastes, especially if this is not properly addressed. In the context of sustainable development in the marine environment, the country's maritime transport has to be put in a proper perspective. Certainly, this can be a very huge and difficult task for a developing country like the Philippines because of the many aspects which need to be addressed.

It can also be gleaned from the initial information that the path of shipping activities is concentrated along the primary routes covering the areas of Manila, Batangas, Central Visayas and Northern Mindanao. However, the other routes and ports also have substantial shares of the traffic volume. It can also be inferred that PPA managed ports are basically general service ports handling more of the containerized and general cargoes and serve as primary gateways for domestic passengers. On the other hand, private ports are more specialized as these handle most of the bulk cargoes in the form of crude oil and petroleum products, mineral fuel, chemicals and other bulk products. This is important in determining the types and quantities of wastes that can be expected in a port. The sheer number of shipbuilding/shiprepair yards likewise indicates a bustling activity in the maritime sector.

The provision of reception facilities in order for ships to discharge their wastes is a significant headstart towards attaining sustainable development in maritime transport. The existing information and statistical analysis of maritime activities may not be sufficient for authorities to design the necessary reception facilities that should be in place in all ports. However, these data are important as a guide to the authorities in their general planning and in identifying the appropriate facilities and mechanisms that need to be in place.

CHAPTER III

Current Marine Environmental Protection Regime in the Philippines

3.1 Introduction

It has been the principle of the state to lay out the establishment of appropriate laws and regulations in order to prevent environmental degradation and to control the rational use of the resources. Many regulations have been formulated since the sixties and constitute the basic instruments to deal with the problems that have arisen as a consequence of the impact of human activities on the environment.

Different national organizations and institutions have been involved in matters related to the enforcement of the legal provisions. Some of these organizations belong to the maritime administration.

The country has been conscious of environmental issues at a global level and of the international efforts to protect the integrity of the environment. Likewise, it has been participating in various international forums on matters of environmental concern. These will be described in the succeeding sections.

3.2 Legal Aspect

In the maritime field, the Philippines is a party to some of the principal conventions dealing with the protection of the marine environment. In some cases, provisions of international regulations have been adopted to national regulations even though the country is not a party to the convention.

In the following sections, the principal legal instruments are summarized with a view to determine the extent to which the country has addressed the maritime aspects that are relevant for this study.

3.2.1 The Philippine Constitution

The current Philippine Constitution, which was approved by plebiscite in 1987, re-established a US style of bicameral legislature comprised of 24 senators elected nationally and 250 congressmen. Of the latter, 200 are elected to represent districts and fifty are appointed to represent special constituencies. Further, for the first time, the right of the Filipino people to a sound environment has been given constitutional recognition. Article 11 Section 16 requires the state:

" to protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature."

Other provisions in the Constitution address the development and protection of lands in the public domain including national parks, in an environmentally sustainable manner. The importance of the environment, including the marine environment, to the physical and economic well-being of the population is also both directly and indirectly acknowledged.

3.2.2 Major National Marine Pollution Control Measures

The stipulations of the constitution in respect to the environment are substantiated by the following:

- Republic Act No. 3931: Creating the National Water and Air Pollution Control Commission
- Presidential Decree No. 600: Marine Pollution Decree of 1974
- Presidential Decree No. 602: National Oil Pollution Operations Center (NOCOP) Decree
- Presidential Decree No. 984: Amendment of RA 3931
- Presidential Decree No. 979: Marine Pollution Decree of 1976
- Presidential Decree No. 1151: The Philippine Environmental Policy
- Presidential Decree No. 1151: The Philippine Environmental Code

Initially, the National Water and Air Pollution Control Commission (NPCC) was established through RA 3931 as the focal point in pollution control matters. Republic Act No. 3931 was later amended by the issuance of PD 984 on 18 August 1976 giving a broader mandate to the Commission.

However, before the amendment, PD 600 was issued on 09 December 1974. The Decree specifically prohibits the spillage of oil or any hazardous substances or noxious liquid substances within the territorial and inland waters of the country. It also empowers the Philippine Coast Guard (PCG) to subscribe, promulgate and enforce rules and regulations for the prevention and control of marine pollution.

While the focus of Presidential Decree No. 984 as executed has been the control of pollution into bodies of freshwater, onto the land and into the air, it has not been used to address the pollution of marine water bodies. The latter has been addressed by PCG via PD 600. Apparently, the issuance of PD 600 created confusion as both the PCG and NPCC have overlapping scope and responsibilities. This is compounded by their authority in rule-making and power of enforcement. As a result, PD 600 was amended by PD 979 which harmonized the responsibilities of both the PCG and NPCC.

In the exercise of their functions, the PCG is the lead agency or responsible agency for pollution control in coastal zones while the NPCC administers inland water. Organizational change ensued by virtue of Executive Order 192 issued on 10 July 1987. The Environmental Management Bureau (EMB), which operates as a staff bureau of the Department of Environment and Natural Resources (DENR), replaced the NPCC.

Moreover, the Philippine Environmental Policy which was enacted in 1977 introduced the requirement for environmental impact assessment, but it was perceived as a fairly short statement of intent. Subsequently, the Environmental Code enacted in the same year, established a more comprehensive policy framework for environmental management. The latter specifically addressed:

- Air Quality Management (Title I)

- Water Quality Management (Title II)
- Land Use Management (Title III)
- Natural Resource Management and Conservation (Title IV)
- Waste Management (Title V)

3.2.3 Specific Legislation Related to Ships Generated Wastes

Taking into account PD 979, the PCG, being the lead agency, promulgated several rules and regulations concerning marine environmental protection through the issuance of memorandum circulars. These outline in detail the things to be undertaken by both the authorities and the affected sectors.

The set of PCG Memorandum Circulars (MC) promulgated concerning marine environmental protection are as follows:

- PCG MC No. 02-80, dated 07 November 1980 -
  Accreditation Of Oil Water Separators, Oil Containment Recovery And Dispersal Equipment, And Chemical Dispersants
- PCG MC No. 05-83, dated 12 August 1983 -
  Issuance Of International Oil Pollution Prevention Certificate To Philippine Registered Vessels.
- PCG MC No. 01-85, dated 18 March 1985 -
  Rules And Regulations For Tank Cleaning Operations Of Vessels/Oil Tankers.
- PCG MC No. 02-91, dated 21 January 1991 -
  Dumping And Discharges Of Wastes And Other Harmful Matter At Sea.
- PCG MC No. 08-91, dated 20 May 1991 -
  Issuance Of Marine Pollution/Apprehension Report.
- PCG MC No. 04-93, dated 08 March 1993 -
  Shipboard Oil Pollution Emergency Plan For Philippine Registered Vessels.

- PCG MC No. 01-94, dated 22 July 1994 -

  Prevention Of Pollution By Sewage From Ships And Issuance Of International Sewage Pollution Prevention (ISPP) Certificate For Philippine Registered Ships.

- PCG MC No. 02-94, dated 22 July 1994 -

  Prevention Of Pollution By Garbage From Ships.

- PCG MC No. 03-94, dated 16 August 1994 -

  Prevention, Containment, Abatement And Control Of Marine Pollution.

Although the Philippines is not a party to the MARPOL 73/78 Convention, the provisions embodied in the Convention were used as the basic reference in drafting the circulars. It is worthy to note that the series of memorandum circulars have substantially covered many aspects of the Annexes of MARPOL 73/78. It seems that the long standing issue on reception facilities was apparently addressed by the issuance of MC 01-94, MC 02-94 and MC 03-94 where the PCG directed the Port Authorities, Oil/Chemical Terminal Operators to provide the necessary reception facilities.

In response, the PPA issued Administrative Order No. 16-95, dated 04 April 1995 which prescribed the rules and regulations on the prevention/control of oil, garbage and sewage through the use of reception facilities/collection of vessels refuse.

Based on the above discussions, it can be gleaned that important initiatives have been undertaken to address marine issues, but still, more needs to be done. The Government is working with the International Maritime Organization (IMO) and other international bodies including associations of countries in ASEAN and deserves to be applauded and encouraged. The following sections briefly highlight some of the pertinent international initiatives.

3.2.4 International Effort to Protect the Marine Environment

The environmental health of the marine waters can only be effectively protected by the universal efforts of all nations working together and the Philippines has been a party to many of the conferences and forums that have been convened to address the matters.

3.2.4.1 OILPOL 54

The first international convention to address oil pollution from ships was the International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (OILPOL 54). With amendments (1962 and 1969), OILPOL 54 requires contracting parties to take steps to promote the provision of adequate reception facilities. But, the provision of reception facilities was not a pre-requisite for the compliance of OILPOL 54. This was regarded as just one of the many flaws of the convention and viewed as the main reason for the inability to progress with regard to installation of the necessary reception facilities.

3.2.4.2 MARPOL 73/78 Convention

The International Convention for the Prevention of Pollution from Ships was adopted in 1973. This convention was subsequently modified by the Protocol of 1978. The convention as modified by the Protocol is referenced as MARPOL 73/78. Regulations covering the various sources of ships-generated pollution are contained in five annexes to the convention:

Annex I Regulations for the Prevention of Pollution by Oil (entered into force on 2 October 1983);

Annex II Regulations for the Control of Pollution by Noxious Liquid Substances (entered into force on 6 April 1987);

Annex III Regulations for the Prevention of Pollution by Harmful Substances in Packaged Form (entered into force on 1 July 1992);

Annex IV Regulations for the Prevention of Pollution by Sewage (has not yet been ratified);

Annex V Regulations for the Prevention of Pollution by Garbage (entered into force on 31 December 1988).

The convention has stronger and more positive wordings on the requirements for the provision of reception facilities. This was done due to the shortcomings of OILPOL 54. MARPOL 73/78 mandates each party to ensure the adequate provision of reception facilities at ports and terminals without undue delay to ships. The Party's ability to comply with the discharge requirements of the Convention's Annexes (I, II, IV and V) is dependent on the availability of adequate reception facilities.

Although the Philippine Coast Guard has adopted into their regulations many of the stipulations of the above annexes, the Government has not ratified the MARPOL Convention.

3.2.4.3 The London Convention (LC 72)

The growing public concerns with respect to dumping of chemical and industrial wastes and sludge into the marine environment, led to several nations initiating the Convention on the Prevention of Marine Pollution by dumping of wastes and other matters (London Convention) in 1972. The purpose of the London Convention (LC 72) was to manage and regulate the disposal of chemically-contaminated wastes; this included wastes such as industrial sludge, chemical wastes, sewage sludge and dredged harbor sediments. The LC 72 provided guidelines to signatory countries through the provision of two schedules of substances which identified chemical element compounds of concern (e.g. mercury and its compounds, cadmium and its compounds) and a schedule of broad issues to be considered in the evaluation of materials and disposal operations, persistence and toxicity.

Currently, the Philippines does not have a specific act or set of regulations with respect to the ocean disposal process as set out in the LC 72. However, the

PCG has issued a series of memorandums which provide reference to such issues as the nature of materials to be dumped at sea and guidelines for the selection of disposal sites (PCG MC No. 02-91).

3.2.4.4 Oil Pollution Preparedness, Response and Co-operation Convention

In recognition of the serious threat posted to the marine environment by oil pollution incidents involving ships, offshore units, seaports and oil handling facilities, representatives of 90 states, including the Philippines, adopted the International Convention on Oil Pollution Preparedness, Response and Co-operation (the OPRC Convention) and ten attached resolutions in 1990. The signatories to the OPRC 90 Convention agreed to the resolutions which included among other things the following:

- establishment of oil pollution combating stockpiles;
- promotion of technical assistance;
- development and implementation of training for oil pollution preparedness and response;
- improving salvage services;
- expansion of the scope of the OPRC 90 to include hazardous and noxious substances

3.2.4.5 United Nations Convention on the Law of the Sea

The United Nations Convention on the Law of the Sea (UNCLOS) of 1982 represented the culmination of major international efforts to balance the matters relating to sovereignty, fisheries, seabed resources and pollution of the world's marine waters. Part XII of UNCLOS provided a framework for the protection and preservation of the marine environment which has been further detailed through various international and regional seas agreements. With regard to marine pollution from ships, the Convention gave particular reference to "generally accepted international rules and standards". Such rules and standards, many of which are in

place are adopted through the competent international organization, namely the International Maritime Organization (IMO).

Table 3.1 presents the list of various IMO conventions, codes and recommendations relevant to the protection of the marine environment.

Table 3.1
IMO Instruments Relevant to the Protection of the Marine Environment and Liability and Compensation for Pollution Damage

- International Convention for the Prevention of the Sea by Oil, 1954
- International Convention for the Prevention of Pollution from Ships, 1973
- 1978 Protocol relating to International Convention for the Prevention of Pollution from Ships, 1973 (MARPOL Protocol 78)
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972
- International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969 (INTERVENTION)
- International Convention on Civil Liabilities for Oil Pollution Damage, 1969 (CLC)
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971 (FUND)
- Guidelines on the Provision of Adequate Reception Facilities in Ports
- IMO/UNEP Guidelines on Oil Spill Dispersant Application and Environmental Considerations
- Manual on Chemical Pollution
- Manual on Oil Pollution
- Oily Waste Separators and Monitoring Equipment
- Proceedings of the IMO/UNDP International Seminar on Reception Facilities for Wastes
- Proceedings of the International Symposium on Reception Facilities For Noxious Liquid Substances
- Provisions Concerning the Report on Incidents Involving Harmful Substances under MARPOL 73/78
- Recommendations on International Effluent Standards and Guidelines for Performance Tests for Sewage Treatment Plants
- Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk- Annex II, MARPOL 73/78
- Regulations for the Prevention of Pollution by Oil- Annex I, MARPOL 73/78
- Report from the Symposium on the Prevention of Marine Pollution from Ships
- Control of Ships and Discharges
- Crude Oil Washing Systems
- Dedicated Clean Ballast Tanks
- Facilities in Ports for the Reception of Oil Residues
- Facilities in Ports for the Reception of Oily Wastes
- Guidelines for Surveys under Annex I of MARPOL 73/78
- Guidelines for Surveys under Annex II of MARPOL 73/78
- Code of Existing Ships Carrying Liquefied Gases in Bulk
- Code for the Construction and Equipment of Ships Carrying dangerous Chemicals in Bulk (BCH Code)
- Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk
- Code of Safety for Special Purpose Ships
- Code of Dangerous Chemicals Carried in Bulk
- Inert Gas Systems
- International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code)
- International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code)
- International Maritime Dangerous Goods Code (IMDG Code)
- Comprehensive Manual on Port Reception Facilities

SOURCE: Grey, 1990, page 8

3.2.5 Regional Initiatives

There have also been a number of regional undertakings with regards to the improvement of the marine environment in which the Philippines has participated. The following have bearing on shipping operations.

3.2.5.1 Memorandum of Undertaking on Port State Control in the Asia-Pacific Region

The countries of the Asia-Pacific region are increasingly working to address problems of marine pollution and to develop mechanisms through which they can co-operate to attain common objectives. The Government has signed the initial discussion but not yet accepted the agreement which came into force on 01 April 1994. Inspections will address a number of issues including MARPOL stipulations. According to Yasuhisa Mitani of the Japan Ministry of Transport, the intention is to enhance the inspection of shipping throughout the region and to achieve a regional annual inspection rate of 75% of the total number of ships operating in the region by the year 2000.

To attain the objectives as defined will require the enhancement of waste reception facilities at Philippine Ports and the availability of qualified personnel to carry out the inspections.

3.2.5.2 Prevention and Management of Marine Pollution in the East Asian Seas

This program was formulated in response to a request from a number of East Asian countries for financial and technical support to address an increasing marine pollution problem. This five-year (1994-1998) US$ 8 million project is being funded by the United Nations Development Programme (UNDP) and the Global Environment Facility (GEF). It is being executed by the IMO.

The program has a number of immediate objectives:

- to strengthen national and regional capabilities in marine pollution prevention and management;

- to develop a regional marine pollution monitoring and information management network;
- to strengthen the ability of countries to implement and enforce international marine pollution conventions and codes;
- to develop and initiate sustainable financing mechanisms which will support ongoing activities beyond the life of the programme.

Transboundary management of marine pollution requires a regional effort. The differing water quality standards and pollution regulations among East Asian countries, apart from the existing problems they face, make it imperative to initiate such a regional effort.

Batangas Bay in the Philippines was selected as one of the demonstration projects for mitigating and preventing marine pollution.

A program development and management office has been set up by IMO in the Philippines to co-ordinate and manage programme activities as well as develop new initiatives.

3.3 Administrative Aspect

3.3.1 National Government

As in most countries, the control over natural resources, including marine waters lies with the national government. The powers of the national government are associated with the principal roles played by government in the development, conservation and management of natural resources and include the following:

- as agent of the state which owns the natural resources of the country;
- as the organ of the state exercising the power to regulate activities carried out in the Philippines;
- as provider of basic infrastructure and support services; and

- as a direct player in the utilization of natural resources

The Legislative power is vested in the Congress, the Judicial power in one Supreme court and the Executive power is vested in the President who has control of all executive departments including the power to overturn and amend decisions made by them. Until recently, the level of centralization of power concentrated decision making and expertise on all matters pertaining both to ports and the environment in the relevant government department in Manila. The 1987 Constitution reinstated the principle of participatory democracy and was an important first step towards decentralization of authority and responsibility. Decentralization was the objective of the Local Government Code that was passed in 1991.

3.3.2 Provincial and Local Government Units

Administratively, the country is divided into 14 regions and made up of 73 provinces. The province is a political and corporate unit of government serving as a mechanism for economic development for the effective governance of the Local Government Units (LGUs) within its territorial jurisdiction.

The chartered cities and municipalities, on the other hand, serve as general purpose governments for the coordination and delivery of basic and direct services to the local population

As a consequence of the passing into law of the Local Government Code of 1991, the mandate of the Provincial and Local Government Units was expanded pertaining to the devolution of authority. Of particular relevance to port management and operations, the LGUs are now empowered to enforce fishery laws in municipal waters, prepare land use plans and zoning ordinances, conserve mangroves, and implement community-based forestry programs, environmental management systems and services or facilities for general hygiene and sanitation.

3.3.3 National Agencies Involved

At present, much of the regulatory context of environmental protection still lies in various national agencies. There were limited instances where the LGUs instituted measures concerning marine environmental protection within their jurisdiction. Mostly, existing measures address only the perennial problem of illegal fishing. In the scope of shipping operations, responsibility is still left to the concerned agencies with direct control over their activities.

These agencies will be presented briefly and their corresponding roles in marine environmental protection.

3.3.3.1 Philippine Ports Authority (PPA)

The Philippine Ports Authority (PPA) is the agency responsible for the operation of port facilities in the Philippines. It was established in July 1974 by Presidential Decree No. 505 (subsequently amended by Presidential Decree 857). Although the PPA operates as a self financing corporation, it is aligned to the Department of Transportation and Communication (DOTC). This department provides policy direction and liaison with the Government. The underlying objective of the PPA is to implement an integrated program for the planning, development, financing and maintenance of ports throughout the Philippines.

The purpose of the PPA is to develop and operate the ports within their jurisdiction efficiently, profitably and in accordance with all the relevant legislative decrees, including those that pertain to environmental matters, although this is not explicitly stated. This includes, but is not limited to, international conventions in respect to the treatment of ships wastes and national legislation pertaining to water quality and environmental impact assessment as embodied in the previous discussion in section 3.2. Despite the legislative context and the environmental problems that are all too apparent in many of the port areas, there is no office or department with specific responsibilities within PPA for environmental issues. Currently, such requirements are addressed on an ad hoc basis as circumstances warrant. As a re-

sult, environmental considerations are not weighted as seriously by PPA as economic considerations nor do they play a key role in the determination of projects to be developed.

3.3.3.2 Environmental Management Bureau

As reconstituted by Executive Order 192 in 1987, the Department of Environment and Natural Resources (DENR) is the lead department with respect to the protection and enhancement of the environment in the Philippines.

From the perspective of the study, the key unit within DENR is the **Environmental Management Bureau (EMB)** which by virtue of Executive Order 192 replaced the National Environmental Protection Council (NEPC), the National Pollution Control Commission (NPCC) and the Environmental Center of the Philippines (ECP). The EMB provides advice to the DENR Secretary on matters relating to environmental management and pollution control.

3.3.3.3 Philippine Coast Guard

The Philippine Coast Guard (PCG) was established by Republic Act No. 5173 on 08 August 1967 as a unit of the Philippine Navy with the mission to promote safety of life and property at sea, safeguard and preserve the marine resources and environment, promote maritime security, enforce all applicable laws upon the high seas and water subject to the jurisdiction of the Philippines and assist in national security and development.

To attain the above missions, the PCG integrated its various functions into five groups for a more coherent discharge of its mandate. These are as follows:

- Maritime Administration (MARAD);
- Maritime Operations (MAROPS);
- Maritime Environmental Protection (MARPOL);
- Maritime Search and Rescue (MARSAR);
- Maritime Law Enforcement (MARLEN) (PCG, 1992, p 6).

