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WORLD MARITIME UNIVERSITY
Malmö, Sweden

**CONTROL OF POLLUTION FROM SHIPS:
EMPHASIS ON THE IMPLEMENTATION OF
MARPOL 73/78 CONVENTION IN PANAMANIAN
TERRITORIAL WATERS**

FELIPE MORENO R.
Panama

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

**MARITIME SAFETY AND ENVIRONMENTAL PROTECTION
(Policy)**

1999

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 content of this dissertation reflects my own personal views, and these are not necessarily endorsed by the University.

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Abstract

Title of Dissertation: Control of Pollution from ships: emphasis on the implementation of MARPOL 73/78 Convention in Panamanian territorial waters

Degree: MSc

The actual position of Panama in the maritime world is due to its important role among the activities related with the maritime sector. The geographical position as international route for maritime traffic is increasing the probabilities of pollution from ships. Not only the maritime traffic itself and its risks affect the environmental conditions, but also the operational procedures onboard ships in order to comply with the regulations transiting through the Panama Canal waters.

All these facts and challenges have certainly induced the Panamanian government to create new structures and programmes to face them. Therefore, planning activities for the implementation of international treaties have to be the next step to reduce the risk of poor management against threats posed thereon.

The lack of implementation programmes regarding pollution from ships has been highlighted because the former administrations did not give real importance to this matter. Instead, they remained behind the actions taken by the Panama Canal Commission into their waters. This area is the only one who has received the appropriate implementation of MARPOL 73/78 since its adoption.

Beside this behaviour, activities relating to the industry have become more popular along both coasts, threatening the marine environment. For instance, the oil pipeline in the western region, and the oil refinery located near populated, and tourist areas, as well as port terminals at the entrances of the Panama Canal. These are some of the active centres to start controlling pollution from ships.

The actual paper focuses on the implementation of the MARPOL 73/78 Convention by the Panamanian Government. The Republic of Panama for its geographical position has the unavoidable duty to preserve the well being of resources and amenities existing throughout both coasts. That is taking into account that this convention has been ratified as well as their two protocols and five annexes. The purpose is to analyse the actual status of the government in its capacity to prevent an emergency pollution situation. That is to say, the revision of the actual proceeding to supervise its compliance, and its updating from the point of view of human resources including the role of the National Maritime Service as Coast Guard. Finally, the proposed improvement will be considered after the conclusions as recommendations for a better implementation of the MARPOL 73/78 Convention.

KEYWORDS: Panama, Pollution, MARPOL 73/78, Implementation, Marine environment.

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List of Abbreviations

A	Asia
A.###	IMO Assembly Resolutions
APN	Former National Port Authority
CFR	Code of Federal Regulations of USA
CLC	International Convention on Civil Liability for Oil Pollution Damage
CO ₂	Carbon Dioxide
COLREG	International Regulations for Preventing Collisions at Sea (COLREG), 1972
CONAMA	Former National Commission for the Environment
CSC	Coastal State Control
CZ	Contiguous Zone
ECSA	East Coast of South America
ECUS	East Coast of United States of America
EEZ	Exclusive Economic Zone
EU	European Union
FSC	Flag State Control
HNS	Hazardous and Noxious Substances
IMDG	International Maritime Dangerous Goods Code
IMO	International Maritime Organisation
IOPCF	International Oil Pollution Compensation Funds
ISM	International Safety Management Code
IW	Internal Waters
km	Kilometres
km ²	square kilometres
LDC	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (LDC), 1972
LL	International Convention on Load Lines (LL), 1966
MAP	Maritime Administration of Panama
MARPOL 73/78	International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78)
MEPC	Marine Environmental protection Committee of IMO
MMD	Merchant Marine Directorate
MOU	Memorandum of Understanding
MRD	Marine Resources Directorate
N	North

NAE	National Authority for the Environment
NMS	National Maritime services
NO _x	Nitrogen oxides
OILPOL	International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL), 1954
OPRC	International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC), 1990
PCA	Panama Canal Authority
PCC	Panama canal Commission
PCC	Panama Canal Commission
PIMR	Panamanian Institute for Marine Research
PMAID	Ports and Marine Ancillary Industries Directorate
PSC	Port State Control
SD	Seafarers Directorate
SDR	Special Drawing Right
SECNAVES	Former Maritime Administration (Consular and Vessels Section)
SOLAS	International Convention for the Safety of Life at Sea (SOLAS), 1960 and 1974
SO _x	Sulphurs
STCW	International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
TS	Territorial Sea
TW	Territorial Waters
UNCLOS	United Nations Convention on The Law of the Sea, 1982
W	West
WCSA	West Coast of South America
WCUS	West Coast of United States of America

CHAPTER I

Introduction

The marine environment should not be affected by discharges of cargo or residues of harmful materials from ships. Such discharges from ships have been clearly defined by international instruments. Waste at sea can be observed in different ways. For instance, organic waste, normally biodegradable, inorganic materials, and noxious substances, these could not only be non-biodegradable, but also extremely harmful for species living therein.

Although the discharges in general are prohibited, there are exceptions, given by maximum amounts of substances that can be discharged at sea under circumstances well stated as provisions within those instruments. For instance, parameters as type and concentration of substances, distance from the coast, depth, speed of the ship, and specific areas of navigation, namely sensitive areas, have been adopted to establish those exceptions. Therefore, special attention to supervise this compliance is needed because of the complexity of the situations originated by those parameters. These kinds of situations can only be prevented, and controlled through co-operation between the government, industry, and the citizens. However, it can only be reached if they are instructed to do so. It is true that instructing the society could be the big challenge involving high costs, but using the media as means of information could be possible to raise the interest and animate their participation. Furthermore, the role of the government is to organise and regulate the procedures that are going to be followed first.

The present document has been developed in order to emphasise the actual position of the Republic of Panama within the maritime field, and the shipping

activities. Specifically, the role of the Panamanian government implementing the International Convention for the Prevention of Pollution from ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78).

Indeed, the role of the country has increased taking into account its geographical position, and the existence of the Panama Canal as international maritime route. What is more, activities related with the seaborne trade have also been increasing, considering the services that need to be provided for ships transiting the Canal, or calling at Panamanian ports.

The Panamanian government is organised according to three independent powers: Executive, Legislative, and Judicial. The executive power includes the President and the Cabinet composed by the Ministers. The Legislative power is composed of the legislators representing the main political parties that exist. These are supported by a determinate quantity of voting people who are members of each party. The Judicial power is composed of the local, maritime, and supreme courts. The three powers act together in order to preserve the administrative, political, economic, and social equilibrium at national as well as international levels.

Panama is divided in nine provinces and one region called “Comarca”. The former has a governor representing the executive power whilst, the latter is an indigenous area and is governed by local leaders that have special treatment. They are represented at the government by a person called by them as “Governor”, but this representation is not directly under the executive power, is carried out through the Minister of Government and Justice, which represent them in the cabinet.

The growth of shipping activities within the Panamanian territorial waters as well as the responsibilities of the Panamanian government under MARPOL 73/78 are the reasons to analyse the actions about pollution prevention in order to preserve the marine environment.

During the first half of this century, the number of ships transiting the Panama Canal have increased by four times, representing an increasing of five times in the quantity

of cargo transported. Almost the same rate of increase was noted during the second half. While during the 50's the average number of ships transiting the Canal was 7,645 ships per year, during the 90's it was about 12,602 ships per year. That means that it has increased by 64.8 percent. At the same time, it is necessary to consider the cargo involved in such transits.

Since the 50's, the average number of cargo transported through the Canal has also increased but not at the same rate. The average of long tons transported increased by 324.3 percent. This huge difference in growth is due to factors such as variations in ship size, modernisation of the Canal operations, improvement in scheduling of transits, and opening of new routes including important trade centres and demand around the world.

The Panama Canal has established an international characteristic size for ships, namely Panamax Size given its structural capacity. It is still important to consider that ships of that size can carry a significant amount of substances putting at risk the marine environment. This document is not intended to alarm the public knowledge. Instead, it is looking for the public awareness through the information.

On the one hand, in MARPOL 73/78 there were improvements in the requirements concerning safety and environmental protection measures on board ships. This convention request from parties its enforcement within their jurisdictional waters having been incorporated as national legislation. On the other hand, the investments have been done to offer better services and the benefits from those services are enough reasons to establish procedures to prevent the risk of pollution.

The threats on the marine environment posed by ships should not only be seen from the point of view of those intended to cross the Canal, but also from those calling at Panamanian ports. What is more, some of the ships that navigate only one of the coasts without transiting the Canal are bigger in size with a capacity of carrying harmful substances. Cases in point are those ships that use the oil pipeline across the isthmus. Other approach the Caribbean coast transporting oil and oil products to and from the refinery located nearby the Colon City.

1.1 The knowledge

Developing the present document, the following questions arise regarding measures taken by the government to prevent marine pollution from ships at first, and to comply with an international instrument as MARPOL 73/78 in the second place.

Do the citizens know the national jurisdiction about territorial waters?

Is it of public knowledge what the rights and obligations of the Panamanian State are in terms of that jurisdiction?

Is it known that shipping activities without the appropriate control and supervision represent a threat for areas where they are carried out?

Are the threats, which put at risk the coastal environment, clearly defined?

Are the particular areas that could be more affected, because of their sensitivity, determined for their protection?

Is the administrative organisation of the government structured to face those responsibilities?

1.2 Objectives

There are initiatives of general interest encouraging the objectives of this paper. The author believes that threats posed by ships transiting Panamanian territorial waters are very far of being known by the citizens. However, some of their effects have been noted specially as a decrease of income in commercial fishing.

Initiative of general interest, is the instalment of a specialised authority to deal with the analysis of the ecological impact resulting from cases of pollution. Beside this, the authority should be able to respond, but it is important to create the conditions to prevent pollution. Such conditions are in fact documented as recommendations of the regulatory body of the international maritime community, the International Maritime Organisation (IMO). Furthermore, the development of an operational plan to implement the MARPOL 73/78 Convention has to be in co-ordination within

governmental institutions.

It is not a new obligation for the government because the knowledge of those responsibilities was already known, but it is a new challenge facing the forthcoming transfer of the Panama Canal Administration.

Consequently, this dissertation is oriented to contribute to the achievement of the following objectives:

- To analyse threats posed by ships in transit through the Panama Canal.
- To analyse the ecological impact of cases of pollution from ships.
- To analyse the legal framework for the prevention of pollution of the marine environment
- To motivate the creation of an environmental protection culture within the Panamanian society.
- To revise the marine environmental protection programme.
- To establish a programme to prevent or minimise pollution from ships.
- To create the basis to develop an operational plan implementing the MARPOL 73/78 Convention.

1.3 Subject matter

Along this document, the author presents the facts that motivated its development. Those facts correspond to the actual status of the Panamanian State in respect to this convention, for instance, basic facts, geographical data, statistics, legislation, institutions, and activities.