As pointed out previously, PD 600 as amended by PD 979 extended a more encompassing authority as well as broader responsibilities. The PCG endeavors to make the marine environment of the country free from the harmful effects of pollution and thereby establishes policies and guidelines to achieve this. More specifically, it regulates pollution from ships and has the power to formulate rules and regulations in this regard.

Coast Guard (CG) units were established throughout the country to enforce its functions effectively. To date, there are eight (8) CG Districts, forty (40) CG Stations and 140 CG Detachments.

3.3.3.4 Maritime Industry Authority

The Maritime Industry Authority (MARINA) was created by Presidential Decree No. 474. Its primary goal is to ensure the integrated and efficient development and operation of the commercial shipping sector on behalf of the government.

In broad terms, MARINA encompasses and presents the perspective of the shipping industry to the Government. It has no direct responsibility in respect to either environmental protection or port development. But its control over the shipbuilding and shiprepair industry with regards to the issuance of licenses, monitoring of its activities and supervision will have a significant role in meeting the overall objective of environmental protection.

On 30 January 1987, Executive Order (EO) No. 125 was issued by then President Corazon Aquino and further amended by Executive Order 125-A issued on 13 April 1987. EO 125/EO 125-A called for the transfer of some maritime safety functions of the PCG to MARINA which included, among others, the registration of vessels and issuance of certificates. This was issued without consultation or public hearing.

This action was in someways responsible for a severely strained relationship between the two agencies which hampered enforcement of maritime safety rules and

regulations in the Philippines as these agencies could not act in a coordinated fashion. **MARINA** Administrator Paciencio Balbon has acknowledged that his office is "being expected to perform duties and functions beyond the scope intended for its charter" (Esplanada, 1995, page 4). The PCG, on the other hand, became relaxed in their control over the operation of vessels because of unclear and unsettled delineation of authority, which includes matters on marine pollution. Currently, an ongoing discussion between the two agencies is taking place to resolve the matter. This was mainly brought about by mounting public pressure due to a series of sea accidents that occurred in the country since the issuance of EO 125 and EO 125-A.

3.3.3.5 Philippine Fisheries Development Authority (PFDA)

The Philippine Fisheries Development Authority (PFDA) is a government agency with inherent powers and responsibilities to provide adequate and essential facilities for efficient handling and distribution of fish and other marine products. PFDA was created on August 11, 1976 thru Presidential Decree 977 and one of its mandates is the establishment and operation of fishing ports throughout the country. To date, PFDA operates six major fishing ports and various municipal ports. The fishing ports are located in Navotas, Manila; Sual, Pangasinan; Lucena, Quezon; Camaligan, Camarines Sur; Ilo-ilo City, Ilo-ilo; and Sangali, Zamboanga del Sur. Also, under construction are fishing ports located in Davao City and General Santos City.

3.4 Enforcement Aspect

As previously described, the existing legislation and associated regulations and memorandum circulars articulating the various standards to be attained and procedures to be followed with respect to pollution from ships, are primarily being enforced by the PCG.

Within the PCG organization, the unit primarily responsible for the implementation of PD 600, as amended, is the National Operations Center for Oil

Pollution (NOCOP) which was established by PD 602 and subsequently activated as a special unit of the PCG.

However, despite the creation of NOCOP, it was still generally perceived that the PCG, in general, is not making significant headway in controlling marine pollution. This can be attributed to the fact that the PCG, besides its duties in the enforcement of marine pollution control measures, has an even broader mandate in the enforcement of other laws in the marine arena. This results in limited staff and facilities, including vessels which can be devoted to marine pollution. Likewise, there was an ineffective coordination and control of personnel within the PCG organization.

As an attempt to remedy the noted deficiency, particularly the organizational aspect, the Commandant of the PCG issued a Letter of Instruction (LOI) on 05 May 1982 creating the Marine Environmental Protection Offices (MEPO) in each Coast Guard District with the following functions to perform:

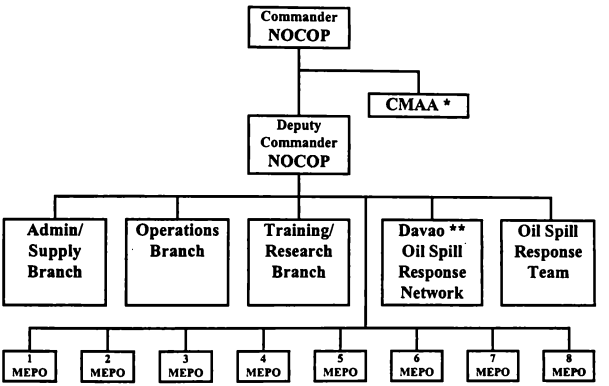
- Monitor ports and harbors within their jurisdiction;
- Supervise operations against vessel contributed marine pollution
- Conduct marine pollution control training for Coast Guard personnel within their respective districts; and
- Act as a district response team for oil spills.

MEPO is a tasked unit of NOCOP but is placed under the operational control (OPCON) of the concerned District Commander. This arrangement somewhat alleviates the circuitous coordination between district and NOCOP in the implementation of marine pollution decrees, rules and regulations. Figure 3.1 shows the current organizational structure of NOCOP.

The issuance of the LOI in 1982 resulted in a wider area of coverage in monitoring marine pollution incidents. This can be gleaned from Appendix 3. However, the reports are mostly on oil spills and discharges of liquid substances and none refer to solid wastes.

NOCOP, then, has the capability to monitor water quality, specifically on pollution caused by oil. However, its laboratory was destroyed by fire in the late 1980's which further reduced the capacity of the Coast Guard to support its over-all monitoring effort. Monitoring of water quality is discussed more generally in Chapter IV of this study.

FIGURE 3.1
NOCOP ORGANIZATIONAL CHART



Note: * - Chief Master at Arms
** - Response network located in Davao City, Philippines

In terms of prosecuting violators on marine pollution, the issuance of MC-03-94 on 16 August 1994, gave Coast Guard personnel more definite guidelines in enforcing marine pollution provisions resulting in a number of adjudicated pollution cases in 1995 and the first quarter of 1996. During the said period, there were 17 cases that were given administrative fines of the total 21 adjudicated cases. Other pollution cases are still undergoing the adjudication process (See Appendix 4).

There is some confusion, however, as to which authority, PPA or the PCG has jurisdiction within the waters of the port. Accordingly, the revised charter of the PPA also provides for administrative fines on vessels found discharging marine pollutants. Specifically, section 43(c) of PD 857 states:

> *"The Authority shall have the power to exact reasonable administrative fines in such specific amounts and for such specific violations arising out of the use of the port, as shall be prescribed in rules and regulations which the Authority is hereby authorized to issue for the purpose.*
>
> *Subject to additions as may be specified in duly promulgated rules and regulations, the following fines shall be imposed for each violation as indicated hereunder:*
>
> *. . . 7) Vessel dumping or causing to spread oil, kerosene or gasoline in the bay or at the piers within three miles from the nearest coastline, a fine not less than one thousand pesos;*
>
> *. . . 9) Vessel dumping garbage or slops over the side within three miles from the nearest coastline, a fine not exceeding one thousand pesos;*
>
> *. . . 10) Vessel causing the emission and spread of harmful gas, fumes and chemicals, a fine not exceeding one thousand pesos.*

A matter of formalizing a co-operative agreement between the two agencies would harmonize any conflict of interest and promote environmental protection in the end.

CHAPTER IV

RECEPTION FACILITIES: A STEP FURTHER TOWARDS ENVIRONMENTAL PROTECTION

4.1 Introduction

The need to control pollution is indisputable. Pollution is a problem of no mean proportion because of its deleterious effects on human life and public welfare. It is no longer a monopoly of highly advanced and developed countries; the ill effects of marine pollution are now also suffered by developing countries as a consequence of a mixture of several factors. The value of the resources could be lost easily if unsustainable development practices continue. Paragraph 27.2, Chapter 27 of the Agenda 21 (Robinson, 1993, page 513) adopted at the UN Conference on Environment and Development phrased it as:

> *One of the major challenges facing the world community as it seeks to replace unsustainable development patterns with environmentally sound and sustainable development is the need to activate a sense of common purpose on behalf of all sectors of society. The chances of forging such sense of purpose will depend on the willingness of all sectors to participate in genuine social partnership and dialogue, while recognizing the independent roles, responsibilities and special capacities of each.*

Maritime transport is just one of the many economic activities posing a threat on the health of the environment. Routine maritime transport covers a wide range of activities and these should not be taken for granted. Possibilities should be explored by all concerned to develop new ideas and approaches for further protection of the marine environment. Guidelines have been formulated through international forums

and new ones are coming out year after year trying to address the worsening environmental situation. Yet, *implementation* is still the key word to reckon with.

4.2 Profile of Coastal and Marine Resources

The Philippine territorial waters cover about 2.2 million square kilometers of which 88 percent is oceanic and 12 percent coastal. The coastal zone covers a total area of 11,000 square kilometers of land and 267,000 square kilometers of coastal waters. Within this area resides about 55 percent of the country's total population. About 70 percent of the 1,525 municipalities in the country, including ten of the largest cities, are located in the coastal zone (DENR-EMB, 1993, p vi). We can therefore infer the role and importance of the coastal zone in the country's economic development and ecological survival.

With its vast wealth of resources, the coastal areas contain valuable resources with highly diverse flora and fauna. The beaches, gulfs and coves provide significant recreational values. The Philippine coastal zone, occupying 18,000 kilometers of coastline, continues to serve as:

- a rich source of fish and other aquatic products;
- a primary mode of transportation;
- a major area of human settlements;
- a breeding ground and habitat for Philippine wildlife;
- a predominant feature of the country's natural beauty.

However, the continuing deterioration of the coastal areas due to unsustainable development practices (past and present) bring these resources into jeopardy. The degradation of mangrove forests and their conversion to other uses, the destruction of coral reefs due to pollution, destructive fishing practices and overfishing beyond sustainable yields, and the occurrence of red tides are the major environmental problems of the country's coastal and marine environment.

4.3 Inland Coastal Resources

The inland coastal areas are represented by the broad interface of land and water that is directly influenced by tidal fluctuations. These include among others, the sandy beaches, dunelands, beach forest and some marginal lands. They occupy 1.1 million hectares of the total 11.84 million hectares of coastal zone. Bays, gulfs and coves also form part of the country's inland coastal zone (DENR-EMB, 1993, p 2-40). The areas described provide recreational sites for local residents and foreign tourists as well. Tourism stimulates local economic development and represents a significant source of foreign earnings for the country. In the Visayas region in Central Philippines, tourism is one of the prominent industries supporting the economy. One of the many concerns to this resource is the deteriorating water quality due to pollution and debris washed up on the beaches. This significantly affects the amenities of the resort areas.

4.4 Current State of the Marine Environment

4.4.1 Local Water Quality Monitoring

Despite the importance of the marine environment, there are few studies conducted in the country to determine water quality. Monitoring of pollutants in the country's coastal waters that was initiated by DENR has been highly localized and limited. According to Talavera (1983, page 293): "*The extent of the pollution of Philippine waters from vessel-sources has not been determined but the environmental problems that may arise from oil spills and discharges have been recognized by the government.*"

The only available data in terms of oil contamination was conducted by NOCOP and is limited in scope. Table 4.1 shows the oil levels in selected areas. Accordingly, the table indicates that (except for Davao) oil and grease levels exceeded the NPCC set criteria for fisheries propagation (EMB, 1988, page 164). As presented in Section 3.3, the NOCOP laboratory was razed by fire in the late 1980's which further reduced the capability of PCG to monitor oil pollution.

TABLE 4.1
OIL LEVELS IN SELECTED PHILIPPINE WATERS

LOCATION	OIL CONTENT (ppm)	YEAR
SOUTH HARBOR	0.20 - 14.50	1980
NORTH HARBOR	0.25 - 8.00	1980
CAVITE	0.14 - 6.00	1980
CEBU	0.66 - 5.05	1980
DAVAO	1.24	1980
MANILA BAY	0.01 - 11.32	1985

Source: NOCOP, PCG

4.4.2 Global Pollution Monitoring Effort

In view of the limited studies conducted in the Philippines in terms of marine pollution, the authorities have been relying primarily on findings undertaken by various international organizations in the formulation of policies, rules and regulations and the adoption of pollution standards. The proportions from different sources of all potential pollutants have been estimated, according to the 1990 UN Report, The State of the Marine Environment, as follows (GESAMP, 1990b, p 88):

Waterborne land-sources pollution	**44%**
Airborne land-sources pollution	**33%**
Marine Transportation	**12%**
Marine dumping (mainly land-source waste)	**10%**
Off-shore oil production	**1%**

It can be said that the contribution from shipping is a relatively small part of the total, but it can cause significant environmental effects when it occurs in coastal waters or enclosed sea areas. In terms of oil pollution, Table 4.2 reflects petroleum hydrocarbon inputs to the world oceans which further indicates a significant proportion coming from maritime transportation. Estimates vary between 1.7 and 8.8

million tons per year. However, it is considered that the best estimate is about 2.5 million tons per year (GESAMP, 1990, p 326).

Table 4.2
Contributions of Petroleum Hydrocarbons to the World Oceans

SOURCES	INPUTS (%)
Natural Sources	8
Offshore Production	2
Maritime Transportation	45
Atmosphere	10
Land-based discharges and run-off (refineries, municipal waste water, industrial waste water, urban run-off, rivers)	34
Dumping at sea	1

Source: GESAMP, 1990, p 326

Inputs from shipping operations have been reduced considerably and this could be traced to the effort done by the IMO in preventing accidents and operational discharges through its various instruments already in force. This can be gleaned from Table 4.3 where a survey was conducted in 1981 and 1989 as shown below (GESAMP, 1993, p 25).

Table 4.3
Estimated Inputs of Petroleum Hydrocarbons into the Ocean due to Marine Transportation Activities (U.S. National Academy of Sciences)

Activities	1981 (million tons)	1989 (million tons)
Tanker operations	0.7	0.159
Tanker accidents	0.4	0.114
Bilge and fuel oil discharges	0.3	0.253
Dry-docking	0.03	0.004
Marine terminals (including bunkering operations)	0.022	0.030
Non-tanker accidents	0.02	0.007
Scrapping of ships	-	0.003
TOTAL	**1.47**	**0.57**

Source: GESAMP, 1993, p 25

It can be deduced from the table that oil pollution can still be significantly reduced if the governments ensure the provision of reception facilities to receive bilges, sludges and oily mixtures generated as a result of tank washings and deballastings.

4.5 Importance of Waste Reception Facilities

The provision of adequate reception facilities in order for ships to land their oily slops, and wastes, tank washings, sewage or garbage for proper treatment and disposal has long been recognized as one of the most important aspects of pollution prevention. The concept forms part of the strategy to limit and eliminate operational pollution from vessels. Hence, it was included as a complimentary provision of MARPOL 73/78 to make effective the various requirements imposed by international safety conventions upon the vessels. As Michael Gray (1990, p 18) comments, *"Onshore reception facilities for wastes, slops and garbage can't keep pace with the requirements placed on them - with tankers roaming the high seas laden with rubbish they can't get rid of. Better services must be provided if worthy ideas are to be translated into reality."*

4.6 Requirements for the Provision of Reception Facilities

4.6.1 General Description of Reception Facilities

The Comprehensive Manual on Port Reception Facilities, developed by the IMO, defines a port reception facility as anything which can receive shipboard residues and mixtures containing oil, noxious liquids, sewage or garbage. The type and size of the facility depends on the requirements of the vessels calling at a port.

In a paper presented to the IMO/UNDP International Seminar on Reception Facilities for Wastes, the US Coast Guard classifies reception facilities into two general basic types:

(1) Fixed reception facility. Where large volumes of wastes are anticipated such as contaminated ballast and cleaning slops from tankers, a fixed storage and processing installation will be required. These will most often be required of product loading terminals. Most of these terminals are closely associated with refineries that already have sophisticated waste treatment systems to process waste water, and complying with MARPOL 73/78 will entail merely dedicating storage space to receive ships wastes.

(2) Mobile reception facility. Most categories of ships requiring reception facilities generate wastes in such low volumes that they may be received by tank barges, tank trucks and railroad tank cars. These mobile facilities can transport the wastes to central receiving and processing installations.

The concept and design of a floating facility introduced by Nippon Kokan, a shipbuilding company in Japan, was also presented at the same seminar. The floating reception facility is a treatment plant for wastes, such as dirty oil, ballast, slop oil, sludge, garbage and others, that is mounted on a barge.

Depending on the manner in which the responsibility of providing reception facilities rests, the facilities may be operated on commercial terms or otherwise by:

- national/nationalized oil companies
- multi-national oil companies
- port authorities
- private contractors

4.6.2 Criteria for Reception Facilities in Ports

MARPOL 73/78 provides sets of criteria to be used to identify which ports need reception facilities in order to comply with the relevant regulations. Annex I, Regulation 12(2) provides the guidance that reception facilities shall be provided at:

(i) all ports and terminals in which crude oil is loaded into oil tankers where such tankers have immediately prior to arrival completed a

ballast voyage of not more than 72 hours or not more than 1,200 nautical miles;

(ii) all ports and terminals in which other than crude oil in bulk is loaded at an average quantity of more than 1,000 metric tons per day;

(iii) all ports having ship repair yards or tank cleaning facilities;

(iv) all ports and terminals which handle ships provided with the sludge tank(s) required by Regulation 17 of this Annex;

(v) all ports in respect of oily bilge waters and other residues, which can not be discharged in accordance with Regulation 9 of this Annex; and

(vi) all loading ports for bulk cargoes in respect of oil residues from combination carriers which cannot be discharged in accordance with Regulation 9 of this Annex.

Annex II, Regulation 7(1) provides the following guidance:

(i) cargo loading and unloading ports and terminals shall have facilities for reception without undue delay to ships of such residues and mixtures containing noxious liquid substances as would remain for disposal from ships carrying them as a consequence of the application of this Annex; and

(ii) ship repair ports undertaking repairs to chemical tankers shall have facilities adequate for the reception of residues and mixtures containing noxious liquid substances.

Annex III of MARPOL 73/78 does not require provision of reception facilities. Although Annex IV is not yet in force, Regulation 10(1) specifies that:

> "the Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of sewage, without causing undue delay to ships, adequate to meet the needs of the ships using them."

Annex V, Regulation 7(1) provides guidance as to which ports need reception facilities. Similar in the condition set in Annex IV, it is very straightforward in this

respect: all ports and terminals should have facilities for reception for garbage, without causing undue delay to ships, and according to the needs of the ships using them.

4.7 Types and Quantities of Ship-Generated Wastes

Ship-generated wastes are generally classified according to the technical annexes of MARPOL 73/78. However, because of the varying operational requirements of reception facilities and different treatment processes, these wastes were further categorized to conform with the operational modalities of the receiving facilities. The resulting sub-categorization of the wastes is also useful in determining the type and capacity of facility to be provided in a port.

Annex I (Oil). The resulting oil mixtures from ship operations can be divided into two main groups:

Oily Waste from Machinery Spaces (All Ships)	Oily Mixtures from Cargo Tank Areas, Including Pump Room (Tankers)
• lubricating oil • fuel oil residues • sludges • oily bilge water	• dirty ballast water • tank washings • cargo residues

A guideline for estimating the quantities of oily wastes that can be expected in ports has been developed by IMO. However, the estimates are still very rough and will not be accurate enough for the proper design of reception facilities. Nevertheless, these can be useful as an initial estimate for port planning.

Oil Mixtures	Estimates
sludge	0.5-1.0 m^3 or 0.5% - 2% of daily fuel consumption of vessel
oily bilge water	1-10 m^3 for medium & large ships/day 0.1 - 3 m^3 on coasters/day
oily ballast water	30% of DWT in < 72 hrs ballast voyage
tank wash water	4-8% of DWT
▫ liquid oil residue	0.02-1.0% of DWT
▫ oily solids	0.01-0.10% of DWT

Annex II (Noxious Liquid Substances). The substances which are subject to Annex II are divided into four categories (A, B, C, and D). For the cleaning of chemical cargo tanks, MARPOL requirements demand only a "prewash" to make the tank environmentally clean after unloading. The resulting wash water from this prewash is to be discharged to a port reception facility. After the prewash, a "main wash" may be carried out to make the tank commercially clean for another product. The main wash may be discharged at sea in accordance with the provisions of regulation 5, however, it often has to be discharged to the reception facility when loading a new cargo at the same port. Accordingly, the main contributor of Annex II wastes to reception facilities are the resulting wash water from tank cleaning operations.

Annex IV (Sewage). According to Annex IV of MARPOL 73/78, sewage is drainage and other waste from toilets, urinals and WC scuppers as well as drainage from medical premises and from spaces containing living animals. Typical examples of the amount of sewage generated on board different ships are shown as:

Type of Ship	**Sewage** (in liters/person/day)		**Greywater** (in liters/person/day)
	Vacuum Toilet System		
	Yes	No	
Passenger Ships	25	70	160
Other Ships	25	70	110

Annex V (Garbage). Garbage, as defined in this annex, means all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically except those substances which are defined or listed in other Annexes to MARPOL 73/78. However, the volume of solid waste (garbage) generated on board is generally subdivided into two categories to fit operational requirements of

reception facilities. In some cases, the categories of garbage to be described are treated differently in terms of handling, payment, etc.

(1) Ship Waste		(2) Cargo Waste
Domestic Waste	Operational Waste	
• Food waste • Packaging materials (plastics, cans, cartons, papers, etc.) • Medical wastes • Bottles, crockery • Paper, cardboard	• oily rags/pads • Machinery maintenance remains • soot and machinery deposits • broken parts • packaging materials • ash and refractories • rust • paints	• cargo residues • dunnage, shoring • pallets • lining • strapping • livestock wastes

Reliable information on the quantities of garbage production onboard ships is very limited. The IMO guideline on estimating the amount of garbage expected in port is about 0.5 - 1.5 kilogram of domestic waste per person per day on a cargo ship and twice that amount on a passenger ship. The volume of cargo associated waste is as follows:

General cargo waste	**1 ton per 123 tons of cargo**
Container cargo waste	**1 ton per 25,000 tons of cargo**
Dry bulk cargo waste	**1 ton per 10,000 tons of cargo**

A more extensive study was conducted in the Caribbean on the quantities of Annex V waste for the ongoing US$ 5.5 million program called the Wider Caribbean Initiatives for Ship-Generated Wastes (WCISW) as shown in Table 4.4.

Table 4.4
Quantities of Annex V Wastes Produced at Sea in the Caribbean

Vessel Type	Average number of passengers + crew	Rate of generation of Annex V wastes (kg/person/day)	Quantity of Annex V waste(kg/day) produced per vessel
Cargo ships	30	2.0	60
Cruise ships	1200	3.5	4200
Yachts	4	2.0	8
Fishing vessels	5	2.0	10
Miscellaneous	20	2.0	40

Source: Environmental Resources Limited, 1991, p12

4.8 The Question of Adequacy and Undue Delay

For ships which are going to avail themselves of the services of reception facilities, the key words are "adequacy" and "undue delay". The provisions of MARPOL 73/78 oblige the Government of each Party to undertake to ensure provision of reception facilities at ports and terminals to receive wastes without causing undue delay. General guidelines have been issued through various IMO publications which summarized adequacy in this form:

> As a minimum, the capacity of reception facilities at cargo unloading, loading, and repair ports and terminals shall be capable of receiving those residues and mixtures which are handled within that port and which must be discharged to reception facilities. All ports including marinas and fishing ports, regardless of size, will need to provide adequate facilities to receive Annex V wastes (garbage) and waste oil from engines (IMO, 1995, p 29).

Surveys have been conducted and are still being conducted by independent organizations such as the International Chamber of Shipping (ICS), Baltic International Maritime Council (BIMCO), International Tanker Owners Association, and IMO which show that there is a glaring lack of reception facilities in many countries and even where provided, it is most often inadequate.

Causing undue delay to ships also classifies a facility to be inadequate. Undue delay may arise when the time spent in port for disposal of residues, mixtures or wastes goes beyond the normal turn-around time of the ship in that port, unless the delay is caused by fault of the ship, its Master, its owner or his authorized representatives, safety requirements or the normal port procedures.

Application of the provisions of the Convention evidently requires further interpretation of what is adequate and appropriate. The publication of the Comprehensive Manual on Port Reception Facilities still requires broad interpretation. Many factors will actually be considered to determine what are adequate and appropriate reception facilities.

With respect to capacity, the MARPOL 73/78 requirements are somewhat qualitative. The United States Federal Regulation (33 CFR Part 158) is more definite and may be used for guidance.

For Annex I, the rules are applicable to ocean tankers and any ship greater than 400 gross tons. Four types of ports and terminals are distinguished and oily wastes are categorized into four types as presented below.

Table 4.5
Capacity Requirement for Annex I Wastes

Waste Category	Ports and Terminals			
	Loading Ports	Loading Ports Other than Oil	Other Terminals	Repair Yards
Fuel Sludge	10 tonnes	10 tonnes	10 tonnes or 1 ton x AVD	
Oily Bilge Water	10 T or 2 T x AVD	10 T or 2 T x AVD	10 T or 2 T x AVD	
Oily Ballast Water	30% max. tanker DWT x 1 or x AVD	30% max. tanker DWT x 1 or x AVD		8% bunker cap. max. tanker + 1,500 T or 4.5% max. tanker DWT
Oil Cargo Residue		0.2% max. tanker DWT x 1 or x AVD		As % of DWT: crude = 1% black prod = 0.5% white prod= 0.2% + solids = 0.1%

Note: **DWT**- dead weight tonnage
AVD- average number of vessels calling at port per day
T - tonnes

For Annex II, Table 4.6 reflects the capacity requirement for the discharge of NLS residues as required also by the US Code of Federal Regulations.

Table 4.6
Capacity Requirement for Annex II Residues

Waste Category for Noxious Liquid Substances (NLS)	Ports & Terminals (in cu. meters)	Repair Yards (in cu. meters)
Solidifying NLS Category A	75	75
Non-solidifying NLS Category A	50	50
Non-solidifying Category B,C,D	see note	50

Note: Need not require to provide the capacity if ports meet equipment and operational requirements as set forth in the regulations.

There is no definite capacity requirement for the reception of Annex V wastes, but the ports should comply with established operational requirements in order for the facility to be adequate.

4.9 Volume of Waste Generation

There is a considerable data base with respect to shipping for every port in the Philippines. This data relates to the type of ship, type of cargo, length of stay in port, previous port of call, and volume of passenger. A forecast for the volume of passenger traffic until the year 2010 was even formulated. However, there is no data available concerning the volume of ship-generated wastes handled by the ports. Private operators involved have no reporting obligation. Although there is an existing requirement for vessels to maintain log reports on garbage disposal, there is no national system for the registration or recording of ship wastes.

In order to determine the capacity of reception facilities, amounts and types of wastes have to be quantified. The IMO, in its Comprehensive Manual on Port Reception Facilities, recommends collecting information by means of interviews, queries, etc. These processes can take several months to undertake in order to be accurate. However, in the absence of specific data, the estimation methods presented in the previous sections can be used to determine the estimates of the initial reception capacity.

Taking into account the latest statistical information of the ports in 1994, the volume of oily wastes that could be possibly generated in various PMOs can be calculated as shown in Appendix 5 while the volume of sewage and solid wastes is indicated in Appendix 6.

From these calculations, one can infer the magnitude of potential waste being generated. Clearly port authorities or the government can not simply set aside the need to address this ship generated waste.

4.10 Status of Port Reception Facilities in the Philippines

4.10.1 Existing Operations

4.10.1.1 Annex I Waste (Oil-contaminated Waters)

The country has three oil terminals/refineries receiving imported and locally produced crude oil. Two terminals/refineries are located in Batangas and are being operated by Shell Petroleum Company and Caltex Oil Company respectively. Both are equipped with reception facilities but can only handle a limited amount of dirty ballast. The other oil terminal/refinery is located in Limay, Bataan operated by Petron Corporation which is partly owned by the government. Presently, there is no reception facility installed on the said terminal/refinery. However, a plan is already in place to put up the required facility. All other oil terminals in the country are operated by the same three companies which do not have fixed reception facilities for the purpose but are equipped with oily water separating equipment as required by PCG MC No. 02-80 and PCG MC No. 03-94.

In general service ports under the jurisdiction of the PPA, there are no facilities provided to receive waste oil generated from engine rooms and machinery spaces. The same is true in all fishing ports and private ports, other than oil terminals.

There are, however, private firms accredited by PCG and PPA to receive oily wastes from vessels (See Appendix 7). One of the companies, Sea Clean Anti-Pollution Services (now renamed as PHILSIN Marine Services, Inc.), which is primarily engaged in tank cleaning services has been issued an Environmental Compliance Certificate (ECC) on July 5, 1995 by the DENR for the construction and development of its treatment facility using a bio-remediation process. The facility can accommodate up to 15,000 cubic meters of oil sludge and residues for treatment in a year. However, available records indicate that said companies concentrate their

activities mainly on tank cleaning services and have a very limited involvement in receiving oil mixtures from machinery spaces.

4.10.1.2 Annex II Wastes (Chemical-contaminated Waters)

There are no existing provisions for the receipt of chemical-contaminated water in any government ports. As previously described in section 2.6.1, the transport of bulk chemical liquid cargoes is not very common in government ports. Chemical shipments are handled mostly in containers. There are, however, recorded shipments of bulk chemicals, but the records did not indicate whether they were liquid or solid. Likewise, the statistics gathered by PPA do not categorize the shipments according to Annex II of MARPOL 73/78.

4.10.1.3 Annex IV Wastes (Sanitary Sewage)

There is no government provision for the receipt or treatment of sanitary sewage from vessels at berths or anchorages in any port in the country. Most of the international cruise ships arriving in the country, including visiting foreign naval vessels are serviced at pier 15 of the Manila South Harbor. Arrangement for the collection of sanitary sewage is through the ship's agent. Local companies operating sewer services are hired for the collection of sewage.

4.10.1.4 Annex V Wastes (Garbage and Solid Wastes)

The situation for the collection of garbage and solid wastes varies significantly among the ports in the country. In the port of Manila, PPA maintains two small vessels (approximately 15 meters in length) to collect garbage from foreign ships at anchor in the designated anchorage areas and this is the only garbage collection service operated by PPA. The garbage is neither bagged nor containerized while on the vessel and there is no standard operating procedure for garbage collection. Collected material is then trucked to the city landfill for disposal. PPA charges vessels US $100 per truck load (Dy-Liaco, 1996).

The garbage from most of the international shipping and all of the domestic shipping at berth is collected by private firms through contractual arrangements with the stevedoring companies or shipping lines. This kind of arrangement is similar in all ports in the country, but limited in some areas. Sulpicio Lines, one of the passenger liner operators in the Philippines, reportedly budgets 1200 pesos (around US$ 50) for every twenty-foot equivalent (teu) container of garbage disposal in Manila (Balboa, 1996).

Garbage bins or containers can be found in most of the ports which are provided either by the city, port authority or private contractors where ship generated wastes and port generated wastes are placed. Filled-up garbage containers are then collected by the city or private entrepreneurs for disposal. There are many instances that piles of garbage are mounting due to inability of city garbage trucks to pick-up garbage on a regular basis.

The present system of solid waste management in Philippine ports does not include separation or sorting of waste materials for recycling nor the separation of hazardous waste components. Basically, the existing system applied in most of the ports consists of the following stages:

Primary Collection. Collection of waste from ships at anchorage is done by service boats. Floating waste is very rarely collected, unless it disrupts vessel or port operations. Waste from ships at berth, which is stored in bins or bags, are collected by hand push cart and moved to designated receptacles, when requested by ships. In most cases, the crew directly dispose of the wastes to designated receptacles. Port generated waste and street waste are directly collected by a sweeper with a push cart.

Primary Disposal. Waste collected through small garbage bins/receptacles is temporarily stored in concrete made disposal places or big containers/dumpsters provided either by the municipality, port authority or private company.

Secondary Collection. Subsequently, secondary collection of waste is done by trucks. They visit all primary disposal sites and manually load the waste from concrete made open disposal places or hook-up filled dumpsters. The trucks are

either operated by the municipality or by the private enterprises contracted by the PPA or by the shipping companies.

Final Disposal. After secondary collection, waste leaves the port area and is transported directly to the final disposal site, but also intermediate process of waste recovery can be carried out. At the final disposal site, the informal waste recovery sector takes charge, involving scavengers, purchasers and middle-men. This informal process is discussed further in a succeeding section.

4.10.2 Related Urban Facilities

4.10.2.1 Sanitary Sewage

Manila is the only city which has a system to collect sanitary sewage. Sanitary sewage is collected from about 85,000 or about 30% of the total households and establishments, in the City of Manila. Wastes are pumped to a central facility in Tondo (near the North Harbor) and then discharged through an outfall (central outfall) with diffusers in place. Sanitary sewage is not treated prior to discharge.

The rest of the city (about 70%) is served with septic tanks (communal or individual) with overflow to the local storm drainage and thence to the Pasig River. In other cities of the country, this particular system is commonly practiced.

4.10.2.2 Garbage/Solid Wastes

City operated trucks routinely service the collection of garbage within the port and then dispose of it in designated dump sites. Sanitary land-filling techniques have just recently been introduced and there are now two sites in operation. These are at San Mateo (45 hectares) with an estimated 20-25 years capacity and at Carmona (65 hectares) with an estimated 45 year capacity. As these are 30-45 km from the center of Manila, a transfer station has been established. In other places in the country, open dump sites are still in operation.

There is no waste incineration facility in existence in the country. Likewise, there is no systematic waste recycling scheme in operation but there are a number of private firms engaged in the recycling business. As a result, poor people and unemployed individuals turn-up at dump sites making a living out of scavenging. Recovered recyclable materials are then sold to intermediaries for the final recycling process.

4.10.2.3 Formal and Informal Waste Handling Activities

As described, only a few private enterprises are engaged in the collection of oily wastes or related services and these are concentrated in the port of Manila. These enterprises are accredited/certificated by concerned authorities as provided by the regulation. In other ports, no such formal interest from the private sector seems to exist. However, according to information received, there are private entrepreneurs who informally approach ship crews to partially or totally collect oily waste (used lubricating oil) for a certain fee, particularly in Cebu, Ilo-ilo and Zamboanga. It is not clear, however, for what the collected oily waste is being used. Common practice is that the used lubricating oil is used to treat wood building materials, lubricating chain saws and other machinery, and as furnace fuel.

With respect to solid wastes, it is generally perceived that municipalities do not operate effective waste collection services because of the perennial problem of garbage filling along the streets and empty lots. In many cities, local governments have contracted out collection and removal of solid waste to private enterprises. This has also been the case in shipping where shipping lines or agents have contractual arrangements with private enterprises.

Waste recovery is organized by an informal sector, however, the recovery process is quite inefficient. It is ironic that, although there are ongoing recycling activities/programs in the Philippines which are being widely promoted, the government has not actively ventured to undertake a comprehensive and systematic waste recycling scheme. Waste recovery is left to informal arrangements among the

scavengers, purchasers, middlemen and the paper, plastic, metal and glass factories. Scavengers collect all types of valuable waste in the streets, at temporary disposal sites or final dump sites. This usually results in the uncontrolled activities of scavengers on the dump sites, exposing them to health hazards. They then sell this unsorted waste to purchasers who sort and prepare the wastes according to factory requirements. The sorted wastes are then sold to various middlemen and finally sold to factories for use as inputs in their production processes.

The attitude of the government towards these informal sector initiatives is ambivalent. Non-government organizations are more active in this aspect, instigating and encouraging the scavengers to form cooperatives to enable their activities to be more organized and systematic.

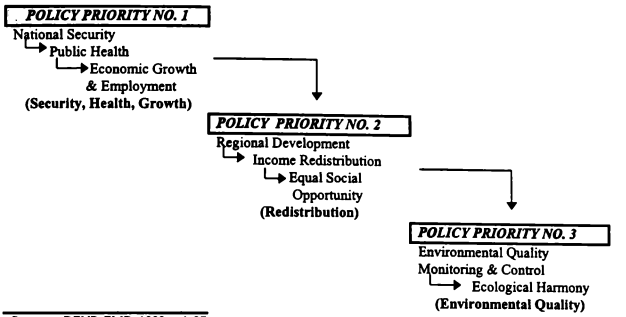
4.11 Impediments to the Provision of Reception Facilities

4.11.1 National Policy Direction

The mix and relative weights of national policy objectives (such as economic growth and development, equitable distribution of income, regional and rural development, environmental quality and the maintenance of the productivity of natural systems) define the direction that government officials are supposed to follow. The Philippine government seems to follow the hierarchy of national goals as illustrated in Fig.4.1.

A recent newspaper account, published in the Philippine Daily Inquirer, reveals that the Philippine Agenda 21, the document seen to guide the country's environmental policies towards the 21st century, is still in the freezer (Mangawang, 1996, p B4). Romeo Escandor, Region 7 Director of NEDA, was quoted in the same news account and states that "*politicians and businessmen do not seem to understand Agenda 21. This is proving to be one of the biggest problems about finalizing the document.*" This simply implies that bringing environmental policy to the forefront of national objectives may still take a long time.

Figure 4.1
THE HIERARCHY OF NATIONAL GOALS



Source: DENR-EMB, 1993, p 1-27

4.11.2 Socio-Economic Consideration

The provision of reception facilities can be considered a national environmental undertaking because of its national and international significance. However, the described national policy direction, outlined in the above figure, where environmental concern is at the lowest level, unfavorably affects the issue of establishing reception facilities in the country. Considering further that the contribution of the marine transportation sector to the GNP is minimal [less than 1% (JICA, 1992, p 1-8)], its impact on the matter is lessened as a consequence.

Likewise, an estimated 50% of the urban population and 64% of the rural population live in poverty and at the same time, the country is burdened with a US$ 37.8 billion foreign debt. This ties-up a significant portion (40%) of foreign earnings to debt servicing, and is compounded by a perennial negative trade balance (Philippines, 1996, pages 898-916). These pressing issues tend to focus government action towards economic alleviation. This means that the resulting allocation of the national budget to environmental projects is small.

4.11.3 Environmental Management Coordination

In the sixties, the environmental movement in the US received powerful and broad spectrum public support. Environmental groups sprang up across the North American continent and in Europe. Such American inspired environmentalism was to eventually reach the Philippines.

With the influence of American environmentalism on the Philippines, there emerged an increasing interest in environmental reform. In July 1976, an Inter-agency Committee on Environmental Protection (IACEP) was created by Presidential Letter of Instruction No. 422 and was placed under the coordinative direction of the Department of Natural Resources. The Committee was tasked to submit a report to the President on the state of the Philippine environment and to review existing government policies and programs on environmental protection. The Committee found that (DENR-EMB, 1993, p 1-28):

a) there was uncoordinated implementation of environment related policies, programs and projects among at least 20 government agencies with their own sectoral responsibilities in environmental protection and management;

b) there was a lack of environmental legislation and agencies with the requisite regulatory powers;

c) there was no mechanism for evaluating the environmental impacts of development projects.

Currently, the issues described in (b) and (c) above were more or less addressed by the enhanced mandate of the DENR in environmental protection efforts in general, by the PCG in the marine environment in particular and through the creation of the EMB in the supervision of environmental impact assessments. However, until now, issue (a) has not been addressed accordingly. This is validated when examining sea accidents that involve most of the ferry services in the Philippines. These have been attributed, by Sen. Leticia Ramos-Shahani (Gomez,

1996), to *"the glaring lack of coordination among several government agencies involved in the maritime industry."*

4.11.4 Institutional factors

Within the PPA there are two specific institutional factors relating to the enforcement of environmental standards and procedures in the ports that need to be highlighted. These are:

a) the lack of any identified mandate within PPA to address environmental or land use matters on a routine basis;

b) the consequences of devolution of authority from the central government to the provinces and local government offices as a result of the Local Government Code of 1991.

There is no specific office or agency within PPA responsible, even giving a broad interpretation to existing mandates, for environmental and land use matters. Environmental Impact Assessment (EIA) of port related matters are addressed on an ad hoc basis and little attention is given to comprehensive port planning beyond an annual assessment of needs. Yet many of the critical issues confronting the ports particularly those in the larger cities (Manila, Cebu and Iloilo) pertain to the port's interface with the city. These include:

a) the management and planning of land uses adjacent to the port to ensure that the city's objectives as well as those of the port authority are attained;

b) the management of effluents and garbage, both within the port and by the host cities.

Each of these issues pose serious questions with respect to co-ordination and communication among agencies. The lack of an identifiable point of responsibility within PPA is mirrored by a comparable lack within municipal, provincial and other national agencies. Indeed, the bureaucracy in some respect is so cumbersome, that a

number of "task forces" have been established by the President to address specific problems and to cut through the layers of bureaucracy. Such responses, however, cannot be put in place for all problems and there is an urgent need both to increase the dialogue and exchange of information within and between departments, and more specifically, in PPA to established a team with clear responsibility for environmental and land issues.

Although the Local Government Code has instigated the devolution of many administrative functions including land use planning from central departments in Manila to local governments units, much of the work on environmental standards, and on the application of those standards remains centralized. Similarly, although municipalities now have the authority to pursue initiatives with respect to land use planning, which should involve constructive dialogue with a key land user such as the PPA, there is little evidence that this is occurring in any meaningful way. Even in Manila where the city is adequately staffed, where there are several vocal and active NGOs involved in downtown and waterfront land use issues, the dialogue has not been established to harmonize port activities with the host city/municipality.

CHAPTER V

RECEPTION OF SHIPS GENERATED WASTES IN DEVELOPED COUNTRIES

5.1 Introduction

This chapter describes the operation of reception facilities in selected countries which have developed and are continuously seeking measures to improve the existing system. The section basically focuses the discussion on the countries bordering the Baltic Sea where the provision of reception facilities is not only governed by individual states as required by MARPOL 73/78 but also with a regional agreement to address the worsening water quality of their common sea area.

5.0 Provision of Reception Facilities in the Baltic Sea Area

The states that border the Baltic Sea Area are Denmark, Finland, Sweden, the Federal Republic of Germany, Poland, the Russian Federation and its former federal states of Estonia, Latvia and Lithuania.