Chapter II presents the jurisdiction, which has been a claim for the Panamanian government and the basic hidrographical conditions of the coastal environment. In the same way, this chapter shows the extent of developments that have taken place throughout the coasts involving shipping activities. The developments have been

presented in terms of ports given that they are the place where the shipping activities concerning ships are concentrated. Moreover, as the shipping activity itself, maritime traffic has been described to concentrate attention to the safety and environmental issues related to the industry.

Because of commodities transported by sea can be of different types, Chapter III focuses on the effects that they could produce if they were released into the marine environment. Here the substances were considered given their generic groups, and the results of them threatening the marine environment. Maritime traffic has also been considered because of the commodities that are mainly transiting the Panama Canal or calling at Panamanian ports, including noxious substances frequently reported of being carried. In addition, other threats related to the movement of goods by sea have been described, for example, port activities or development thereof, the oil industry, and transfer of goods.

The legal framework supporting the prevention of pollution from ships have been examined throughout the chapters IV and V, but the former relates to those of international scope, while the latter refers to national legislation. Not only was the MARPOL 73/78 Convention considered but also many other instruments that support its implementation. It is because the supporting instruments allow a better understanding of its objectives as well as financial compensation for those who suffer the breach thereof. In addition, other instruments promote co-operation and assistance between parties, and determine strategies and procedures in order to achieve its objectives. The regional agreements that are mentioned in this chapter demonstrate that countries believe in reliable joint work. Although the Panamanian government is not a party to some of those instruments, the knowledge of their existence is important to awaken the awareness and understanding of the need of joining them.

Finally, Chapter VI reveals how the Panamanian government has been structuring its administrative organisation in order to face the responsibilities implementing the MARPOL 73/78. Beside this, the efforts made by the administration have been highlighted from the point of view of the State as Party, and its actions in relation to

such implementation.

1.4 Constraints and limitations

Since, the governmental system in Panama is carried out through the three powers, legislation is a competence of the executive power. It is done through its components, and those agencies connected to the central government by economical means. It is true that a sovereign State has the prerogative to manage its national legislation in accordance with its national policy and interest. For the Panamanian government, these functions have been the responsibility of the legislative power. These can be suggested by different sources such as the executive power following initiatives of its cabinet, autonomous agencies as programs looking for improvement in their fields, and representatives of different political currents as response to social and public interests.

Whatever the way the projects reach the Panamanian Parliament, the result after their consideration, when they are fully approved or approved after modifications, is the corresponding national law. This law has national scope, and normally it is delegated to a specific ministry, organisation, or agency for its implementation.

That is the case of international conventions, where they are adopted at international forums. Furthermore, through the Ministry of Foreign Affairs, as part of the cabinet, they are submitted to the Parliament looking for its incorporation into the national legislation. Having done so, they are ratified or acceded depositing the instrument at the secretariat of the corresponding international organisation.

It was necessary for the author to determine what are the procedures followed by government to delegate function concerning specific convention. It was nearly impossible, given that such an act has been a customary procedure since immemorial times. However, in recent times a Law was approved whose functions were conferred to the Ministry of Foreign Affairs having the prerogative to designate

the appropriate governmental entity to deal with each international treaty or agreement. It was done by May 10, 1999.

Regarding the MARPOL 73/78 Convention, functions concerning its implementation were covered by several institutions, for instance, the Port Authority dealing with pollution control, and Consular and Vessels Section (SECNAVES). Both were subordinated to different ministries. It was very difficult to locate the focal point, even though when actually they were joined under the same Authority.

On the one hand, the Port Authority was only dealing with cases of pollution inside the port areas, while the SECNAVES was only dealing with the certification of ships under Panamanian Flag. On the other hand, the Panama Canal Commission (PCC), who was in charge of the Panama Canal Waters responsibilities, has been responsible for the pollution prevention activities since the opening of the Canal inside that area. This situation made it difficult to find information concerning the specific task performed by them, and to determine the procedures used to fulfil their obligations.

However, except for the PCC, the others have no written procedures neither their organisation, nor their action plans. The only way to obtain information was through personal communication with some of the public servants belonging to such departments.

In another frame, it is important to consider that the time given by the University schedule to collect materials for developing this paper coincided with a difficult period when Panamanian administrative offices were affected by long holidays. This situation was the most important constraint given that the places for research were close at that time. Although it was not only because of the limited working hours, but also because of pressure in time for people really involved in pollution matters.

It can be noted that the objective of this paper was to develop a guide to the implementation of this convention, following international guidelines. However, during the research, most of the necessary knowledge on this matter was already

known by the responsible departments of the Panamanian Maritime Administration. Therefore, it was necessary to emphasise the existence of those international instruments, and the national legislation that should be used to prevent pollution from ships in Panamanian territorial waters. In the same way, it was needed to change its focus giving it one in which the main aspects were clear in terms of failure in implementation. Therefore, activities supporting the MARPOL 73/78 Convention have been compared between the actual ones and those that can demonstrate a proper implementation.

1.5 Strategy and methods

After the formulation, this investigation has been designed based on a historical description and the contrast with the present time within the Panamanian administration. The descriptive focus is specifically related with the organisational and operational structure of the governmental entities, which are involved in the marine sector and environmental matters.

It is not enough to determine which the legal regimes are that mark the way to continue, but also to determine which is the degree of responsibility that concerns each one of the said institutions. Within the experimental field it is necessary to identify the factors related with the final solution of the problem, either because they act against the normal development of the activities, or because they act in benefit of them.

Data from previous years has been evaluated in order to determine the degree of growth experienced by the government about responsibility on marine environmental pollution resulting from shipping activities. The evaluation included the majority of the international agreements signed by the Republic of Panama and the willingness to maintain the state of preparedness and control required avoiding violations.

Data from previous years has been evaluated in order to determine the degree of growth experienced by the government about responsibility, protecting the marine environment of pollution from shipping activities. The evaluation included most of the international agreements signed by the Republic of Panama and the willingness to maintain the state of preparedness and control required avoiding violations.

Considering the analysis carried out in function of the activities of control concerning prevention of pollution of the marine environment from ships. The most important focus of this document is that it criticises and shows the existent flaws in the system of the administration. These flaws have maintained the development of the activities of control and surveillance in a state of hibernation since the economic has always had more weight than the social values and even more than the environmental aspects.

CHAPTER II

Geographical position

2.1 Basic facts about Panama

Panama lies between Central and South America, bordered by Costa Rica on the west, Colombia on the east, the Caribbean Sea to the north and the Pacific Ocean to the south. It is a small and narrow country between 51 and 135 km. wide, located between latitudes 7 to 10 N, and longitudes 77 to 83 W. (See Figure 1)

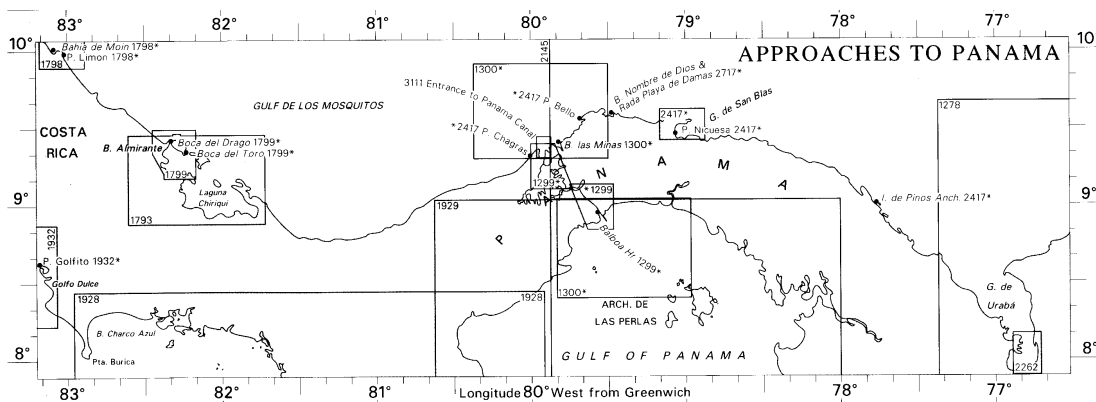


Figure 1: The Republic of Panama, geographical location.

The country has 1160 km. of Caribbean and more than 1690 km. of pacific coastlines. The total land area is approximately 77,082 km², which is slightly smaller than South Carolina, United States of America.

A big mountainous chain divides this country into two plains, one on the Caribbean

side with jungles and the other on the pacific side with many forest areas.

The existence of mostly plains on the pacific side has been the reason for the communities to be established on that coast. The most populated and industrial areas have been developed in these communities, giving to them their current importance. As a comparison, while on the Caribbean side, there are only two areas where high port schemes have been developed, on the Pacific, weather and terrain conditions continue being the key elements permitting such developments. The fact is that there are more areas on the pacific side with the appropriate conditions for developing overseas terminals, increasing the risks of maritime traffic, that is to say high probabilities of pollution from ships.

2.2 Territorial waters

Panama for its geographical, geological, and biological characteristics has the unavoidable duty to defend the minerals, and live resources that underlie in its jurisdictional waters, the seabed, and the marine underground. For these reasons, it would be contrary to national interests to remain isolated in front of the widespread consent that represents the new maritime international order. In fact, it has a privileged geographical position and the convergence of two big oceans, where there are ports of high draught in both seas, as well as reverted infrastructure with high development at the margins of the Canal. It has a merchant fleet that figures among the first of the world, and an inter-oceanic canal that at the end of the present century will be administered totally by Panamanians.

Consequently, the live resources of the seas that surround the approximately 2,988.3 km of coast as well as the mineral resources that underlie the marine underground constitute vital elements for the development of economic activities. In the face of this undeniable activity, the Panamanian State faced the alternative of sustaining the territorial sea of 200 miles established in Law N° 31 of February 2 of 1967. After that, practice demonstrated that states in development are not in capacity to preserve such extension with unilateral actions invoking internal

legislation. On the contrary, it sought protection in a new juridical oceanic regime able to assure the interests of a nation, inexorably linked to the sea. (Montañez, 1996)

The Republic of Panama based its sovereignty on the benefits that could be offered by the marine area that surrounds the Panamanian coasts. Previously these benefits supported the position of claiming the 200 miles territorial sea exercising total sovereignty over this area. During the Third United Nations Conference on the Law of the Sea of 1982, the Republic of Panama changed the claim of this area. Consequently, the determinations of the United Nations Convention on the Law of the Sea III (UNCLOS III) were accepted, including such areas well known as Territorial Sea, Contiguous Zone, and Economic Exclusive Zone. This new convention was approved through Law N° 38 of June 4 of 1996. The Panamanian decision is now based on terms of security, tourism, economy, and maritime traffic, this last due to the fact of permitting transit to ships through the Panama Canal.