Voicing concern on the need to protect the fragile marine environment, the Baltic Sea states signed the Convention on the Protection of the Marine Environment of the Baltic Sea Area - the Helsinki Convention - on 22 March 1974 which subsequently entered into force on 03 May 1980.

Upon the request of the member states, the area became a "special area" under the provisions of MARPOL 73/78. As such, the Baltic Sea Area has been given special protection from MARPOL 73/78 for recognized environmental reasons in relation to special conditions and to the particular character of the traffic and requires more stringent environmental measures to be followed. This includes the

provision of the required reception facilities needed for MARPOL Annexes I, II, IV and V. Complying with the agreement set forth in the HELSINKI Convention, reception facilities were put up by member states. The scope of the HELSINKI Convention 74 was expanded with the adoption of the later convention, the HELSINKI Convention 1992. The membership has also been expanded to include the European Community.

5.2.1 Mode of Operations

5.2.1.1 Administration/Responsibility

Among the Baltic Sea states, the responsibility of providing the necessary reception facilities generally lies with the port authorities, port owners or port operators while supervision is with the national agencies involved with environmental protection or with marine transportation. It is only in Poland where responsibility has been taken over from the port authorities by private enterprises (Shipservice and Portservice) rendering services to the Polish commercial seaports. However, the responsibility of the two companies is limited to Annex I and V wastes only. In other small ports along the Polish coastline, the port authorities are still in charge. Annex II waste is the responsibility of the importer/exporter of noxious substances while Annex IV wastes are not received until the completion of the municipal sewage treatment plants now under construction.

For other member states, port authorities or oil terminal operators are responsible for receiving Annex I waste. Handling of chemical-contaminated water (Annex II waste) is likewise, the responsibility of the importer/exporter of the cargo with the exemption of Germany where responsibility is still with the port authority. For Annex IV and V wastes, port authorities, port owners and operators are generally responsible for receiving such wastes. But in Sweden, it is the municipality where the port is located which is held responsible.

5.2.1.2 Fee System

There are differing arrangements for the reception of shipborne wastes among the Baltic Sea states. The fee systems which apply in the member states are:

Denmark. The Danish system operates on a "no special fee" basis and this applies at all Danish ports under the following conditions:

- the delivery of residues shall be within normal working hours of the port. Exemption is given to ships calling only outside normal working hours.
- the amount of residues should be in reasonable proportion to the size and type of ship, and duration of voyage.
- the ship should be equipped with standard connections and must have necessary pumping capability.
- the ship must pay harbour dues.

The amount necessary to cover the handling of wastes is financed through the port dues. The ship will be charged separately if said conditions are not met. The amount is based on the extra expenditures incurred by the port authorities. Likewise, if the ship has to deliver large quantities of wastes such as dunnage or residues from cargo cleaning and materials containing noxious substances, the port authorities need to be contacted for special arrangements which will include an extra charge for handling such wastes.

Finland. In Finland, the ports set their own charges based on a recommendation by the Finnish Port Association for the reception of Annex I wastes. Oily ballast water or tank washings carry a lower charge than oily bilge water and sludge. Normally, the imposed fee covers the actual cost of handling the wastes. For Annex IV and V wastes, a "no special fee" or common fee applies for all ports and terminals, based on the net tonnage of the ship. The port supplies plastic sacks for garbage generated during the ship's stay at port and the crew delivers the filled sacks to marked containers on the quay. However, a special fee or arrangement applies to passenger ferry operators. Special arrangement also applies for handling dunnage or

cargo residues and materials containing noxious substances which is arranged through the ship's agent.

Germany. Before the unification of Germany in 1992, the country was divided into the German Democratic Republic and the Federal Republic of Germany. The ports under the former German Democratic Republic applied a "no special fee" system for all wastes with exemptions on dirty ballast, cargo residues or dunnage and other noxious substances that were not generated during the normal loading/unloading of bulk liquid chemicals. In these cases, special arrangements were to be made with the ship agent with corresponding fees.

The former Federal Republic of Germany embarked on a three year reception facilities pilot project with the aim of removing residues in accordance with Annex I and II from ships in German seaports free of charge to the shipowners. The project started in May 1988 with 50% of the cost borne by the federal government and the other 50% by the German coastal states (Bremen/Bremerhaven, Hamburg, Niedersachsen and Schleswig Holstein) where the ports are located. The project had an annual budget of DM 13.5 million. During the duration of the project, the port authorities contracted private companies to undertake reception of wastes. In order to receive the free services, the ship had to fulfill the following:

- equipment and operation of the vessels had to be in line with the valid rules and regulations of MARPOL 73/78;
- costs were to be borne only for discharge procedures performed by authorized companies;
- residues that resulted from normal ship operations had to be in pumping condition.

A total cost of approximately DM 31.6 million was spent on the reception of about 400,000 cubic meters of oily residues (Annex I waste) during the period of the pilot project from June 1988 to May 1991. This translates to an average cost of DM 80 per cubic meter handled. The costs include discharge from ships by barge or road tanker, transportation to a final disposal and final treatment. Discharge and disposal

of chemical residues according to Annex II amounted to DM 202,000 for a total volume of 600 cubic meters.

When the pilot project ended, port authorities started charging vessels for the use of reception facilities, especially at commercial harbours. It is presumed that the fee is carried in the general port tariff as in the case of Bremen and Bremerhaven where official harbour dues increased by 9% from January 1992. Special arrangements apply for passenger ferries and the discharge of dunnage or cargo residues and other harmful substances.

Poland. As described earlier, two designated private enterprises are held responsible for reception services at Polish commercial seaports, such that a special fee system applies. The fees imposed are based on an index of charges for harbour services as presented in "Tariffs in Polish Commercial Sea Ports". The rates are also dependent on the type and size of the ship.

Sweden. A "no special fee" system works in Sweden which is similar to that of Denmark and vessels must fulfill the same conditions outlined earlier. However, reception of sewage and garbage is free of charge as these are the responsibility of the concerned municipality.

Russia. Before the break-up of the former Soviet Union, a system of a sanitary fee (environmental fee) was in effect in her ports along the Baltic Sea coast with the exception of the ports of Tallinn and Novotallinskij. The objective was to encourage the ship to discharge wastes and garbage to the reception facilities. The system was devised to extend compensation at the ports for reception of oily bilge water, sewage and garbage from ships. All ships, regardless of nationality, were charged based on a ship's duration in the port and net tonnage. However, ships that were equipped with environmental protection equipment for total utilization of wastes, and fully certified according to the statutory International Certificates on oil, sewage and garbage pollution prevention, were given a 50% discount on the sanitary fee rates. Ships were obliged to discharge all types of wastes to the port reception facilities and the ship was to be certified by the port authorities. In the same manner,

the port was obliged to receive all kinds of wastes without any restriction (except for the ballast water from oil tankers where a special arrangement was in effect). Likewise, a special fee system was also in effect for ferries, icebreakers, passenger vessels, cruise vessels, non-self-propelled vessels, floating craft and sport vessels, vessels less than 20 GRT, and transit vessels, where the fee was based on the volume of wastes delivered. The ports of Tallinn and Novotallinnskij also charged vessels based on the volume of wastes discharged.

5.2.1.3 Notification

At least 24 hours notice needs to be given to the concerned authorities by the agent of the vessel. Although there is no standard format in effect among the member states, the notice at least gives information on the quantity, content of the waste and estimated time of arrival of vessel.

5.2.2 Cost Recovery

In principle, there are two general mechanisms being practiced to recover cost for the disposal of wastes - the "polluter pays principle" and costs shared by society. The various fee systems described previously imply the application of the said principles and there are three main systems for financing the reception and treatment of ship-generated wastes that can be identified. Each system has its merits but also its drawbacks:

- Costs of reception, treatment and disposal are paid by the ships and done on a strictly commercial basis - the **Direct Cost Recovery** or the **Fee System.**
- Costs of reception, treatment and disposal are included in the harbour fees - the **No Special Fee System.**
- Costs of reception, treatment and disposal are paid by the state or the community - the **Free of Charge System** (Olson, 1996, pages 252-255).

5.2.2.1 Direct Cost Recovery System or the Fee System

This cost recovery mechanism is most widely used. Ships or the agents contract with waste collection companies and are invoiced. The most noticeable advantages of the system are:

- Financial and administrative involvement of the port authority is small.
- The system stimulates waste reduction measures on board ships in order to minimize discharge costs.
- The system does not interfere with interport competition

On the other hand, there are a number of disadvantages:

- The system stimulates illegal discharges to avoid costs. This needs more government control in terms of supervision and monitoring of sea areas to prevent discharges at sea.
- The system provides a form of disincentive. The fixing of prices is often left to the reception companies. Private companies tend to generate high profits thus costs become prohibitive. Again, government involvement is needed to ensure prices are reasonable.
- The system does not stimulate the use of best technology for reception and treatment, as reception companies will cover costs using less than best technology, especially when there is no competition. It follows that companies may make high prices everlasting. Control mechanisms should be in place and good supervision by the government is required.

5.2.2.2 No Special Fee System.

The idea behind the system is that ships will use that for which they have already paid. The tangible advantages of this system are:

- The system is very likely to do away with the illegal discharges that are caused by high waste discharge fees.

- There will be less extensive control by port authorities over ships. Financial and administrative involvement over waste collection companies is greater but is essential in pursuing integrated port waste management.
- The system stimulates ports/private companies to use the best available technology for reception and treatment to reduce own costs. This hopefully positively affects ships by lowering overall reception costs due to the competition between ports.
- The costs to the ships will be kept at a reasonable level because the port authorities are in a far better bargaining position with the waste collection companies than each single ship.

However, there are also some disadvantages:

- The system does not stimulate waste reduction measures on board ships. This may even lead to poor maintenance practices of pollution control equipment by the crews since the ship does not have to pay extra for large quantities of waste generated. But, this can be offset by providing some form of incentives (reduced fees) for those practicing good waste management onboard.
- If not applied in a greater region, ships tend to retain their waste on board for discharge in other ports applying the No Special Fee system thereby putting an unacceptable burden on those ports. This may also affect competitiveness of ports applying the system as against those that do not apply the system.
- Port dues are a sensitive issue which brings an outcry among shipowners whenever there is an increase in the rate.

5.2.2.3 Free of Charge System.

The idea behind the system is that ships will discharge their waste to reception facilities if they do not have to pay anything for this. There is no extensive governmental control needed. The system may sound attractive, but only very few ports apply this system. Since the taxpayers are the ones who will carry the burden, it is very difficult to convince them that they should pay for the reception to keep

ships from discharging waste into the sea. The German government applied this system in their three year pilot project as described in section 5.2.2 but was unable to sustain the system.

5.3 The Baltic Strategy for Reception Facilities

Aware of the increasing incidence of illegal discharges from ships and the urgent need to change it for the better, the Baltic Marine Environment Protection Commission-Helsinki Commission (HELCOM) developed a comprehensive package of measures in order to decrease operational discharges and to eliminate illegal discharges of ships' wastes. The Baltic Strategy for Reception Facilities was endorsed by the Commission on March 1996 with the following basic principles:

- It must be easy, and convenient for ships to avail themselves of the reception facility in port. Any contradictive procedural, operational, technical, or other hindrances for its use should be eliminated.
- The cost of delivering wastes in port must be reasonable and harmonized throughout the area. A matter of priority is the adoption of a harmonized fee system, established to encourage ships to deliver wastes ashore and avoid undesirable waste streams between ports, this encourages a sound sharing of the waste burden in the Convention area. In this respect, a "no-special-fee system is to be applied.
- Good co-operation and development of data-based control and reporting systems are needed to promote an effective control network among port reception facility operators to discourage temptation for illegal discharges and ensure punitive actions are carried out in the case of violations.
- One central authority in each country is necessary to be assigned as responsible for the implementation of the strategy.

The draft HELCOM Recommendation on Reception Facilities also entails proposed actions that each member country should follow (see Appendix 8). Lord Donaldson's Report pointed out the need to re-structure the current practice of charging vessels for

the use of reception facilities in the UK ports. There should be no charge for making use of the facility or additional charge (custom duty) on discharged waste oil. Customs law considers waste oil discharged from foreign ships as imported oil on which a custom duty has to be paid. To encourage the use of reception facilities, the report recommends an arrangement where the cost of using the reception facilities in UK ports be included in the general port dues, getting away from additional charges currently being imposed on ships. In addition, the report also recommends that all European ports should take a similar approach, so that port competition remains fair. In effect, the proposal is similar to the system being advocated by the HELCOM for the Baltic ports.

In Norway, a proposal for a new system for the reception of wastes from ships is also being actively pursued which calls for an extensive restructuring of the handling of ship wastes. The current system operating in Norway is that the responsibility for the provision of reception facilities is divided between several parties (owner of the port, terminal, repair yards, etc.) and a special fee system applies depending on the quantities of wastes delivered. The new proposal recommends that municipalities should be responsible for the provision of satisfactory reception facilities for all types of ships' wastes and payment for the reception service should be independent of whether waste is delivered or not (no special fee). Accordingly, the responsibility will become more transparent, and the mode of payment will hopefully stimulate the delivery of wastes in ports.

5.4 United States Regulation on Reception Facilities

The United States Federal Regulations (33 CFR Part 158) encompass the legal obligation and requirements for the provision of reception facilities in US ports. As set forth in the regulations, the purposes are the establishment of the following:

(a) Criteria for determining the adequacy of reception facilities;

(b) Procedures for certifying that reception facilities are adequate for receiving:

(i) residues and mixtures containing oil from oceangoing tankers and any other oceangoing ships of 400 gross tons or more;

(ii) NLS residue from oceangoing ships; or

(iii) garbage from ships.

(c) Standards for ports and terminals to reduce NLS residue.

Some of the main features of the regulation with respect to the aforementioned purpose are:

a) The regulation is more definite in quantifying what is adequate and appropriate reception facilities for Annexes I, II and V wastes.

b) No oceangoing tanker or other ship of 400 gross tonnes or more required to carry their oily waste onboard may enter a port or terminal unless the port or terminal has a valid Certificate of Adequacy or the ship is entering under force majeure.

c) The US Coast Guard has been given powers to inspect and issue Certificates of Adequacy to ports that are able to demonstrate that their facilities for reception of oily waste are adequate.

The reception facilities as required by the said regulations do not have to be continuously present in the port. In fact, the most common procedure as described by Lt. Cmdr. Richard M. Kaser, Chief Port Operations, MSO Mobile, is for terminals to arrange contracts with waste disposal companies to provide reception services. The written contract entered into by the port operator with a private enterprise is then presented to the Coast Guard for the issuance of an appropriate Certificate of Adequacy. The facility of the private company is inspected by the Coast Guard before issuing the certificate. When the service is needed, the waste handling company sends one or more tank trucks to receive the waste and transport it to a treatment facility or final disposal site.

The Lord Donaldson Inquiry recommends a similar certification system to be applied in UK ports.

5.5 ISM Code and Shipboard Waste Management

The development of the International Safety Management Code (ISM Code) by IMO to ensure safety at sea, prevention of human injury or loss of life, and avoidance of damage to the marine environment and to property is another significant step towards environmental protection. The Code mandates every company to establish a safety and environmental protection policy, and that Masters should implement the defined policy within the daily routine.

There are already individual initiatives of shipping companies (mostly operating cruise lines and ferry services) to adopt a system of waste management onboard ship in order to reduce the volume of waste to be discharged, thus reducing reception costs. This primarily involves installation of additional processing equipment on board such as pulpers, shredders, comminuters, compactors, and incinerators; or, the provision of additional spaces to accommodate such equipment and for the separation and storage of wastes. This undertaking is certainly not cheap which deserves some form of incentives to shipowners in return.

The IMO is currently working on a manual designed to meet the objectives of the ISM Code and to harmonize waste management initiatives of ships with port waste reception operations. The manual on disposal of ship-generated wastes, being developed, provides suggestions for continuously improving safety management skills of ship and shoreside personnel involved in the management of shipboard wastes. These include suggested management procedures for prevention, reduction, recycling, separation, processing, storage, discharges into reception facilities, and discharge into the sea. Suggestions are also provided for the preparation of the waste management plan. The Manual also includes information sheets (forms) that would need to be filled-in (See Appendices 9, 10 and 11). These forms can be used also to develop the necessary data bases for establishing the needed reception capacity in a port.

CHAPTER VI

THE CONCEPTUAL PLAN FOR PHILIPPINE PORTS

6.1 Introduction

This chapter presents an analysis of appropriate mechanisms for the reception of ship generated wastes in the Philippines. The review of the issues surrounding the provision of reception facilities in order to complement those control measures imposed upon ships and to improve marine pollution prevention have been presented. It is now necessary to seek a workable balance between continuing present shipping activities, pursuing economic development priorities and identifying sound environmental policy for maritime transport.

6.2 Strategic Considerations

6.2.1 Institutional Development

Ratification and adequate implementation of the provisions of MARPOL 73/78 is no doubt a huge task for the Philippine government. It will be necessary to construct reception facilities in a large number of Philippine ports, to provide management and control structures at various levels of authority, and to train and educate not only people directly engaged in handling of vessels and port wastes, but also waste producers.

The management and control structure should be situated at the levels of PCG, EMB, PPA, MARINA, PFDA, PMOs and in the ports. These would include private port owners/operators, shiprepair/shipbuilding yards, marinas and fishing ports. The basic structure required is **first** for a strong executive commitment to

environmental management. A committee has to be established chaired by the PCG, with representatives from the various government agencies concerned and the private sector involved in shipping operations, as a task force to coordinate, support and control the implementation of MARPOL related issues.

As discussed in Chapter III, PCG has the mandate over the control of marine pollution, EMB formulates general national policies on environmental protection, PPA is responsible for the operation of port facilities, MARINA issues necessary permits and licenses to shiprepair/shipbuilding facilities, and PFDA is responsible in the operation of commercial fishing ports. However, as these agencies occupy the same level of hierarchy in terms of governmental administration, inter-agency coordination is a necessity to avoid future conflict and disagreement on PCG issues relevant to MARPOL regulations.

The envisioned inter-agency committee could have the following tasks:

- coordinate preparation of specific MARPOL regulations (enabling improved law enforcement);
- reconciliation of line and agency responsibilities for ship and port waste management activities;
- assistance in developing a general cost recovery structure and incentive system for port users;
- development of a MARPOL control and law enforcement program, to be executed by the MEPO;
- coordination in the development of vessel waste production and discharge data base;
- coordination and dissemination of MARPOL related activities of PCG to all concerned;
- coordination with other ports in the region (with neighboring countries) of MARPOL enforcement activities and data exchange.

Second, an environmental office or unit should be established within PPA, to give adequate attention and professional support and coordination to each PMO concerning MARPOL implementation. Their task will consist of:

- provision of inputs for adaptation in the PPA of standing rules and regulations including MARPOL fees in the tariff structure;
- preparation of a reception facilities operation and control plan;
- preparation of a reception facilities management contract;
- development of a system of incentives for port users;
- assisting PMOs concerning the establishment of reception facilities
- collection of vessel waste production and discharge reports and establishing of a data base;
- coordinating with PCG in the enforcement of MARPOL regulations for reception facilities

And **third,** a waste management unit should be established within PMOs to be responsible for the day-to-day management, control and supervision of MARPOL related activities within their respective ports. Their tasks could be:

- advisory input during design and construction of facilities;
- establishing management contracts with private waste collectors/operators;
- control of operations of private waste collectors/operators;
- collection of discharge reports and inputs to the MARPOL port data base;
- coordination with PCG district headquarters and/or PCG stations in the enforcement of MARPOL regulations on reception facilities.

6.2.2 Administrative Structure

To facilitate integrated management and planning, and as a condition for an effective system, it is recommended to concentrate waste management tasks to a single authority. The PPA is the most appropriate organization since their focus is on management and control of operations inside the port zone. Overall responsibility should rest with the PPA and they should formulate service requirements and

monitor implementation. As in many other countries, the responsibility of providing the necessary reception facilities is left to the port authorities while implementing guidelines is provided by an agency having a mandate.

A committee has to be established in a port, chaired by senior official, with representatives from staff and work force to address not only ship generated wastes, but port generated wastes as well. Along this line is the establishment of an identifiable point of responsibility (specific office or agency) within the PPA. The PPA should also encompass private ports and encourage or require participation of their representatives, since PPA has operational jurisdiction over these ports.

6.2.3 Financing and Cost Recovery

The provision of reception and treatment facilities requires an initial investment, for which sufficient funds should be available. In terms of funding requirements, a distinction should be made between reception facilities and treatment facilities because generally, investments for treatment facilities are higher than for mere reception facilities. Although, this may not be true in all cases since many variables have to be considered. It is also important to clarify/determine what level of infrastructure has to be provided by the PPA and by the private sector/enterprise. This is in relation to participation of the national government and/or international assistance if capital investment is deemed of such magnitude that internal funding would be very difficult.