During the conference, the Panamanian representative declared that the Republic of Panama has exclusive sovereignty over the **Historic Bay of Panama** comprising the Gulf of Panama, a well marked geographic configuration of coast, which belongs entirely to the Republic of Panama. It is also a large indentation or inlet to the south of the Panamanian Isthmus, where sea waters, super-adjacent to the seabed, and subsoil cover the area between latitudes 7°28'00", and 7°31'00" N, and longitudes 75°59'53", and 75°11'40" W, these being the positions of *Punta Mala* and *Punta Jaqué*, respectively, on the west and east side of the entrance of the Gulf of Panama. This large indentation penetrates deep into the Panamanian isthmus. The width of its entrance, from *Punta Mala* to *Punta Jaqué*, is some 200 km., and it penetrates inland a distance of 165 km. This distance is measured from the imaginary line joining *Punta Mala* and *Punta Jaqué* to the mouth of the Rio Chico east to Panama City. (See Figure 2)

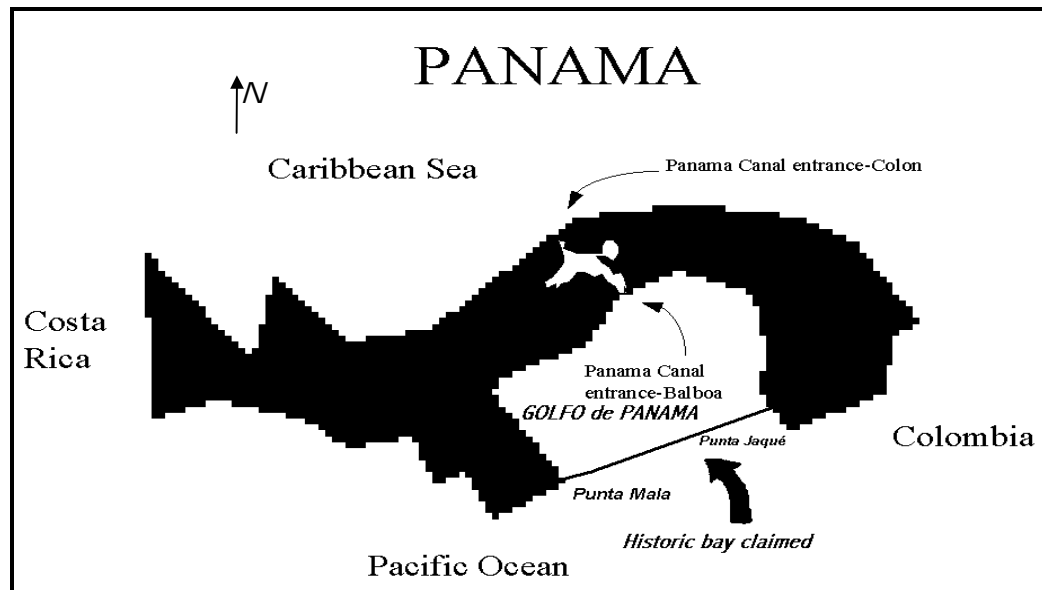


Figure 2: Historic Bay.

Given its present and potential resources, the Historic Bay of the Gulf of Panama is a vital necessity for the Republic of Panama. In terms of both security and defence, this has been the case since time immemorial, and in economic terms, as its marine resources have been utilised since ancient times by the inhabitants of the Panamanian isthmus.

It is oblong in shape, with a coast outline that roughly resembles a calf's head, and its coastal perimeter, which measures some 668 kilometres, is under the maritime control of the Republic of Panama. According to this delimitation, the Historic Bay of the Gulf de Panama has an area of approximately 30,000 km².

In accordance with that declaration, the Republic of Panama claims the delimitation of its historical bay, which comprises the Gulf of Panama in its entirety. The following are the reasons for claiming the Historic Bay.

In terms of security, the waters that surround the Isthmus of Panama have been the field for the development of illegal activities, for example, the illegal traffic of drugs and weapons as well as people. Likewise, illegal fishing has grown in the last decades. A delimitation of where the country could exercise total jurisdiction would

be the ideal frame in order to counteract these activities.

From the economic point of view, the use of the marine resources is a right of the Republic of Panama, in fact, it is a customary right. It is important to highlight that such use is one of the sources of subsistence of the inhabitants that are devoted to the activities of fishing.

From the point of view of tourism, projects for development along the beaches exist on both coasts. These projects should be protected. The most effective way of protecting them is having the possibility of exercising the sovereignty on the waters that surround the Panamanian coasts. This means that it is necessary to guarantee firmly the investments that are carried out in these projects.

Figures 3 and 4 show the offshore limits of the Panamanian territorial waters in accordance with the International Convention on the Law of the Sea, 1982. They were stated under bilateral agreements with the neighbouring countries, using procedures established therein.

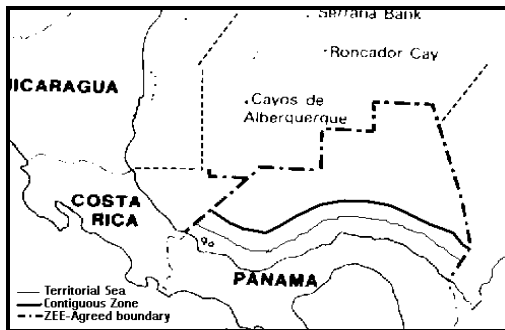


Figure 3: Territorial waters, Caribbean side.

Source: Prescott, 1985, page 342



Figure 4: Territorial waters, Pacific side.

Source: Prescott, 1985, page 244

2.3 Coastal environment

The Republic of Panama is a country located on the Tropic of Cancer. It has been

clearly identified that it has a tropical coastal environment. Although the situation may seem to be similar, it can not be said that the conditions between the Caribbean Sea and the Pacific Ocean are similar. As it is known, environmental conditions are different from place to place.

The Caribbean coast of Panama is near the mountainous chain that runs throughout the country. Therefore, the continuation of land into the sea reaches deep waters between ten to fifteen nautical miles off the coast. Thus, the continental shelf ends very close to the coastline. The main characteristic is the heavy jungle covering the 1160 km. of coast. As is typical in the Caribbean waters, small beaches can be seen with crystalline water as well as small villages located nearby. In addition, in the eastern area, indigenous tribes have traditionally populated the coast.

Hydrographic studies have demonstrated that this coast is bathed in two currents because of the northern equatorial stream. This current travels the coasts of Brazil, Venezuela, and Colombia, where it ramifies itself dividing into two sub-currents. The first travels the islands of the Caribbean toward the north, bathing the Western Indians. The second travels the eastern Caribbean coast of Panama entering from the east and straying to the northwest until it bathes the eastern coast of Nicaragua. Part of this arm rotates toward the south, travelling the coasts of Costa Rica then and entering to the western Caribbean coast of Panama from the northwest. Both currents are found in the proximity of the north entrance of the Panama Canal.

On the Pacific side, a single current exists which bathes the coast of Panama. This current is the result of the Current of Humbolt weakened by the travelled distance. This current comes from the south travelling the coast from Chile, Peru, and Ecuador, where an arm strays toward the east and forms the southern equatorial current of the Pacific Ocean. The other arm continues its course going through the coasts of Ecuador, Colombia, and finally Panama. It comes into the Gulf of Panama. The coast of the Pacific is totally bathed by this arm, which depends on meteorological factors. In some seasons, it is more visible than in others.

On this side, long beaches can be observed, and more populated areas have been

established. Therefore, development in the coastal environment has taken place in the form of land-based industry, shipping, and tourism. These developments did not come alone; some activities related with them interfere with the peaceful marine environment, posing threats thereon.

Table 1: Ports in Panama

Ports in Panama			
N°	Name of Port	Use	Location
(Caribbean side)			
1	Cristobal	Overseas Commercial Port Oil terminal	Panama Canal: north Entrance
2	Coco Solo Norte (Colon Container Terminal)	Container Terminal	Panama Canal: north Entrance
3	Las Minas Bay (Dry cargo) Las Minas Bay (Oil Terminal)	Overseas Commercial Port Oil terminal (Refinery)	Near Panama Canal: north Entrance
4	Manzanillo International Terminal	Container Terminal	Panama Canal: north Entrance
5	Obaldía	Inter-coastal trade	East side
6	Chiriquí Grande	Inter-coastal trade	Laguna Chiriquí Grande
7	Chiriquí Grande Terminal	Oil terminal (pipeline)	Laguna Chiriquí Grande
8	Bocas del Toro	Domestic Port	West side
9	Almirante	Overseas Port for Bananas	West side
10	Almirante	Oil terminal	West side
(Pacific side)			
11	La Palma	Domestic Port	East side
12	Panama	Overseas Port	Capital city
13	Balboa	Overseas Port Oil terminal	Panama Canal: Pacific Entrance
13	Rodman	Overseas Port, Oil	Panama

Ports in Panama			
N°	Name of Port	Use	Location
		terminal	Canal: Pacific Entrance
15	Taboga	Inter-coastal trade	Near Panama Canal Pacific entrance
16	Vacamonte	Fishery Port	Near Panama Canal Pacific entrance
17	Aguadulce	Overseas Port for Sugar and salt	Central area
18	Mutis	Domestic Port	Central area
19	Pedregal	Overseas Port	West side
20	Armuelles	Overseas Port for Banana	West side
21	Charco Azul	Oil terminal (pipeline)	West side

Source: Autoridad Portuaria Nacional, 1996.

Table 1 shows the general location and use of the main ports along Panamanian coast, which have been adapted to offer services in accordance with the developments of world maritime transport. The geographical characteristics of Panama have called the world's attention and have stabilised its status as a key place in world maritime transport since the opening of the Panama Canal in the early 20th Century (Patiño, 1998).

The following Figure 5 shows the geographical location of ports and the corresponding threatened areas.

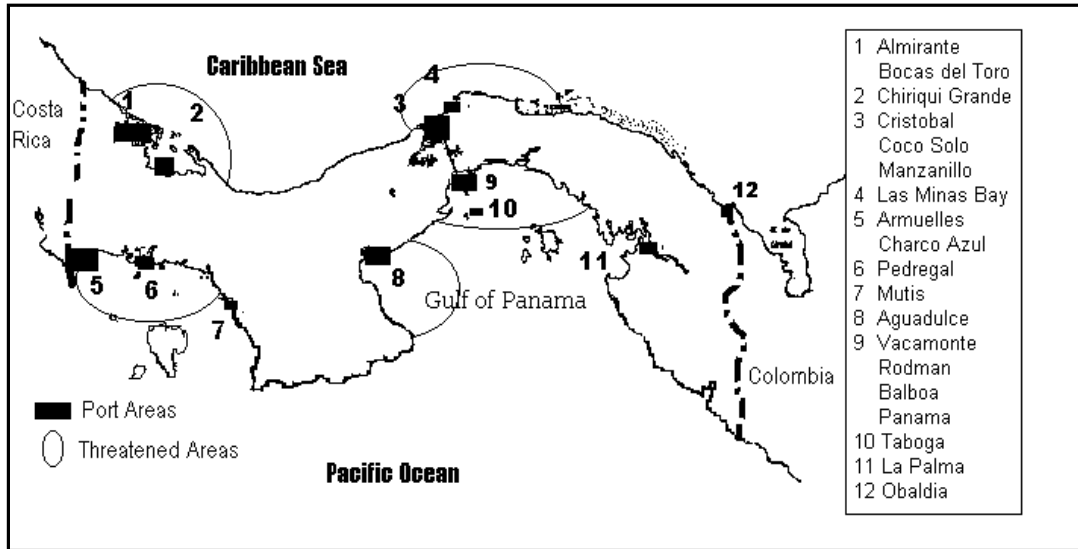


Figure 5: Port areas and threatened areas

As a comparison, the next Figure 6 shows the areas where the fishing activities are concentrated.