If internal financing of reception facilities proves to be difficult to secure, the PPA can solicit the financing from banks or international organizations. Organizations like the World Bank, SIDA, UNEP, and UNDP through its Global Environmental Facility (GEF) assistance program can be approached to fund this noble concept of eliminating operational discharges from ships. The IMO Technical Cooperation Division can also assist in seeking favorable financial arrangement/concession with potential donor organizations. The Government should

extend loan guarantees for private enterprises willing to invest for the establishment of the needed facilities.

The "build-operate-transfer" scheme (BOT) is also another source of financing options. The BOT is a financing scheme whereby a private enterprise undertakes to build a project out of its own fund, operate it under a long term concession, and transfer the facility to the government at the end of the concession. This scheme does not require any financial input from the government but subsequently, the government would not be entitled to the revenues generated from the project during the term of the concession. This scheme was introduced at the height of power crises that struck the country in 1992. This was adopted to fast track the construction of power generating units in the country. This scheme proved to be effective and gained nationwide acceptance. A number of developmental projects currently being undertaken in the Philippines are operating under this scheme.

The adopted policy developed by the Environmental Management Bureau as embodied in the document, Philippine Strategy for Sustainable Development (PSSD), called for "proper pricing of natural resources". This basically brings realization that the environmental resources (e.g. air, water) which have been regarded previously as free inputs to economic activities will now be priced based on the "polluter pays principle" (DENR-EMB, 1993, page xii).

For the reception, treatment and disposal of ship generated wastes, the costs shall be carried by ship operators, while cargo associated waste shall borne by the importer/exporter. To prevent disincentives to ships, it is advisable to include these cost structures in the general port fee. This means that the "no special fee system" should be adopted. This type of system is also being recommended in many other countries which have gained substantial experience in the operation of port waste reception facilities. The advantages and disadvantages of this particular system have been presented in section 5.2.2.

6.2.4 Monitoring and Enforcement

A port waste management system including reception facilities will only be successful, if adequate monitoring and enforcement is carried out, both at the ship and at the port level. Monitoring and enforcement are essential to keep participants on the right track. But, these activities should be based on available rules and regulations. As mentioned before, the legislative context has been published, but it should not be assumed that all enabling legislation is already in place, particularly to define enforcement functions at various levels. Legislation can always be subject to review and if found lacking, necessary amendments should be adopted.

Adequate control will ensure ships' and ports' compliance with the regulations on discharge and disposal. In addition, effective gatherings of data on production and discharge of waste will give an insight on the effectiveness of the system in collecting the major part of waste produced by vessels. Production has to be monitored closely in order to assess the performance of the system and its operators.

6.2.4.1 Control of Ships

Monitoring of the vessels is the task of the PCG. Flag state control and port state control inspections may be called for to determine if the ship presents a threat to the environment. For instance, such a threat would arise when a ship leaves port with filled slop tanks. In this case, the ship should be required to discharge the contents of the slop tanks to a reception facility.

An administrative system that is already in existence is the maintenance of the Oil Record Book onboard vessels which requires the crew to record the handling operation of oil onboard ships, as well as, any discharging of oil residues. A log report on the handling of garbage has also been incorporated. In this manner, the ship's crew can account for their waste management. At the same time, the controlling authority can keep track of the waste produced by the ship. The PCG needs only to conduct regular checks of the books and validate entries made.

Complimentary action to be undertaken by the port authority is the keeping of records on waste landed at the port and the incorporation of this into the data base. Any discrepancies noticed should be relayed to PCG enforcement officers for appropriate action.

6.2.4.2 Control of Ports

It is apparent from previous discussions that there are extensive rules and regulations applying to ships with respect to marine pollution prevention. It is said that much of the burden to reduce discharges at sea and improve environmental conditions is borne by the shipowners. Tormod Rafgard (Grey, 1990, p 18), managing director of INTERTANKO, noted that while tanker owners have been required to make huge investments to reduce the risk of pollution, governments are not fulfilling their own rules. This leaves the port authorities, or the government in general, to fulfill their obligations.

The provision of adequate reception facilities can be stimulated and promoted by following the accreditation system for port and terminal reception facilities currently being practiced in the United States of America as presented in section 5.4. Lord Donaldson's Report also recommended this certification system to be applied in UK ports. The PCG may become the accrediting agency, and all ports and terminals must posses valid Certificates of Adequacy in order to receive ships to which the regulation applies. This aspect may become a controversial issue between the PCG and PPA, as these are both governmental agencies performing different functions and occupying the same hierarchy in the government administrative level, the action may be perceived as encroachment of the administrative jurisdiction of one over the other. This may also be true with regard to application of the proposed system for fishing ports since these are managed and operated by the PFDA. The envisioned committee previously discussed should address this possible area of conflict. Applying the system to private port operators, shipbuilding/shiprepair yards and marinas will

certainly boost compliance. Parallel with this system would be the imposition of heavy penalties and restrictions for non-compliance.

6.2.4.3 Control of Private Enterprises

Certainly, private participation is welcomed in waste handling operations. Involvement of private sectors is common in the US and European countries. Port authorities/operators have contracted out to private enterprises to handle waste reception services, both for ship and port generated wastes. This is apparent as port authorities have little experience in waste handling and it would be better if left to qualified contractors.

Licensing mechanisms have been issued by PCG and PPA and requirements have been outlined in order for private enterprises to be able to provide reception services for ships. The requirement by the EMB for any enterprise to hold a valid Environmental Compliance Certificate (ECC) before an enterprise could engage in business operation has been another positive step towards improving environmental management in the country. It is a common belief that larger numbers of participants enhance competition thus reducing price/costs to the benefit of the users. It may also lead to the development of technology to achieve higher efficiency and reduce overall cost. However, according to Per H. Olson (1995, p 8), a leading world expert on ship-generated wastes, he has no knowledge of any port where effective competition between waste reception companies has kept fees/cost down. And, if such competition did exist, the environmentally proper handling of waste would be at risk as the reception companies would be inclined to compete in this arena also. This suggests that participants in this field should be limited to those which can demonstrate good capability and operate conscientiously within rules established to ensure proper disposal of wastes.

To go along with these licenses and certificates is the need to establish a system of notification, or a tracking system to follow the waste from the moment of reception until disposal. This is to ensure that wastes are properly handled,

particularly for hazardous materials. A document should accompany the waste shipment and provide a record of waste movement from the waste source through each stage of transport, storage, treatment and disposal. Close control of the activities of private enterprises is difficult, but crucial. The licensing agency (PPA), in consultation with other governmental agencies or the envisioned Environmental Committee, should overcome identified difficulties in the future to sustain the system.

6.2.5 Notification and other Requirements

A system of advance notification needs to be established to co-ordinate actions between ship and port. It is essential to pass on information before ship's arrival in port to identify possible discrepancies on operational requirements of both ship and port in discharging and handling of wastes. At least 24 hour prior notice should be required of ships. A proposed information sheet being developed by IMO for shipboard waste management, could be adopted (see Appendices 9, 10 and 11). This information is comprehensive and could replace the existing log report imposed on ships by the PCG. These are also useful in obtaining the necessary inputs for the needed data base.

6.2.6 Education and Public Awareness

In this respect the role of the authorities is crucial. The authorities should convince their constituents that they must take care of environmental health as if they are taking care of their own health. A process of awareness campaigns or similar activities needs to be undertaken to change current public thinking and make environmental consciousness part of day to day activities.

6.3 Operational/Functional Approaches

The management and operation of the facilities should be left to the private sectors while the role of the port authority should be only supervisory in nature to

ensure that a total waste management system is adopted and followed. In this arrangement, the PPA can concentrate on its normal port operations. It only needs a staff of a few persons to monitor and keep records of the activities of the private companies. Said staff could be a part of the environmental unit proposed in section 6.2.1. In addition, said staff would need to process the payment for the services of the private enterprises engaged in the reception of ship-generated wastes. It should be noted that the proposed cost recovery scheme for the reception of wastes is to incorporate the fees the ships have to pay within the general port charges.

In order to achieve integrated waste management, at least in the port zones, the PPA has to have more involvement in waste handling and not be content with just issuing licenses or permits to waste collectors. In addition to the existing two garbage collection boats operating in Manila, the PPA would have to invest more in waste reception facilities in terms of fixed facility components (e.g. temporary storage tanks for oily wastes, separation and sorting facilities for solid wastes) and to some extent, mobile components such as collection barges and trucks. These facilities could be leased to a private enterprise licensed/contracted to undertake waste collection services. Most private companies are not willing to construct facilities on properties in the port area which the companies themselves do not own.

It is suggested that the prevailing practice of solid waste handling by private enterprises be limited to the primary collection and primary disposal of wastes as described in section 4.10.1.4. However, their involvement may expand once the PPA opts to incorporate waste recovery in their waste management program. This waste recovery option will be described further in section 6.4.4. The next stages of secondary collection and final disposal should be arranged with the municipality to be incorporated within existing municipal services. It has to be considered that the ship/port waste stream is only a minimal part of the total municipal waste stream which the municipal service can easily address. This arrangement could be cheaper than when a private company undertakes all the phases of solid waste management in the port area alone. The port authorities have to initiate constructive dialogue with

the authorities of the local municipality in order to promote said arrangement. The dialogue would also help to harmonize environmental objectives of the port and those of the municipality.

However, it has to be considered, as previously described in section 4.10.2.3, that municipalities do not operate effective waste collection services and hardly cope with their task of serving their urban areas. Involving them in the collection of the ship/port waste stream may just deteriorate further their effectiveness, particularly in major ports such as Manila, Cebu, Iloilo, Iligan and Zamboanga. Further, local governments in many cities, have already contracted out collection, removal and disposal of solid wastes to private enterprises.

As for the handling of oily wastes and sewage, these could be considered more specialized waste streams that would be appropriate to contract out to the private companies that have already established a line of business for the collection and disposal of such wastes.

6.4 Technical Facilities

The Philippines has twenty major ports strategically located among the dispersed islands. In addition, there are over 300 other ports of varying sizes, traffic demands and purposes. Obviously, it would be a very long term assignment to evaluate and make recommendations for all of these ports. Therefore, only a general facility arrangement can be developed in this study to serve as a template for application to other Philippine ports. The process from collection to final disposal generally contains the following steps: 1) collection; 2) storage; 3) treatment; 4) storage; 5) transport; 6) disposal/re-utilization. According to MARPOL rules and related Philippine legislation, the ports are responsible for the first two steps in the handling of oily waste. Apparently, the treatment process is excluded. However, within the requirements of the global framework and the concept of pollution prevention, there is also a responsibility to ensure the proper treatment and disposal of these wastes.

The establishment of facilities for the reception and treatment of oil residues and other wastes should be directed towards environmentally sound processes. In order to assure this, at least the following requirements should be considered:

- sufficient capacity and optimal location of storage and treatment facilities;
- continuity - economic and technical functioning of reception and treatment facilities;
- optimal environmental treatment methods;
- promotion of recycling;
- sound disposal procedures.
- measures to reduce size and quantity of wastes generated

A detailed technical design of the facilities for major ports should be developed further by the Engineering Services of the PPA in consultation with local or foreign consultants. The practical planning guide developed by IMO could be used as a model for this purpose (see Appendix 12).

6.4.1 Facilities for Annex I Waste

Collection of oily waste can be executed in various ways through the combination of mobile and fixed components of the facilities. Considering that PPA managed ports are expected to handle oily waste generated only from engine rooms such as sludge and oily bilge water, a realistic option is to utilize one or more road tank trailers and/or barges. Road tank trailers collect from ships at berth while barges come alongside ships at anchorage. Both tank trailers and barges discharge their load into permanent holding/storage tanks located inside the port. This offers the highest flexibility with regards to ship requirements. Mobile disposal containers/drums should be installed near the berthing areas to accommodate vessels discharging small quantities (in buckets or small containers) of oily waste.

With respect to treatment facilities for oily waste, a regional approach is to be undertaken instead of attempting to install such in every port. Considering the shipping route described in the earlier section, it is recommended that treatment

facilities be established in Manila and Cebu. Besides being the prominent commercial centers in the country, these are the main terminal points for foreign and domestic vessels. The other ports would only establish collection services, temporary storage facilities and provisions for transportation of collected wastes to a central treatment facility. Operating a centralized treatment facility has a major impact on economic viability. This concept also aims to support a sustainable oily-waste recycling scheme which needs to be promoted. It is important that the input stream is substantial in order to sustain a commercial operation.

Accordingly, the recycling options for collected oily waste could be:

(1) re-use as fuel for land-based industrial installation where recovered oil is mixed in small quantities with the regular fuel oil or bunkers;

(2) redistillation by oil refineries where it is mixed with crude oil. However, this process may be limited or constrained by the technical requirements of the refineries regarding unwanted contaminants that may be present in the recovered oil; and

(3) application in civil works where it can be used in road construction and dust control or as wood preservatives.

6.4.2 Facilities for Annex II Waste

As previously described, chemical cargoes passing PPA managed ports are mostly handled in containers and drums, such that provision of reception facilities for Annex II waste is not warranted at present. Generally, transport of bulk liquid chemical cargoes is not very common in the Philippines. There are, however, shipments of bulk chemicals as reflected on PPA records, but these are not clearly categorized according to MARPOL classification. The author believes that the bulk of the shipments are to oil/petrochemical refineries. As a result, there is little demand for such waste treatment facilities at present, but future investments for reception and treatment facilities are likely to be required. This is in anticipation of the local economy becoming more developed and industrialized such that traffic of

bulk liquid chemicals is projected to also become significant over the coming years. The investment should be borne by the private sector, particularly, the involved industry, as part of the planning and construction of new terminal facilities. It is also recommended by IMO to let the receiving industry take care of their own wastes, as they will best know the specific requirements of their own substances.

6.4.3 Facilities for Annex IV Waste

The absence of any sewage treatment plants in the Philippines, seems at first instance, to make the provision of required facilities for sewage impractical. Apparently, the establishment of central sewage treatment plants in urban centers is still a long way off in the current Philippine setting. However, the authorities need to consider that domestic shipping, especially the segment involving passenger ships that discharge fairly large volumes of sewage, is mostly engaged in coastal voyages. It is not to be overlooked that tourism is one of the prominent industries supporting the economy. Tourism activity along the coastal resort areas has been considered significant. As such, reduction of amenities (poor water quality) along the resort areas would adversely affect this tourism activity .

Along this line, port reception facilities for sewage need to be in place. The PPA should consider the involvement of sewer and sewerage companies which have their businesses in various regions of the country. Contractual arrangement should be initiated by the PPA to service the ships calling at their ports. Collection of sewage could be executed by the company's existing collection trucks and deliver the collected sewage directly to their facilities. This arrangement would not require fixed piping systems and temporary storage tanks at the port to collect the sewage from ships. The author believes that such a fixed system would not be practical, investment wise, for the present situation because of the absence of municipal sewerage systems (with treatment facilities) to which the port facilities could be connected. Some companies are operating sewage farms where they treat and

convert the sewage to manure. An expansion or minor modification may only be needed to accommodate the new waste stream from ships.

6.4.4 Facilities for Annex V Waste

This study does not favorably consider advanced high-tech solutions to solid waste management for a number of reasons. First, the existing labour intensive approach to solid waste management in the Philippines is effective, especially in the primary collection phase, and provides employment to thousands of unskilled laborers. Second, lack of technical knowledge and experience and lack of spare parts make advanced technologies much more vulnerable, compared with low-tech and manual options. Third, involvement of private entrepreneurs when possible is highly promoted. The immediate introduction of advanced technology would be an impediment to their involvement because of high investment costs required to acquire advanced handling equipment. And last, the municipalities are still employing extensive manual labour in the waste collection phase and are still below par in terms of technology and waste handling processes being employed in developed countries.

Introducing a waste recovery scheme will certainly boost integrated port waste management. Waste recovery in the port area is not totally unknown as employed laborers and roaming scavengers endeavor to recover recyclable waste materials before and after the waste is disposed of in designated receptacles. However, employing a systematic separation and sorting scheme is desirable, but the follow-on stages of extended sorting, pre-treatment and recycling are regarded as already too alien to the port's core business. Since, there are markets for recyclable materials in the Philippines and there are already existing informal recycling schemes in operation, the primary aim of port waste recovery is to generate additional revenue from the sale of recyclables in order to reduce overall reception cost of ships. Waste recovery, however requires additional investment for the installation of a separating

and sorting facility. The facility for this would consist basically of a dedicated building with provisions for:

- a dumping area for collected waste,
- compartments for storage of each item of recyclable, organic materials and hazardous substances,
- a washing area, and
- office space

The waste recovery component can be easily incorporated within the existing solid waste management being practiced by the PPA. The facility would replace the primary disposal described earlier. The secondary disposal phase would now primarily be split into two - transport of recyclables to purchasers and transport of non-recyclables to a final disposal site. A model of this facility, designed by DHV Consultants of the Netherlands for Indonesian ports presents a low technical concept that is easily adaptable as shown in Appendix 9. An economic analysis is required to assess the investment needed against the potential revenue that could be generated from sales of recyclables.

6.5 Increasing Managerial Challenges in Ports

The value of international forums is becoming evident to many sectors of the society. It leads to some degree of realization. Maritime authorities have acknowledged that there is sufficient evidence to indicate that the capacity of the environment to absorb pollutants is nearing limits in some places and globally, environmental quality is deteriorating. Coastal zones are areas which are seriously impacted and ports are significant contributors as major users of these zones. Because of this, port authorities in many parts of the world are beginning to adopt more commitment to the environment.

World trade is increasing (both actual and projections) and ports will have to respond. They will have to find ways of increasing throughput but will be faced with accepting more wastes from ships and will need to co-ordinate their efforts with

pressure groups (government and non-government organizations) and other users of the marine environment. More may still be required in the future to remain competitive and fulfill economic and social functions. These requirements are driving ports towards new administrative structures and roles.

Until recently, many organizations were content with reactive policy. This is very true in the Philippine setting, particularly in port organizations with respect to environmental issues. However, the recent global trend is towards incorporating environmental values as part of the sustainable development of ports. Eventually, port authorities in the Philippines need to follow this, either by their own initiative or by the influence of government and other sectors such as port users, local communities, government agencies, NGO's and media. Not all sectors exert pressure in the same direction, but what is certain is that the environment will continue to generate growing public concern and will drive political momentum to address environmental issues.

CHAPTER VII

CONCLUSIONS/RECOMMENDATIONS

Based on the preceding chapters, it can be concluded that the Philippine maritime transport sector has demonstrated significantly increasing activities in the following areas: frequency of shipping traffic, volume of passengers, cargo throughput, offshore fishing, shiprepair and shipbuilding activities. The actual and potential discharges of ship-generated wastes into the sea could be considered to be of a high magnitude which would greatly contribute to worsening conditions of the marine environment.

The issue of protecting the environment and sustaining the economic/ commercial activities of both shipping and port operations is of particular significance at the present time. It is no longer a major concern of only the developed countries nor an activity to be avoided in the developing and third world countries. The concept of sustainable development is not a temporary "fad" just becoming popular now. It is an irreversible trend that everyone involved in shipping activities should progressively understand and eventually support.

The adequate provision of reception facilities at ports is not only an obligation under MARPOL 73/78, but is an essential factor in the prevention of pollution from ships. As indicated in previous discussions, the Philippines is not a party to MARPOL 73/78 Convention. However, the Government has obligations under its Constitution. Likewise, the various rules and regulations imposed upon ships to prevent and control discharges of wastes into the seas must be complemented accordingly. As such, actions must be taken to ensure that the adequate provision of reception facilities is given a high level of priority.

The provision of reception facilities and disposal of ship's waste has proved to be a complicated issue. This issue has long been on the discussion table in the

international arena. It involves the shipping industry, port authorities, owners/ operators of private ports, marinas, fishing ports, oil and chemical companies and all levels of government, including local government units. All of these interest groups, including non-government organizations, need to be consulted in relation to the implementation of MARPOL 73/78 especially, on the provision of reception facilities.

Adopting well-defined environmental policy objectives is another issue that demands attention. It is important to identify and prioritize necessary activities and allocate part of the resources of the port to ensure such needs are addressed. Policies and strategies to achieve such objectives have to be coordinated with other concerned establishments and implemented by the port authority or port community as a whole, rather than through ad hoc measures taken separately by various port actors.

In keeping with this premise, the following recommendations are made in the hope that government authorities and administrators may consider adopting an integrated approach to address ship-generated waste and overall marine environmental protection:

(1) An institutional development should be pursued to provide a coordinating mechanism, such as an environmental committee that would have a strong executive commitment to environmental management. The responsibilities of this committee should be to coordinate actions, inform all interested parties and provide an opportunity for the presentation of the respective views of the participants with the aim of obtaining their mutual support. The committee should consist of representatives from the various government agencies concerned and the private sector involved in shipping operations. The committee needs to be chaired by the Philippine Coast Guard (PCG) which has the mandate for marine environmental protection.

(2) The concentration of the waste management tasks to address ship-generated wastes should rest with a single authority. It is recommended that the Philippine Ports Authority (PPA) should take overall responsibility as the most appropriate

organization since its focus is on the management and control of operations inside the port zone. Along with this responsibility comes the need to establish an environmental protection unit or office in each port area to serve as a focal point. Such an additional office/unit, which should be incorporated in the present PPA administrative structure, should contribute to the formulation of the port's environmental policy in such a way that international instruments or recommendations are taken into account, as well as national interests and regulations.

(3) Incentives to encourage environmental protection initiatives should be supported. This is to promote good housekeeping and shipboard waste management and to reduce waste generation, thereby reducing the burden on the port. It should be up to the port authorities to decide, in conformity with the decisions taken by the Government, on the nature of the incentive, bearing in mind port operations, development and financial requirements. In the same manner, waste recovery or recycling should also be highly encouraged and promoted, both on board ship and on the shore side. The establishment of a separation facility in the port area would be an important initiative.

(4) An aggressive education and public awareness programs for marine environmental protection should be undertaken to change current public thinking and make environmental consciousness part of day to day activities. This involves the shipping industry in general and in particular the seafarers, shoreside personnel, port personnel, and the general public.

(5) For the cost recovery aspect, the "no-special-fee" system is highly recommended, wherein the costs of the reception, treatment and disposal of wastes are to be included in the general port fee. This type of system is also being recommended in many other countries which have gained considerable experience in the operation of port waste reception facilities.

(6) Control mechanisms for ships, ports and private enterprises engaged in the collection of wastes should be established to keep participants on the right track to marine environmental protection. The government should adopt a certification and documentation system for ports and terminals (e.g. letters or certificates of adequacy for reception facilities), and carry out periodic inspections. Likewise, the government should promote the use of a waste discharge reporting system. The waste discharge reporting system would enable the port authorities and the Coast Guard to monitor the volume and type of wastes generated on board ships and ensure the wastes are properly disposed of. The system basically involves appropriate forms to be filled-in by ship's crew and by companies engaged in the reception of wastes which will be forwarded to the port authorities for consolidation.

(7) A regional approach would be appropriate for the establishment of treatment facilities for oily wastes considering the high capital costs required to put up treatment facilities. Such facilities could be strategically located in Manila and Cebu where shipping and commercial activities are significant. Other ports would need only to establish collection services and provide for transportation of collected wastes to central treatment facilities. This arrangement has a significant implication on the economic viability of the concept. Participation of the private sector in environmental management is to be encouraged and promoted within environmental guidelines.

(8) And finally, the government, in general, should adopt an integrated approach to waste management. The environmental effort that could be initiated in the maritime transport sector would become meaningless if, because of the absence of needed treatment and disposal facilities on land, the waste stream coming from this sector is not disposed of in an environmentally acceptable manner. The provision of waste reception facilities is essential as pollution control laws can not be enforced without these facilities. The prevention and control of marine pollution must be carried out in an integrated manner.

BIBLIOGRAPHY

Asiaweek (1996). 'Bottom Line'. *Asiaweek.* August 9, 1996 issue.

Balboa, N (1996). Interview by the Author. Philippine Coast Guard, Philippines.

Baltic International Marine Council (1996). 'Ports and Taxes: Philippines'. *BIMCO On-Line Service.* Copenhagen: BIMCO.

Baltic Marine Environment Commission/Helsinki Commission (1989). *Reception of Wastes from Ships in the Baltic Sea Area: A MARPOL 73/78 Special Area.* (Baltic Sea Environment Proceedings No. 28). Helsinki: Baltic Marine Environment Commission/Helsinki Commission.

Baltic Marine Environment Commission-Helsinki Commission-(1996). *HELCOM News.* Helsinki: Baltic Marine Environment Commission-Helsinki Commission.

Code of Federal Regulation (1989). 33 CFR 158. Washington. Office of the Federal Register, National Archives and Record Administration.

Davidson, E (1984). 'Legislative/Administrative Mechanisms in the US for Ensuring that Adequate Reception Facilities are Provided in Ports'. *IMO/UNDP International Seminar on Reception Facilities for Wastes.* (30-31 August 1984: IMO HQS, London). London: IMO Publication.

Department of Environment and Natural Resorces - Environmental Management Bureau (1990). *The Philippine Environment in the 80's.* Manila: DENR-EMB.

Department of Environment and Natural Resorces - Environmental Management Bureau (1993). *Earth Summit 1992-Philippines.* Manila: DENR-EMB.

Department of Environment and Natural Resources - Environmental Management Bureau. *The Environmental Management Bureau.* Manila: DENR-EMB.

DHV Consultants (1995). *Ports Environmental Improvement Project:Ship Waste Reception Facilities.* (Draft Final Report Volume II). Jakarta: Ministry of Communications.

Donaldson, Lord (1994). *Safer Ships, Cleaner Seas.* (*Report of Lord Donaldson's Inquiry into the Prevention of Pollution from Merchant Shipping*). London: HMSO.

Dy-Liaco, A (1996). Interview by the Author. Philippine Ports Authority, Philippines.

Environmental Resources Limited, (1991). *Port Reception and Disposal Facilities for Garbage in the Wider Caribbean.* (Final Report). London: ERL

Environment Management Bureau (1988). *Oil Pollution Control Measures and Arrangements in the Philippines.* (UNEP Regional Seas Reports and Studies: Oil Pollution and its Control in the East Asian Seas Region). London: IMO Publication.

Esplanada, J (1995). 'Collision on Troubled Waters'. *Philippine Daily Inquirer.* July 28, 1995 issue. Manila.

Forsund, H-M (1994). 'Proposal for a New System for the Reception of Wastes from Ships in Norway'. Unpublished

GESAMP (1990). *The State of Marine Environment.* (UNEP Regional Seas Reports and Studies No.115). London:GESAMP.

GESAMP (1993). *Impact of Oil and Related Chemicals and Waste on the Marine Environment.* (GESAMP Reports and Studies No. 50). London: GESAMP.

Gomez, D (1996). 'Ramos Orders DND, DOTC to Probe Ferry Sinking'. *The Philippine Star.* February 22, 1996.

Gosovic, B (1992). *The Quest for World Environmental Cooperation.* London/New York: Routledge.

Grey, M (1990). Shipping and the Environment. *Shipping Economist.* Supplement.

Hernandez, R (1995). *Analysis of the Effect of Ship Replacement and Finance in the Inter-Island Shipping Fleet of the Philippines.* Msc Dissertation. Malmö, Sweden: the World Maritime University.

International Maritime Organization (1992). *MARPOL 73/78 Consolidated Edition, 1991.* London: IMO Publication

IMO (1993). *MEPC 35/7. Follow-up Action to UNCED.* London: IMO Publication.

IMO (1995). *Comprehensive Manual on Port Reception Facilities.* London: IMO Publication

IMO (1996). *MEPC 38/11 Annex. Manual on Shipboard Waste Management.* London: IMO Publication

IMO Programme Development and Management Office. *Regional Programme for the Prevention and Management of Marine Pollution in the East Asian Seas.* Manila: IMO-PDMO.

Jaboli, D (1993). *Oil Spill Contingency Planning Evaluation for the Philippine Management.* MSc Dissertation. Malmö, Sweden: the World Maritime University.

Japan International Cooperation Agency (1992). *The Study on Master Plan on Maritime Safety in the Republic of the Philippines.* (Draft Final Report-Main Report). Manila: Japan International Cooperation Agency.

Maritime Industry Authority (1994). The Marina: 1974-1994 *Milestones and Visions.* Manila: DOTC-MARINA.

Mitani, Y (1995). *Port State Control.* Lecture. Maritime Technology and Safety Bureau, Ministry of Transport, Japan.

National Environmental Protection Council (1978). *Philippine Environmental Law.* Manila: NEPC.

Nolledo, J (1993a). *The 1991 Local Government Code with Basic Features.* Manila: National Book Store.

Nolledo, J (1993b). *The New Constitution of the Republic of the Philippines with Annotation.* Manila: National Book Store.

Olson, P (1995). 'Port Reception Facilities for Ship Generated Waste in the Baltic Sea'. Sweden: Safe Ports AB.

Olson, P (1996). 'Facilities for Ship Generated Waste'. *BIMCO Review 1996.* London: WH Robinson.

Philippine Coast Guard (1994). *PCG 93rd Anniversary.* Manila: PCG.

Philippine Fisheries Development Authority (1994). PFDA *Financial Report CY 1994.* Manila: DA-PFDA

Philippine Ports Authority. *Presidential Decree No. 857.* Manila: PPA.

PPA (1991). Summary Report. Manila: Philippine Ports Authority

PPA (1992). Summary Report. Manila: Philippine Ports Authority

PPA (1993). Summary Report. Manila: Philippine Ports Authority

PPA (1994). Summary Report. Manila: Philippine Ports Authority

PPA (1994). *The Philippine Ports Authority.* (1994 Annual Report). Manila: Philippine Ports Authority.

PPA (1995). Summary Report. Manila: Philippine Ports Authority.

PNF (1996). '...while RP Environment Policies Still in the Freezer'. *Philippine Daily Inquirer.* August 3, 1996 page B4.

Regional Surveys of the World (1996). 'Philippines'. *The Far East and Australasia.* 27th Edition. London: Europa Publications Limited.

Robinson, N, editor (1993). *Agenda 21: Earth's Action Plan.* New York: Oceana Publications.

Seminar on Marine Pollution Prevention and Control. (August 1995: Cebu, Philippines). Philippine Register of Shipping and Philippine Coast Guard. Manila: PRS, Inc.

SNC Lavallin (1995). *Environmental Study for the Proposed Maritime Sector Project in the Philippines.* (Draft Report). Manila: Philippine Ports Authority.

Steger, W and Bowermaster, J (1990). *Saving the Earth.* New York: Visual.

Talavera, H (1983). 'Regulatory Control of Water Pollution: The Philippine Experience'. In *Water Management and Environment Protection in Asia and the Pacific.* Edited by Ichiro Kato, et al. Japan: University of Tokyo Publication.

Taylor, Robert, editor (1991). 'Asia and the Pacific'. *Handbook of the World: Volume I.* New York-Oxford: Facts of File.

Wardley-Smith, J (1979). *The Prevention of of Oil Pollution.* London: Graham and Trotman.

WWF (1995). 'Common Baltic Approach to Stop Illegal Discharge'. *WWF Baltic Bulletin.* 2-3/95 page 57-63.

APPENDIX 1

VOLUME OF PASSENGER TRAFFIC BY PMO (1991-1994)

PORT MANAGEMENT OFFICE	1991			1992			1993			1994		
	Embark	Disembark	Total	Embark	Disembark	Total	Embark	Disembark	Total	Embark	Disembark	Total
LUZON												
North Harbor	1,539,595	1,758,645	3,298,240	1,475,441	1,818,625	3,924,066	1,698,796	2,015,881	3,714,677	1,944,433	2,167,898	4,112,331
South Harbor	5,335	5,337	10,672	4,744	4,764	9,508	3,196	3,250	6,446	3,627	2,668	6,295
MICT Field Office	0	0	0	0	0	0	0	0	0	0	0	0
LUZON												
Batangas	1,134,725	1,461,991	2,596,716	1,122,814	1,149,450	2,272,264	1,082,445	1,124,851	2,207,296	1,028,361	1,050,203	2,078,564
Legaspi	605,210	604,215	1,209,425	652,506	704,168	1,356,674	665,997	674,631	1,340,628	712,681	713,821	1,426,502
Puerto Princesa	79,973	78,186	158,159	84,001	56,238	140,239	87,588	73,474	161,062	94,921	82,565	177,486
San Fernando	0	0	0	0	0	0	0	0	0	0	0	0
VISAYAS												
Cebu	2,950,508	2,991,935	5,942,443	3,073,168	3,131,738	6,204,906	3,185,057	3,235,520	5,420,577	3,832,308	3,938,305	7,770,613
Dumaguete	721,487	712,199	1,433,686	808,539	769,675	1,578,214	832,656	854,754	1,687,410	873,872	903,958	1,777,830
Iloilo	2,181,331	2,203,734	4,390,065	2,305,372	2,346,720	4,652,092	2,427,529	2,446,536	4,874,065	2,735,905	2,720,389	5,456,294
Tacloban	1,154,438	1,166,781	2,321,219	1,218,272	1,207,126	2,425,398	1,263,218	1,285,935	2,549,153	1,350,970	1,444,627	2,795,597
MINDANAO												
Cagayan de Oro	409,426	367,168	776,594	792,950	767,302	1,560,252	1,017,318	995,811	2,013,129	1,189,316	1,222,855	2,412,171
Iligan	2,181,331	2,208,734	4,390,065	2,657,662	2,680,474	5,338,136	2,715,635	2,822,877	5,538,512	2,985,124	2,977,656	5,962,780
Naslpit	239,448	250,082	489,530	305,860	299,773	605,633	302,186	314,658	616,844	316,793	289,237	606,030
Surigao	307,396	289,617	597,013	272,559	293,642	566,201	418,037	413,872	831,909	531,910	484,277	1,016,187
MINDANAO												
Davao/Sasa	163,319	169,514	332,833	151,919	167,675	319,594	157,334	155,280	312,614	186,446	198,420	384,866
General Santos	63,600	42,928	106,528	59,659	31,599	91,258	66,631	35,471	102,102	67,252	60,208	127,460
Jolo	343,032	391,481	734,513	294,563	369,806	664,369	344,841	305,365	650,206	443,983	460,752	904,735
Polloc	191,145	190,929	382,074	207,542	222,393	429,935	251,387	242,328	473,715	197,940	211,254	409,194
Zamboanga	1,174,872	1,211,175	2,386,047	1,090,787	1,135,021	2,225,808	1,476,781	1,388,206	2,864,987	1,503,953	1,515,719	3,019,672
TOTAL	**15,544,485**	**16,171,498**	**31,715,983**	**16,578,358**	**17,156,189**	**33,734,547**	**17,976,632**	**18,388,700**	**36,365,332**	**19,999,795**	**20,444,812**	**40,444,607**
GROWTH RATE (%)			**6.36**			**6.36**			**7.80**			**11.22**

Source: PPA Summary Reports CY 1991-1994, modified by the Author

APPENDIX 2

NUMBER of SHIPCALLS by PMOs (1991-1994)

PORT MANAGEMENT OFFICE	1991			1992			1993			1994		
	Domest	Foreign	Total	Domest	Foreign	Total	Domest	Foreign	Total	Domest	Foreign	Total
PDO MANILA:												
North Harbor	11,049	229	11,278	11,596	299	11,895	12,503	267	12,770	13,247	290	13,537
South Harbor	6,273	1,662	935	6,403	1,937	8,340	6,619	2,170	8,789	6,549	2,508	9,057
MICT Field Office	163	1,102	1,265	133	1,156	1,289	129	1,113	1,242	63	1,232	1,295
PDO LUZON:												
Batangas	14,615	895	15,510	15,919	908	16,827	16,644	1,032	17,676	19,513	1,045	20,658
Legaspi	8,775	71	8,846	9,386	58	9,444	9,430	60	9,490	10,088	38	10,126
Puerto Princesa	2,264	85	2,349	2,246	53	2,299	2,500	58	2,558	2,811	31	2,842
San Fernando	546	177	723	474	208	682	509	151	660	654	269	923
PDO VISAYAS:												
Cebu	30,709	525	31,234	33,404	578	33,982	35,654	581	36,235	38,693	560	39,253
Dumaguete	12,470	96	12,566	14,099	79	14,178	14,839	125	14,964	16,461	86	16,547
Iloilo	21,440	120	21,560	22,526	128	22,654	21,962	166	22,128	23,785	120	23,905
Tacloban	8,821	345	9,166	9,090	232	9,322	9,654	298	9,952	10,215	335	10,550
PDO N. MINDANAO:												
Cagayan de Oro	3,660	514	4,174	7,632	511	8,143	9,953	524	10,477	11,202	576	11,778
Iligan	14,187	323	14,510	13,812	246	14,058	14,270	273	14,543	20,577	228	20,805
Nasipit	1,249	16	1,265	1,258	26	1,284	1,326	36	1,362	1,297	24	1,321
Surigao	4,464	62	4,526	6,702	51	6,573	8,893	60	8,953	8,193	36	8,229
PDO S. MINDANAO:												
Davao/Sasa	2,147	763	2,910	1,913	746	2,659	1,847	684	2,733	1,863	879	2,742
General Santos	800	245	1,045	892	303	1,195	1,156	172	1,328	931	441	1,372
Jolo	4,335	0	4,335	4,730	0	4,730	3,720	0	3,720	5,586	0	5,586
Polloc	3,959	12	3,971	3,842	13	3,855	4,054	6	4,060	4,115	9	4,124
Zamboanga	12,568	195	12,763	11,725	175	11,900	12,753	189	12,942	13,660	210	13,870
TOTAL	164,494	7,437	171,931	177,782	7,707	185,489	188,417	8,165	196,582	209,603	8,917	218,870
VOLUME INCREASE (%)			9.03			7.89			5.98			11.16
AVE. STAY TIME (hours)			41.92			39.00			37.00			33.00

Source: PPA Summary Reports CY 1991-1994, modified by the Author

APPENDIX 3

POLLUTION CASES/INCIDENTS MONITORING in the PHILIPPINES (1975-1996)

DATE	SPILLER/SOURCE	PLACE	QUANTITY	TYPE
03 Aug 1975	L-1909 LUSTEVECO	Pasig River, Manila	200,000 gallons	Ind.Fuel Oil
03 Aug 1975	L-235 LUSTEVECO	Manila Bay	350,000 gallons	Ind. Fuel Oil
17 Oct 1975	MS SGOTUKOTO MARU	Negros Occidental	not specified	Ind. Fuel Oil
13 April 1976	FIL-OIL REFINERY	Rosario, Cavite	20 barrels	sludge oil
18 Aug 1976	MOBIL DEPOT	Sasa, Davao City	20 barrels	Ind. Fuel Oil
21 Sept 1976	LSCO LUMBERJACK	Batangas	10 barrels	Ind. Fuel Oil
11 Oct 1976	LSCO PETROCHEM	San Fernando, La Union	400 gallons	Ind. Fuel Oil
06 Nov 1976	MT RAJAH SULAIMAN	BRC, Bataan	50 barrels	crude oil
10 Dec 1976	MS SAN DIAMOND	Sta. Ana, Davao City	32,000 gallons	Ind. Fuel Oil
27 Dec 1976	MV GENERAL SANTOS	Manila Bay	32,000 gallons	Ind. Fuel Oil
23 Feb 1977	MV MAYA	Bataan	not specified	Fuel oil/Lube oil
04 June 1977	PETROPHIL	Bacolod City	67,000 liters	gasoline
01 Sept 1977	CALTEX/PETROPHIL	Bacolod City	147,300 liters	gasoline
15 Sept 1977	MV INSULAR DE CEBU	Dumaguete	10,000 liters	gasoline
22 Aug 1977	MV PHILSTAR	Batangas	3 tons	Ind. Fuel Oil
16 Oct 1977	MT APOKIA	Batangas	9 tons	Ind. Fuel Oil
27 Dec 1977	CBCI-808	Manila	350 tons	Sulfuric Acid
12 Apr 1978	AG & P	Manila	3 - 4 drums	Bunker oil
19 May 1978	MV DON JOSE	Manila	not specified	oily waste water
20 May 1978	MV GUIMARAS	Iloilo	20 gallons	oily waste water
22 May 1978	MB TAMARAW	Iloilo	30 gallons	oily waste water
22 June 1978	COMMODITY BARGE 101	Iloilo	500 metric tons	caustic soda
06 Aug 1978	MT PEATHERAY G-III	Manila	not specified	Ind. Fuel Oil
27 Sept 1978	LC-1960	Manila	20,000 bags	fertilizers
27 Sept 1978	LB-603	Manila	4,000 barrels	aviation fuel
27 Sept 1978	LB-607	Manila	7,000 barrels	premium gas
27 Sept 1978	MT PEATHERAY	Manila	5,500 liters	bunker oil