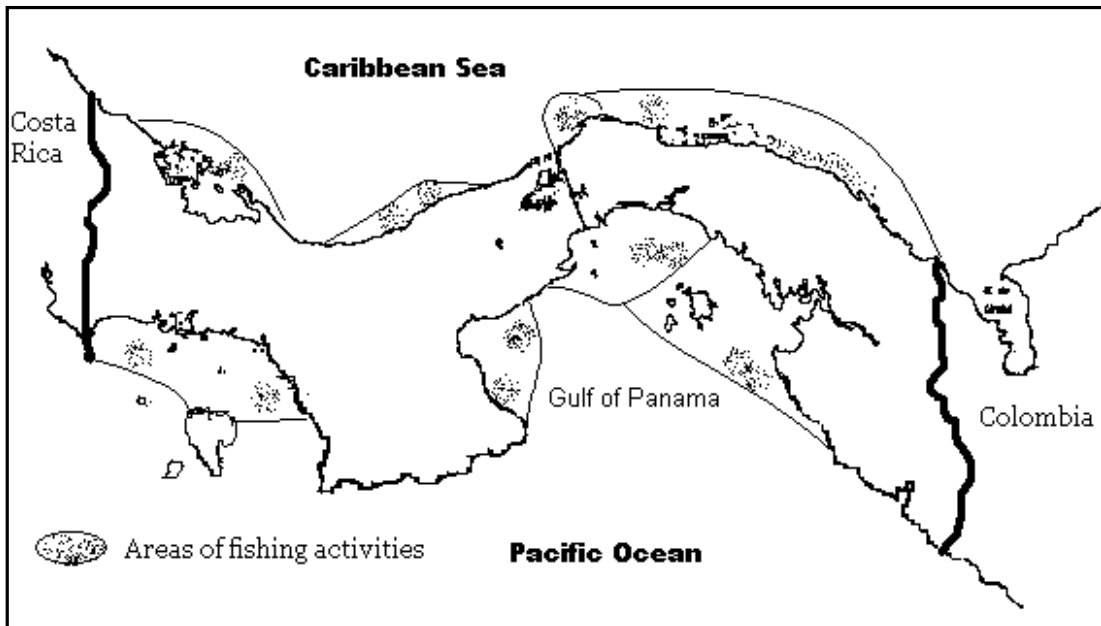


Figure 6: Main-fishing areas

It is true that threats on the marine environment could be posed either by activities carried out in the sea or by activities carried out on land. Inside the frame of this

investigation will be only considered those activities related to ships as sources of pollution. However, harbour operations, port development, and integrated coastal zone management will be dealt with because of their close relation with ships' activities.

2.4 Routes of maritime traffic

As a route of traffic, the Panama Canal presents several alternatives of approach. It is obvious that there only exists one entrance and one possible exit for this route, but the important thing is to determine the specific prone areas to the danger of contamination. It is important to highlight that not only the routes of traffic as such represent threats for the marine environment, but also which routes are most trafficked by the ships that transport dangerous goods.

Next, the major elements of traffic and their historical evolution will be described. These elements are, for example, international routes of trade, types of merchandise, types of ships, volume of traffic, and size of the ships that transit the Panama Canal. The first will be dealt with in this section, while the other four will be specifically described as threats in the next chapter. However, as it is not only ships in transit which represent a threat for the marine environment, they will be considered also whilst docking to national ports. These are not necessarily obliged to transit the Canal, but rather also carry out the trade moving cargo in said ports.

International routes of transit have been defined according to cargo, tonnage, and the places between which the trade is performed. The following are the origin or end places of trade routes crossing Panama Canal.

East Coast of the United States (ECUS)
West Coast of the United States (WCUS)
Canada (CAN)
Asia (A)
Europe (EU)

East Coast of South America (ECSA)

West Coast of South America (WCSA)

As is shown in Table 2, the main routes of transit between these places are:

Table 2: Principal Routes - Fiscal Year 1996

PRINCIPAL ROUTES - FISCAL YEAR 1996				
Long Tons in millions				
Routes	From (I) to (II)	From (II) to (I)	Total	%
ECUS(I) - ASIA(II)	67.1	14.1	81.2	41%
ECUS(I) - WCSA(II)	7.8	11.7	19.5	10%
WCUS/Canada(I)-EU(II)	13.4	3.4	16.8	8.4%
WCSA(I)-EU(II)	7.9	2.7	10.6	5.4%
WCSA(I) - ECSA(II)	6.9	2.4	9.3	5%

Source: Panama Canal Commission, Annual Report 1996

According to this information, the most important route is between east coast of United States and Asia, followed by an increasing trade including both coasts of South America.

Taking this information as starting point, and concentrating on the Panama Canal itself, the following Figure 7 shows the increments in transit. In addition, the corresponding values for the number of transits and volume of cargo transported since the opening of the Canal can be observed in Appendix 1.