09 Oct 1978	LB-1008	Manila	3,000 barrels	bunker oil
10 Oct 1978	MT CHARLIE	Manila	280,000 liters	bunker oil
16 Oct 1978	MT MABUHAY	Manila	not specified	oil residue
08 Nov 1978	MT FEOSO	Manila	not specified	oil residue
14 Nov 1978	BARGE CCI-1	Manila	1,300 barrels	lube oil
20 Nov 1978	SANCHEZ ENGINEERING	Manila	400 metric tons	spent acid
10 May 1979	MT SAN ROQUE	Batangas	400 barrels	bunker oil
05 July 1979	MV SHIN PIONEER	Batangas	10-15 barrels	Ind. Fuel Oil
12 July 1979	SMC GLASS CORPORATION	Manila	10 barrels	oily waste water
09 Aug 1980	MT PHIL HERO	Batangas	200 liters	Ind. Fuel Oil
08 Oct 1980	LB-1010	Manila	200 lilters	bunker oil
03 Dec 1981	MT DELSAN VI	Batangas	5 drums	bunker oil
24 April 1981	MT INSULAR DE NEGROS	Manila	3 barrels	bunker oil
21 Aug 1981	MV LORENZO CONTAINER II	Manila	100 liters	bunker oil
19 Dec 1981	MT GULF ACE	Batangas	1,000 barrels	bunker oil
28 Apr 1982	NPC STORAGE TANK	Manila	50-70 barrels	Ind. Fuel Oil
15 June 1982	CALTEX TANK FARM	Lapu-lapu City, Cebu	11,500 barrels	Ind. Fuel Oil
01 Sept 1984	MT REGINA	Pandacan, Manila	140,000 liters	bunker oil
19 Dec 1984	MT NASSA	Bantayan Island, Cebu	11,000 liters	Ind. Fuel Oil
26 Nov 1985	MT BASILAN	Aringay, La Union	125,000 liters	various oil prod.
30 May 1986	SHELL REFINERY	Batangas	6,000 barrels	bunker oil
16 Aug 1986	MT MAYSUN	Nogas Pt., Panay	14,000 barrels	bunker oil
17 Oct 1986	MT PEATHERAY G-III	Pandacan, Manila	2,500 barrels	bunker oil
16 Jan 1987	MT CHARLIE DIANE	Puerto Galera, Mindoro	1,300 barrels	bunker oil
24 Oct 1988	LT 506 / AH - 71	Zamboanga City	4,000 - 5,000 barrels	Ind. Fuel Oil
21 May 1989	MT M.Y.	Hospicio de San Jose, Manila	101,000 liters	bunker oil
30 May 1989	SEA OIL PETROLEUM CORP.	Sta, Ana, Manila	1,000 liters	bunker oil
19 Aug 1989	NPC TANK NO. 2	San Pascual, Batangas	15,000 liters	bunker oil
25 Jan 1990	MT FERNANDO J-1	BRC, Limay, Bataan	200,000 liters	Ind. Fuel Oil
18 May 1990	MT VENTURA CHEMICARRY	Tanjay, Negros Oriental	not specified	bunker oil
16 July 1990	PILIPINAS SHELL	Tabangao, Batangas	150 liters	fuel oil
02 Aug 1990	MT AL TALUDI	Manila	10 drums	bunker oil
02 Sept 1990	DELSTAR	Iloilo	37liters	bunker oil
20 Oct 1990	POLYSACHARIDE CORP.	Zamboanga City	840 liters	bunker oil
22 Oct 1990	BRC	Limay, Bataan	5 barrels	bunker oil
05 Dec 1990	MT RAY PATRICK G-V	Pililia, Rizal	5 drums	bunker oil

20 Jan 1991	MT PEATHERAY G-II	Batangas	50 liters	Ind. Fuel Oil
03 Feb 1991	CALTEX DEPOT	Zamboanga	80 barrels	bunker oil
08 Feb 1991	MT PETRON QUEEN	Batangas	1,200 liters	Ind. Fuel Oil
08 March 1991	MV CARLOTA	Mariveles, Bataan	5 drums	oily water
10 March 1991	PILIPINAS SHELL	Batangas	2,100 liters	bunker oil
20 March 1991	CALTEX REFINERY	Batangas	200 barrels	crude oil
05 Apr 1991	MT IVY	PBR Lamao, Bataan	20 barrels	Ind. Fuel Oil
10 July 1991	MT MINDORO EXPRESS	Puerto Princesa City Pier, Palawan	24,500 liters	crude & lube oil
20 Dec 1991	MT NAZAL - 1	Pier 8, North Harbor, Manila	10,500 liters	Auto diesel oil
22 Feb 1992	PNC BARGE 104	Iloilo Commercial Pier, Iloilo City	1,000 liters	sludge oil
14 March 1992	MT CARLA	Shell, Bacolod City	800 liters	diesel oil
06 July 1992	ISAROG PAPER PULP CO	Daraga, Albay	2,000 liters	bunker oil
02 Sept 1992	SEA OIL PETROLEUM CORP	Manila	2 drums	bunker oil
10 Sept 1992	MT ANDHIKA ARIADNO	Batangas	30 barrels	diesel oil
22 Sept 1992	MT BACOLOD CITY	Manila	100 liters	bunker oil
03 Oct 1992	MT OCEAN PRIDE	Marinduque	630 liters	bunker oil
08 Dec 1992	PNOC / PSTC	Pandacan, Manila	2 drums	bunker oil
17 Dec 1992	SHELL PILIPINAS REFINERY	Batangas	30 barrels	diesel oil
Feb 1993	Undetermined source	Bgy. Marina, Bataan	Undetermined amount	bunker oil
08 March 1993	LCT MELVERIC	Danao Port, Negros Occidental	Undetermined amount	oily mixture
19 April 1993	MT CALUMPIT	Petron Pandacan, Manila	20 drums	lube oil
23 April 1993	GENERAL MILLING CORP	Lapu-lapu, Cebu City	Undetermined amount	oily mixture
24 April 1993	BATANGAS POWER PLANT	Pinomucan, Batangas	25 liters	used oil
01 May 1993	SHELL REFINERY	Taysan, Batangas	20,000 liters	bunker oil
12 June 1993	MT HELENA	Cargolift Ship Corp	10 barrels	diesel oil
09 July 1993	BATANGAS POWER PLANT	Pinomucan, Batangas	25 liters	used oil
19 July 1993	MV NEKKEI CHALLENGE	Manila Bay, South Harbor, Manila	undet amount	grain chaff
24 Sept 1993	ILIGAN CEMENT CORP	Kiwakan, Iligan City	50 liters	bunker oil
29 Sept 1993	CALTEX PHILIPPINES REFINERY	San Pascual, Batangas	420 liters	bunker oil
21 Nov 1993	NAPOCOR/ APLAYA JASAAN	Misamis Oriental	3 - 4 drums	bunker oil
17 March 1994	PHIL VINYL CONSORTIUM	Rosario, Cavite	Undetermined amount	
19 April 1994	PBRC	PBRC, Limay, Bataan	2 drums	bunker oil
28 April 1994	MV FORTUNE STAR	Daliao, Toril, Davao City	55 gallons	used oil
09 July 1994	MALAYA THERMAL PLANT	NPC, Pililia , Rizal	7,000 liters	bunker oil
08 Aug 1994	PETRO QUEEN/ LAS VIVAS	Manila Bay	670 barrels	bunker oil
13 Aug 1994	DISCOVERY IND. DEV. CORP	Namayan, Mandaluyong	600 liters	bunker oil

21 Aug 1994	BAUANG PVT POWER CORP	Lingayen Gulf, Bauang, La Union	1,000 liters	diesel oil
02 Dec 1994	MV CEBU CITY	Manila Bay	3,000 liters	bunker oil
06 Dec 1994	MV JIAN DA	Tobaco, Albay	30 liters	bunker oil
30 Dec 1994	MV SEVEN SUPER POWER	Cadaanan, Bgy. Pagudpud, Ilocus N	Undetermined amount	bunker oil
11 Jan 1995	ALLIED THREAD COMPANY	Pasig River, Maybunga, Pasig	1,000 liters	bunker oil
11 Jan 1995	MV PACIFIC PRINCE	Iloilo Pier, Iloilo City	20 drums	bunker oil
17 Jan 1995	ROCKWELL POWER PLANT	Pasig River, JP Rizal, Makati	139,200 liters	bunker oil
26 Jan 1995	NAPOCOR POWER PLANT	NPC Malaya Plant, Pililia, Rizal	1,000 liters	Ind. Fuel Oil
08 Feb 1995	MV JIANDA	Tabaco, Albay	Undetermined amount	Urea Fertilizer
15 Feb 1995	MT AGONCILLO (PNOC)	Subic Bay	22 barrels	Ind. Fuel Oil
28 Feb 1995	REPUBLIC ASAHI GLASS CORP	Pasig River	2,000 liters	Ind. Fuel Oil
03 March 1995	PUYAT STEEL CORP	Pasig River, Mandaluyong	50 - 70 liters	fuel oil
05 March 1995	CALTEX PHILIPPINES REFINERY	Caltex Wharf area	50 liters - 2,100 barrels	fuel oil
17 March 1995	PACIFIC GLASS MFTG PRODUCT	San Juan River, San Juan	1,500 liters	Ind. Fuel Oil
20 March 1995	PISCOR	Bo. Manggahan, Pasig	20 liters	diesel oil
19 April 1995	MT VICTORY	Batangas	1 barrel	Ind. Fuel Oil
12 May 1995	MT CORE RUBY	Petron Depot Zamboanga City	10,000 liters	XLL gasoline
12 May 1995	FB CANSON I	General Santos City	450 liters	oily mixture
12 May 1995	MT PANDI (HERMA TANKERS)	Lamao, Bataan	500 liters	Ind. Fuel Oil
18 June 1995	MT CARLA		420 liters	undetermined
21 July 1995	WARNER LUMBER CORP	Pasig River	3,000 liters	Ind. Fuel Oil
15 July 1995	RESIN CORPORATION	Pasig River	2,000 liters	Ind. Fuel Oil
Aug 1995	PETRON BULK PLANT	Bacolod City	118 liters	undetermined
11 Sept 1995	MV SPRING SWIFT	Iloilo City	15 liters	bunker oil
22 Sept 1995	MV WILCON X	Pier 8 North Harbor, Manila	2,000 liters	IFO/bunker oil
24 Sept 1995	MV OCEAN PRIDE	Tagbilaran City	10 liters	Ind. Fuel Oil
14 Oct 1995	INTEGRAL CHEMICAL CORP	Pasig River, Mandaluyong	100 liters	diesel
30 Jan 1996	TONDO, MANILA	Jacinto St., Tondo, Manila	1,000 liters	bunker oil
02 Feb 1996	SAN JOSE GLASS CORP	Pasig River, Mandaluyong	150 litrs	bunker oil
16 March 1996	MV SULCON XIV	Puerto Galera, Oriental Mindoro	2 drums	used oil
17 March 1996	MV LADY HELEN	Zamboanga City	300 liters	used oil
26 March 1996	MARCOPPER MINING CORP	Boac, Marinduque	3.7 million cubic meters	mill residue
May 1996	MT MEGA PILOT	Caltex Phil, San Pascual, Batangas	79 barrels	Oman Crude oil

SOURCE: NOCOP, Philippine Coast Guard

APPENDIX 4

ADJUDICATED POLLUTION CASES/INCIDENTS IN THE PHILIPPINES (1995-1996)

DATE	SPILLER/SOURCE	PLACE	QUANTITY	TYPE OF DISCHARGE	CAUSE OF DISCHARGE	ADMIN FINE	REMARKS
11 January 1995	MV Pacific Prince (Panamian Registry)	Iloilo Comm'l Port Complex, Iloilo City	20 drums	Bunker Oil	While manuevering to dock the ship, a portion of the vessel port quarter hit a pier bollard w/c tore a fuel oil settling tank shell plate. The freeboard hole caused the discharge.	P 4,000.00	Adjudicated
11 January 1995	Allied Thread Company, Inc.	Marikina River	400 liters	Bunker Oil	Open valve of fuel tanks.	-	Adjudicated
17 January 1995	Rockwell Thermal Plant	Pasig River	63,000 liters	Bunker Oil	Leak in the manhole of fuel oil tank nr. 1, valve of the storm drainage was inadvertently left open	-	Adjudicated
20 January 1995	MT Agihis (BBCI)	NPC Wharf, Malayan Pililla Rizal	-	-	Opening of the drain valve where the spill emanated. Spill originated from the shoreside.	P 4,000.00	Adjudicated
08 February 1995	MV Jianda (S. African Registry)	Tabaco, Albay	-	Urea Fertilizer	Overflowing of its port fuel exhaust pipe. Contaminated urea fertilizer.	P 6,000.00	Adjudicated
03 March 1995	Republic Asahi Glass Corporation	Brgy. Pinagbuhatan, Pasig, Manila	10 liters - 2 drums	Bunker/Fuel Oil	Leak originated from the refilling line of storage tank #2 to F1, F3 and F4 day tanks.	-	Adjudicated

03 March 1995	Puyat Steel Corporation	Pasig river, Mandaluyong	50 - 70 liters	Bunker / Fuel Oil	Leak on the day tank	P 4,000.00	Adjudicated
05 March 1995	Caltex (Philippines) Refinery	Caltex Wharf area, San Pascual, Batangas	50 liters to 2,100 bls	Fuel Oil	Tank SD-96 underground receiving line leak	-	Adjudicated
19 March 1995	Pacific Glass Product	San Juan River	1,700 liters - 7 drums	Bunker Oil	Leak was caused by cracked portion of day tank	P 9,000.00	Adjudicated
20 March 1995	PISCOR	Bo. Manggahan, Pasig, Manila	20 liters	Diesel Oil	Leak was caused by an old gate valve inadvertently left open	P 13,000.00	Adjudicated
12 May 1995	M/T Pandi	South Center Pier Petron Bataan Refinery, Limay, Bataan	500 liters	IFO	Transferring operation tank #3 at the star-board side due to negligence of the vessel's crew	P 4,000.00	Adjudicated
12 May 1995	M/T Core Ruby Core Marimte Corp.	Petron Depot Zamboanga City	10,000 liters	XLL Gasoline	Valve of gasoline line was left half-opened	P 4,000.00	Adjudicated
12 May 1995	F/B Canson I	General Santos City	450 liters	Oily Mixture	Discharging oily water mixture	P 4,000.00	Adjudicated
16 May 1995	M/T Davao Violy Oceanic Traders Co.	Cebu City	-	-	No SOPEP, No sewage treatment tank and lacking one open ended drum	P 15,000.00	Adjudicated
18 June 1995	M/T Carla	Pasig River	420 liters	-	Submarine pipe at the Parola light house was leaking		
15 July 1995	Resin Corp	Pasig River	2,000 liters	IFO	Caused by damaged centrifugal O-ring	P 15,000.00	Adjudicated
21 July 1995	Warner Lumber Corp.	Pasig River	3,000 liters	IFO	Caused by overflow of oil during filling of the storage tank	P 15,000.00	Adjudicated
30 July 1995	M/T PHIL SEA				Oil slick from pipe line of fuel tank		
August 1995	Petron Bulk Plant	Bacolod City	118 liters		Pipe leaking	P 500	
August 1995	Pilipina Shell		420 liters		Discharging/ dumping oil	P 4,000.00	

11 September 1995	M/V Spring Swift Liberian Registry	Iloilo City	15 liters	Bunker oil	Accidental spill was to due to hose disconnection		
20 September 1995	M/V SOLID UNO				Listing on her portside due to shifting of her cargo vans causing water to enter at engine room and submerging her fantail slowly to the water line. Observed traces of oil believed coming from bilge		
24 September 1995	M/V OCEAN PRIDE	Tagbilaran City	10 liters	IFO	Spillage was due to pulling off the hose from the connecting flauce which was connected to the ship discharging manifold		
22 September 1995	M/V WILCON X	Pier 18 N. Harbor	2,000 liters	IFO/Bunker oil	Crack on the stbside which caused the spillage		Adjudicated
14 October 1995	Integral Chemical Corporation	Pasig RIver	100 liters	Diesel oil	Inadvertent discharge of diesel/oil mixture	P 4,000.00	Adjudicated
02 February 1996	San Jose Glass Corp.	Pasig River	150 liters	Bunker oil	Tear on the rubber hose which connected the day tank to engine	P 13,000.00	Adjudicated
16 March 1996	M/V SULCON XIV Sulpicio Shipping Lines	Varadero Bay, Puerto Galera, Oriental Mindoro	2 drums	used oil	Discharging of oil		
17 March 1996	M/V Lady Helen SKT Shipping Corp.	Zamboanga City	300 liters	used oil	Pumping/discharging of oily bilge water	P 4,000.00	
24 March 1996	MARCOPPER Mining Corp.	Boac, Marinduque	3.7 million cu. meters	mill residue			
May 1996	M/T MEGA PILOT	San Pascual, Batangas	79 barrels	Oman Crude Oil			

Source: NOCOP, Philippine Coast Guard

APPENDIX 5

Expected Volume of Oily Wastes by PMO (1994)

Port Management Offices (Destination Ports)	Shipcalls* (1994)	Oily Wastes (cu.m/day)**	
		Sludge	Oily Bilge Water
PDO Manila:			
North Harbor	13,537	37	74
South Harbor	9,057	25	50
MICT Field Office	1,295	3.5	7
PDO Luzon:			
Batangas	20,658	56	112
Legaspi	10,126	28	56
Puerto Princesa	2,842	7.8	15.6
San Fernando	923	2.5	5
PDO Visayas:			
Cebu	39,253	107.5	215
Ilo-ilo	23,905	65.5	131
Dumaguete	16,547	45	90
Tacloban	10,550	29	58
PDO Northern Mindanao:			
Cagayan de Oro	11,778	32	64
Iligan	20,805	57	114
Nasipit	1,321	3.6	7.2
Surigao	8,229	22.5	45
PDO Southern Mindanao:			
Davao/Sasa	2,742	7.5	15
General Santos	1,372	3.8	7.5
Jolo	5,586	15	30
Polloc	4,124	11	22
Zamboanga	13,870	38	76

Note: * Figures taken from PPA Summary Report CY 1994

**The estimation used was 1 cu.m. for sludge and 2 cu.m. for oily bilge water as patterned with the US Regulation.

APPENDIX 6

Expected Volume of Sewage and Solid Wastes by PMO (1994)

Port Management Offices (Destination Ports)	Volume of Disembarking Passengers a/	Sewage b/ (liter/day)		Garbage c/ (kg/day)
		Black Water	Black water &Greywater	Domestic Wastes
PDO Manila:				
North Harbor	2,167,898	415,761	1,366,073	17,818
South Harbor	2,668	512	1,681	22
MICT Field Office	0	0	0	0
PDO Luzon:				
Batangas	1,050,203	201,409	661,772	8,632
Legaspi	713,821	136,897	449,805	5,867
Puerto Princesa	82,565	15,834	52,027	678
San Fernando	0	0	0	0
PDO Visayas:				
Cebu	3,938,305	755,291	2,481,672	32,370
Ilo-ilo	2,720,389	521,718	1,714,218	22,359
Dumaguete	903,958	173,362	569,617	7,430
Tacloban	1,444,627	277,052	910,312	11,874
PDO Northern Mindanao:				
Cagayan de Oro	1,222,855	234,520	770,566	10,051
Iligan	2,977,656	571,057	1,876,331	24,474
Nasipit	289,237	55,470	182,259	2,377
Surigao	484,277	92,857	305,160	3,980
PDO Southern Mindanao:				
Davao/Sasa	198,420	38,053	125,032	1,631
General Santos	60,208	11,545	37,939	495
Jolo	460,752	88,363	290,337	3,787
Polloc	211,254	40,514	133,119	1,736
Zamboanga	1,515,719	290,686	955,111	12,458

Note: a/ - Data taken from PPA Summary Report CY 1994 using only the figures on disembarking passengers considered potential waste producers.

b/ - Most domestic ships is using the conventional toilet system where 70 liters/person/day of sewage and a combined 230 liters/person/day of blackwater and greywater is applicable.

c/ - 3 kilogram/person waste generation was used for computation.

APPENDIX 7

LIST OF PCG ACCREDITED WASTE COLLECTORS

NAME/ADDRESS/TEL NO. OF COMPANY	PERMIT	EXPIRATION DATE
International Towage and Transport Corporation # 2868 Lamayan St., Sta. Ana, Manila Tel. # 521-09-11 / 58-20-61	Oily Waste Collector	26 July 1997
G & G Marine Anti-Poluution Services # 9 Eliseo St., Concepcion Subdivision Valenzuela, Manila Tel. # 35-18-18	Oily Waste Transporter	09 November 1996
Sea Clean Anti-Pollution Services # 1195 Maria Orosa St., Ermita, Manila Tel. # 810-05-03	Waste Transporter	25 October 1996
Rapid Ports Utilities Corporation 603 Ermita Center Building 1350 Roxas Blvd., Ermita, Manila Tel. # 522-99-84 / 536-05-09	Waste Collector	21 October 1996
Gluckauf Marine Anti-Pollution Services Room 407, VIP Bldg., Plaza Ferguson Roxas Blvd., Ermita, Manila Tel. # 521-13-65 / 521-17-51 / 521-75-20	Marine Anti-pollution/ Sludge C ollection Services	08 March 1995
Maharlika Marine Anti-Pollution Services Naval St., Navotas, Metro Manila Tel. # 232-215	Sludge Collection Contractor	01 October 1994

APPENDIX 8

HELCOM RECOMMENDATION ON RECEPTION FACILITIES

THE COMMISSION,

RECALLING the 1992 HELSINKI Convention which stipulates a need for development and application of uniform requirements for the provision of reception facilities in the Baltic Se Area,

RECALLING ALSO the 1988 Ministerial Declaration which urges the Contracting Parties to work together to promote the use of shore reception facilities for residues and wastes from ships making such facilities and services available at reasonable costs or without charging special fees to the individual ships,

RECALLING FURTHER that Annexes I, II, III and V of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78) are in force,

BEARING IN MIND that the provisions of Regulation 7 of Annex IV of the 1974 Helsinki Convention and Regulation 5 of Annex I of the 1992 Helsinki Convention, in which each Contracting Party undertakes to ensure the provision of facilities at its ports and terminals of the Baltic Sea Area for the reception of sewage, without causing undue delay to ships, adequate to meet the needs of the ships using them,

NOTING that the Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO) has adopted guidelines on the provision of adequate reception facilities in ports for oily wastes, residues and mixtures containing noxious liquid substances, sewage, and garbage to assist Governments in implementing the requirements of MARPOL 73/78,

DESIRING to protect the Baltic Sea Area against harmful effects by pollution from ships including pleasure craft,

CONSCIOUS of the international nature of shipping and of the importance of a harmonized system for the provision of reception facilities and relevant financial arrangements covering the Baltic Sea Area,

CONSCIOUS ALSO of the importance of applying an effective harmonized penal system having a deterrent effect on the illegal operational discharges thereby encouraging the use of reception facilities,

I AGREES:

1. That primarily a system shall be established in the Convention Area for the control of ships' discharges to reception facilities and waste management on board ships. A prerequisite for an efficient control system aiming at a better enforcement if the exchange of information on whether a ship has used a reception facility in the Area and an estimation of the amount of waste generated on board any ship. A suitable communication system with an accompanying data base should be introduced for this purpose. It is important that the control is exercised under the responsibility of the Administration in order to minimize distortion of competition between ports;

2. That, as matter of priority, a harmonized fee system shall be established with the dual purpose of encouraging ships to deliver waste ashore and to avoid undesirable waste streams between ports thereby encouraging a sound sharing of the waste burden in the Convention area. The "no-special-fee" system constitutes such a system and will, when applied by all Contracting Parties in a harmonized way, serve both purposes. In this context the "no-special-fee" system is defined as charging system where the cost for reception, handling and disposal of ship-generated waste is included in the harbour fee of otherwise charged to the ship irrespective of whether waste are delivered or not;

3. That mandatory regulations shall be developed for ships to deliver all garbage to a port reception facility before leaving port, taking into account the need for special arrangements for e.g. passenger ferries and ships engaged in short voyages;

4. That harmonized, mandatory rules shall be developed and applied within the Helsinki Convention context to new fishing vessels, working vessels and pleasure craft, which are not covered by the existing regulations, in respect of toilet retention systems and holding tanks for sewage. Sufficient onboard storage possibilities are to be provided also for other wastes generated onboard such vessels. Existing fishing vessels, working vessels and pleasure craft shall, to the widest possible extent, become equivalently equipped, or if this is not possible, in the case of sewage, be equipped with portable toilets in order to make reception of sewage for municipal treatment possible thereby minimizing discharges into the marine environment;

5. That, in order to facilitate the enforcement of existing discharge regulations through an expeditious and effective legal mechanism, the responsibility for the evaluation of evidence presented in cases of illegal operational discharges from ships to the widest possible extent shall be centralized on a national level and assigned to persons/institutions having

adequate expertise in matters related to violation of international marine environment protection regulations in respect of shipping;

6. That all necessary steps are taken as soon as possible to elaborate a system harmonized on the widest possible extent for determining the severity of sanctions to be imposed on, including calculating the level of fines to be charged, when ships violate the Convention's regulations in respect of operational requirements,

II REQUESTS the Maritime Committee to finalize the follow-up actions related to Section I as soon as possible and to report on the status of this work to the Commission at its meeting in 1988,

III AGREES ALSO to seek cooperation with the North Sea region with the aim to develop uniform requirements including financial arrangements and proper operation of reception facilities in both regions,

IV RECOMMENDS that the Governments of the Contracting Parties to the Helsinki Convention take appropriate action before 1 January 1988, in order to ensure:

1. That measures shall be taken and procedures shall be applied on board ships aiming at the minimization of waste production and waste segregation. The Contracting Parties should encourage both their shipping and ship supplying industries when requisitioning bonded stores and ships' provisions to apply the substitutionary principle in order to prevent, already at an early stage, the generation of unnecessary waste on board ships. The development and application of improved technology with the aim of eliminating the adverse environmental effects from shipping should also be encouraged and the education of ships' crew and management at all levels on the importance of waste management should be promoted;

2. The cost-effective technical and practical solutions shall be applied both on board ships and in ports for separation of oily bilge water or water extraction from oily residues in order to avoid expensive long distance transportation of large amounts of contaminated water and to make it possible to recycle the oil, or as an alternative, to utilize the extracted oil as an energy resource at the place of its appropriate thermal destruction;

3. That port requirements, procedures and conditions for reception and disposal of ship-generated wastes shall to the widest possible extent be harmonized with the IMO's Manual on Shipboard Waste Management in order to promote and simplify the reception of wastes from ships*;

4. That the reception procedures and waste handling shall be harmonized between port authorities and shipping companies for passenger vessels and passenger ferries engaged in so-called dedicated trade in order to promote and simplify the waste reception and thereby to avoid unnecessary burdens of costs as well as to make recycling of wastes possible to the greatest extent;

5. That marinas, fueling stations, fishing harbours, etc. for pleasure craft and small vessels shall be equipped with installations for simple and convenient reception of sewage and other wastes as a normal service. The establishment of a network of such installations should be encouraged by e.g. a national plan in order to ensure an extensive coverage of waste reception;

6. That any contradictive economic, procedural, operational, technical, etc. hindrances for the use of port reception facilities for ship-generated wastes shall be eliminated. In particular customs, health and environmental formalities should be as simple and expeditious as possible in order to avoid undue delay of ships. In this context it should be particularly observed that any fees charged for the use of reception facilities, whether included in the harbour fee or not, should not serve lucrative purposes but reflect the real costs entailed by the port for the reception and final disposal of the wastes,

V RECOMMENDS ALSO to the Governments of the Contracting Parties to facilitate the implementation of these measures by providing technical assistance and expertise including organizing arrangements for financial support to the countries in transition,

VI URGES the Governments of the Contracting Parties to assign one authority responsible for the coordination of the implementation of this Recommendation on a national level.

---

* - The IMO Manual has not yet been adopted.

APPENDIX 9

SHIP'S SPECIFIC WASTE MANAGEMENT PARTICULARS

1 SHIP'S NAME AND REGISTRY/OFFICIAL NUMBER:_____

2 MAXIMUM CREW SIZE:_____

3 MAXIMUM NUMBER OF PASSENGERS:_____

4 MAXIMUM NUMBER OF ANIMALS CARRIED:_____

5 DESIGNATED PERSON(S) IN CHARGE:_____

.1 **Ship's Waste Management Plan Coordinator** (name or position):_____

.2 **Deck Department Coordinator** (name or position):_____

.3 **Engine Department Coordinator** (name or position):_____

.4 **Galley Coordinator** (name or position):_____

.5 **Other Coordinator** (name or position):_____

6 SPECIFIC OR ESTIMATED SHIPBOARD WASTE GENERATED PER DAY

.1 **Annex I - Oils**

.1 **Bilge Slops** (m3/day):_____

.2 **Bilge Water** (m3/day):_____

.3 **Cargo Residue/Dirty Ballast** (m3/day):_____

.4 **Other** (m3/day):_____

.2 **Annex II - Noxious Liquid Substances in Bulk**

.1 **Cargo Residue** (m3/day):_____

.2 **Tank Washings/Dirty Ballast** (m3/day):_____

.3 **Other** (m3/day):_____

.3 **Annex IV - Sewage**

.1 **Drainage from toilets, urinals, WC scuppers** (m3/day):_____

.2 **Drainage from medical facilities** (m3/day):_____

.3 **Drainage from spaces containing living animals** (m3/day):_____

.4 **Annex V - Garbage**

.1 **Non-recycled/non-separated** (kg/day):_____

.2 **Recycled/separated** (kg/day):_____

.1 **Paper products:**_____

.2 **Food wastes:**_____

.3 **Glass:**_____

.4 **Plastics:**_____

.5 **Metals:**_____

.6 **Other:**_____

PROCESSING EQUIPMENT ON BOARD

.1 **Oily-water Separators**

	MODEL	LOCATION	CAPACITY
Unit #1			
Unit #2			

.2 **Incinerators**

	MODEL	LOCATION	CAPACITY
Unit #1			
Unit #2			

.3 **Waste Treatment Plants**

	MODEL	LOCATION	CAPACITY
Unit #1			
Unit #2			

.4 **Pulpers/Grinders/Comminuters/Shredders**

	MODEL	LOCATION	CAPACITY
Unit #1			
Unit #2			

.5 **Compactors**

	MODEL	LOCATION	CAPACITY
Unit #1			
Unit #2			

WASTE STORAGE CAPACITIES (For discharge to reception facilities)

.1 **Storage for Waste Oils**

WASTE OILS	TYPE OF STORAGE	LOCATION OF STORAGE	STORAGE CAPACITY (cubic meter)	VOYAGE DAYS OF STORAGE (Capacity ÷ Waste Generated per day)
1 BILGE SLOPS				
2 BILGE WATER				
3 CARGO RESIDUE/ DIRTY BALLAST				
4 OTHER (Specify)				

.2 **Storage for Waste Noxious Liquid Substances (NLS)**

WASTE NLS	TYPE OF STORAGE	LOCATION OF STORAGE	STORAGE CAPACITY (cubic meter)	VOYAGE DAYS OF STORAGE (Capacity ÷ Waste Generated per day)
1 CARGO RESIDUES				
2 TANK WASHINGS/ DIRTY BALLAST				
3 OTHER (Specify)				

.3 **Storage for Sewage**

SEWAGE TYPE	TYPE OF STORAGE	LOCATION OF STORAGE	STORAGE CAPACITY (cubic meter)	VOYAGE DAYS OF STORAGE (Capacity ÷ Waste Generated per day)
1 TOILETS/URINALS WC SCUPPERS				
2 MEDICAL FACILITIES				
3 ANIMAL WASTES				
4 OTHER (Specify)				

.4 **Storage for Garbage**

GARBAGE TYPE	TYPE OF STORAGE	LOCATION OF STORAGE	STORAGE CAPACITY (cubic meter)	VOYAGE DAYS OF STORAGE (Capacity ÷ Waste Generated per day)
1 NON-RECYCLED/ NON-SEPARATED				
2 RECYCLED/ SEPARATED				
.1 PAPER PRODUCTS				
.2 FOOD WASTES				
.3 GLASS				
.4 PLASTICS				
.5 METALS				
.6 OTHER (Specify)				

APPENDIX 10

WASTE MANAGEMENT TECHNIQUES EMPLOYED BY SHIP

TECHNIQUES*	ANNEX I (Oils)	ANNEX II (NLS)	ANNEX IV (Sewage)	ANNEX V (Garbage)
1 PREVENTION	N/A**	N/A	N/A	
2 REDUCTION			N/A	
3 RECYCLING		N/A	N/A	
4 SEPARATION				
.1 Filtration		N/A		
.2 Manual	N/A	N/A	N/A	
5 PROCESSING				
.1 Pulpers	N/A	N/A	N/A	
.2 Shredders	N/A	N/A	N/A	
.3 Comminutors	N/A	N/A		
.4 Compactors	N/A	N/A	N/A	
.5 Incinerators				
6 STORAGE				
.1 Bins				
.2 Tanks				
.3 Spaces	N/A	N/A	N/A	
.4 Other				
7 Discharge to Sea ***				
8 Discharge to Port ****				

* "Y" in a box indicates the waste management technique listed in vertically and corresponding with the applicable MARPOL Annex listed horizontally will be employed on board the ship; "N" indicates the technique will not be employed.

** "N/A" indicates this waste management technique is not applicable under corresponding MARPOL Annex.

*** Based on corresponding MARPOL Annex control discharge of wastes to the sea requirements

**** Refer to Appendix 11 for information on discharge of ship's wastes to reception facilities.

APPENDIX 11

SHIP WASTE INFORMATION SHEETS FOR PORT WASTE MANAGEMENT

I SHIP INFORMATION *(Sections 1-7 are to be completed by the ship/owner/ operator and forwarded to the appropriate Shipping Agent/Port Authority in the next port of call)*

1 SHIP'S NAME AND REGISTRY/OFFICIAL NUMBER:_____

2 SHIP/OWNER/OPERATOR FAX or CABLE #:_____

3 SHIP/OWNER/OPERATOR MAILING ADDRESS:_____

_____

4 NAME OF PORT TO BE VISITED:_____

5 DATE(S) OF PORT VISIT:_____

6 DESTINATION IN PORT TO BE VISITED:_____

_____

7 ESTIMATED WASTE FOR DISPOSAL AT PORT RECEPTION FACILITY AT NEXT PORT:

.1 Annex I - Waste Oils (m^3):
- .1 Bilge slops:_____
- .2 Bilge water:_____
- .3 Cargo residue/dirty ballast:_____
- .4 Other (Specify):_____

.2 Annex II - Waste Noxious Liquid Substances (m^3):
- .1 Cargo residue:_____
- .2 Tank washings/dirty ballast:_____
- .3 Other (Specify):_____

.3 Annex IV - Sewage (m^3):
- .1 Drainage from toilets, urinals, WC scuppers:_____
- .2 Drainage from medical facilities:_____
- .3 Drainage from spaces containing living animals:_____

.4 Annex V - Garbage (m^3):
- .1 Non-recycled/unseparated garbage:_____
- .2 Recycled/separated garbage:
  - .1 Paper products:_____
  - .2 Food wastes:_____
  - .3 Glass:_____
  - .4 Plastics:_____
  - .5 Metals:_____
  - .6 Other (Specify):_____

II INFORMATION ON DISPOSAL OF SHIPBOARD GENERATED WASTES TO PORT RECEPTION FACILITIES (The ship/owner/operator shall place a _/ in column (1) for each of the wastes listed in column (2) planned for disposal at port reception facilities and forward Part II, along with Part I, to the Shipping Agent/Port Authority at the next port of call. The Shipping Agent/Port Authority is requested to complete the information in columns (3) through (6) for each row corresponding with a _/ in column (1) and return the completed form to the source address/telefax/cable specified in section 2 or 3 in Part I.)

(1) _/ By Ship	(2) MARPOL ANNEX	(3) COMPANY NAME, ADDRESS, PHONE #, FAX # & PERSON IN CHARGE	(4) SPECIFIC HANDLING REQUIRE-MENTS *	(5) COSTS **	(6) CAPACITY LIMITS
	1 ANNEX I - OILS				
	.1 Sludge Oil	Company: Address: Phone #: Fax #: Person in Charge:			
	.2 Cargo Oil	Company: Address: Phone #: Fax #: Parson in Charge:			
	2 ANNEX II - NLS				
	.1 Tank washings or dirty ballast	Company: Address: Phone #: Fax #: Person in Charge:			
	.2 Cargo Residue	Company: Address: Phone #: Fax #: Parson in Charge:			
	3 ANNEX IV- SEWAGE				
	.1 Drains from toilets, urinals, and WC scuppers	Company: Address: Phone #: Fax #: Person in Charge:			

(1) _/ By Ship	(2) MARPOL ANNEX	(3) COMPANY NAME, ADDRESS, PHONE #, FAX # & PERSON IN CHARGE	(4) SPECIFIC HANDLING REQUIRE-MENTS *	(5) COSTS **	(6) CAPACITY LIMITS
	.2 Drains from medical facilities	Company: Address: Phone #: Fax #: Parson in Charge:			
	.3 Drains from spaces containing living animals	Company: Address: Phone #: Fax #: Parson in Charge:			
	4 ANNEX V - GARBAGE				
	.1 Unseparated Garbage	Company: Address: Phone #: Fax #: Person in Charge:			
	.2 Food Wastes	Company: Address: Phone #: Fax #: Person in Charge:			
	.3 Medical Wastes	Company: Address: Phone #: Fax #: Person in Charge:			
	.4 Plastics	Company: Address: Phone #: Fax #: Person in charge:			
	.5 Paper Products	Company: Address: Phone #: Fax #: Person in Charge:			

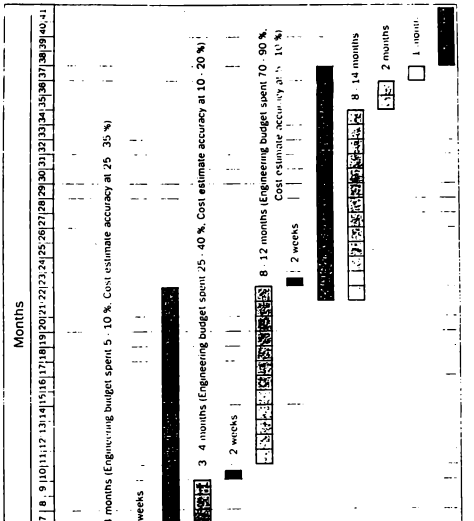
(1) _/ By Ship	(2) MARPOL ANNEX	(3) COMPANY NAME, ADDRESS, PHONE #, FAX # & PERSON IN CHARGE	(4) SPECIFIC HANDLING REQUIRE-MENTS *	(5) COSTS **	(6) CAPACITY LIMITS
	.6 Glass	Company: Address: Phone #: Fax #: Person in Charge:			
	.7 Metals	Company: Address: Phone #: Fax #: Person in Charge:			
	.8 Other (Specify)	Company: Address: Phone #: Fax #: Person in Charge:			

* Specific handling requirements include: any special transportation means or equipment to remove wastes from ship at port reception facility; operating hours of port reception facility; any special requirements for containers or storage devices, etc.

** Shipping agent/port authority are requested to list only those costs for receiving waste at port reception facilities if in addition to port fees.

APPENDIX 12

OVERVIEW OF PROJECT PLANNING PHASES FOR RECEPTION FACILITIES



SOURCE: IMO, 1996, p 101

Necessary Elements for Considerations:

- The necessity for reception facilities according to Annex I, II and V of the Convention;
- Assessment of waste stream types and quantities to be handled by the reception facilities;
- Existing possibilities to receive the wastes;
- Selection of best technical options for port reception and treatment facilities;
- Required additional measures fro environmentally acceptable processing and treatment of the received wastes;
- Description of the spare capacity philosophy (it is important to provide for emergency storage capacity, that will enable the temporary reception of waste in case of a temporary plant malfunction);
- Site selection study (the site should include sufficient spare land to allow for possible future extensions, avoiding sensitive environments);
- Approximate investment and operating costs of the required reception and treatment facilities
- Which companies and authorities are or must be in involved in the establishment and operation of the port reception facilities;
- A planning period for the design/engineering and construction phases;
- Environmental Impact Assessment

Data to be collected:

Port Characteristics

- Port lay-out
- Environmental data
- Berths and equipment
- Commodity flows
- Information on companies or other organizations which could possibly receive and process certain wastes, such as:
  - Garbage collection companies
  - Oil refineries
  - Terminals for petroleum products and other products
  - Ship repair yards
  - Tank cleaning companies
- Space requirements
- Existing or available labour
- Which laboratories could be used for testing samples of the wastes

Ship Characteristics

- Present shipping traffic and ships' characteristics (including pleasure boats, commercial fishing vessels, and other non-commercial vessels)
- Future trends in shipping traffic and ships' characteristics
- Ship requirements for access to reception facilities including size limitations

Waste Characteristics

- Types and quantities of wastes received at present and estimates of the waste streams that could discharged in port
- Types and amounts of waste generated in the port

Port Waste-Handling Characteristics

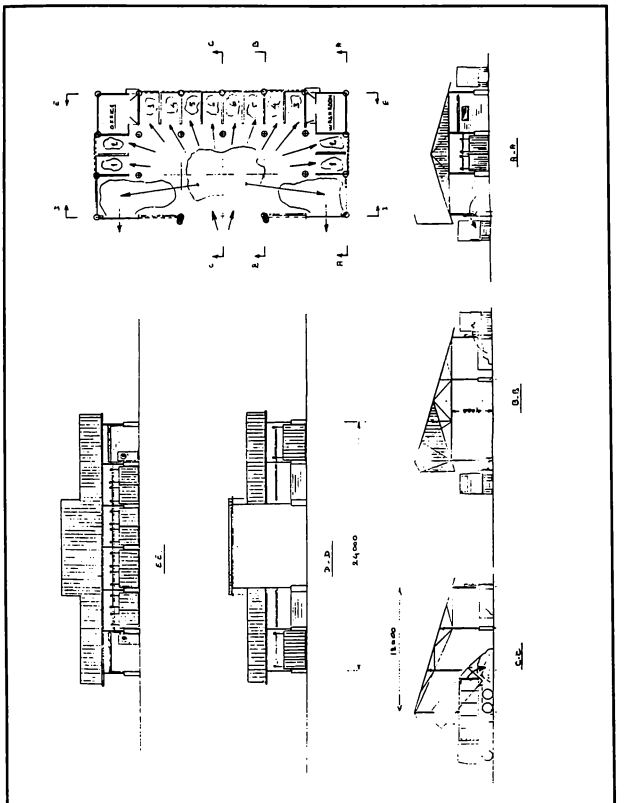
- Existing facilities for the reception of wastes from ships (including location of facilities, access, security, visibility, signs, lighting, etc.)

Applicable Laws, Regulation and Policies

- Port and other regulations regarding the prevention and combatment of port pollution and the receipt of wastes from ships
- Waste management strategy which is applied in the country

APPENDIX 13

MODEL DESIGN OF A SOLID WASTE SEPARATION FACILITY



Source: DHV Consultant, 1996, Annex II/8