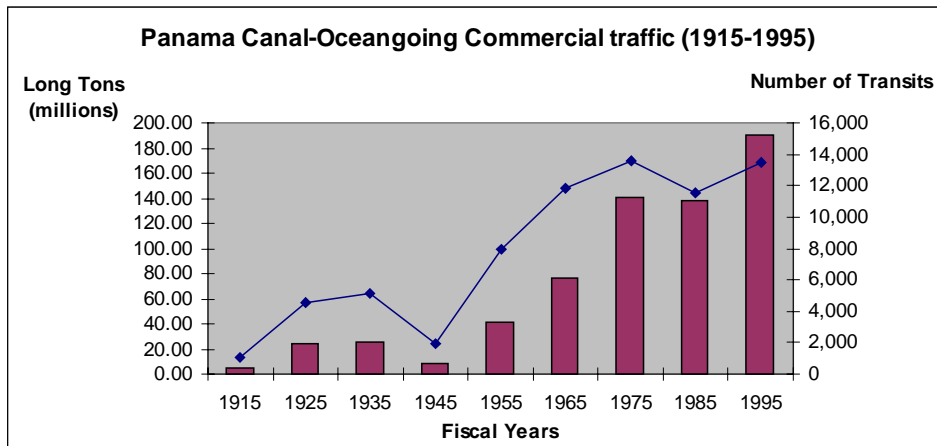


Figure 7: Increment of transits through the Panama Canal

Source: Compendio Estadístico de Tránsito por el Canal de Panamá. Panama Canal Commission. Instituto del Canal, Universidad Nacional de Panamá, 1997.

The capacity of the Canal in terms of number of transits has been limited because only one ship can navigate along its critical point, the Gaillard Cut, either northbound or southbound. Therefore, the number of ships transiting per year has remained

stable. Beyond the year 2002, an increase of 60% is expected because of the project of enlargement that is actually being carried out for this passage. The project will permit two ships to transit through this passage at the same time. Therefore, the volume of cargo will increase as well as the risk of pollution of the marine environment, either from operational procedures, or from accidental discharges.

CHAPTER III

Analysis of threats

3.1 Background

For many years, the oceans have been considered as a big garbage dump. In other words, humans have not been thinking about the oceans as an environment that involves life. The oceans have been thought to be large enough to store wastes or noxious substances that are not useful on land, and therefore there could not be any negative effects. Today it is well known that the oceans represent a very good reserve for the future, and thus it is important to act in order to preserve them.

Some definitions have to be understood in order to identify factors that take part in using the oceans as a garbage dump. First, the process of putting poisonous chemicals or sewage in the water, air, or land that can make the environment dirty and dangerous to live in or to use is called pollution. Pollution can be described in many different ways, but if specifically linked to the oceans, it must be called marine pollution. Next, pollutants are substances that enter the oceans, and their effects on them can be observed as a deterioration of the marine environment, for example, contaminated marine organisms, unsightly beaches or areas along the coast, and a decrease in fishing activities. Evidently, these substances could not be pollutants by themselves, so an intermediary is needed to make this possible. An intermediary can be someone who or something which is known as a polluter.

Among other definitions, the following seems to be the clearest. A United Nations report defined marine pollution as:

The introduction by man directly, or indirectly of substances or energy into the marine environment resulting in such deleterious effect as harm to living resources, hazards to human health, hindrance to marine activities, including fishing, impairment of quality for use of sea water and reduction of amenities (Bishop, 1983).

Although the word 'ocean' seems to refer to the open ocean, far away from the coast, the areas of the oceans close to the coast should not be forgotten. In fact, coastal waters are more sensitive to damages. Consequently, it is more appropriate to call these areas the marine environment, because marine waters can be considered an environment, whether it is an estuary, bay, harbour, coastline, sea, or high sea. To clarify, rivers that can be polluted in the same way are considered principally as a way of transport of waste to the oceans.

Because of their big size, oceans were believed to have a large capacity to degrade all kinds of waste that human beings could produce. Now, the contrary is known. The results of that former thinking can be seen near the discharge points, whether or not it was intentional, particularly in coastline areas, as harm to the marine environment.

Certainly, in order to understand the main idea of pollution of the marine environment, the properties of the pollutants entering the oceans should be known, and what kind of effects they have on the marine life in the oceans.

3.2 Ecological effects by substances

An international group of experts has divided ocean pollutants into the following eight categories:

- Halogenated hydrocarbons
- Nutrients
- Inorganic chemicals
- Suspended solids
- Radioactive substances

- Thermal waste
- Petroleum and its derivatives
- Other organic chemicals

(Bishop, 1983, page 47)

For example, the most important sources of waste materials are:

- Domestic sewage
- Sewage sludge
- Industrial wastes
- Solid wastes
- Shipboard wastes
- Pesticides
- Dredge spoils
- Off shore oil exploration and production wastes
- Oil spills
- Radioactive wastes
- Heat
- Sediment from overland runoff
- Antifouling paint

(Bishop, 1983)

3.3 Pollution and its effects on the marine environment

Pollution is not easy to avoid when considering the oceans as a big receptacle. Because of the large concentrations of people, there is a need to discharge their waste. The normal solution is to dump it into the oceans either directly or indirectly. Whatever method is used, the waste ends in the oceans. It can be observed that the main areas of disposal of waste are located near cities, and the amount of discharged waste material depends on how big the city is.

Therefore, it is perfectly clear that there are many cities close to the seas producing larger amounts of waste materials than ships.

Among the materials or substances entering the sea, some of them can be harmful,

but others can be useful. The harmful substances, which are called pollutants, can be hazardous not only to species in the ocean, but also to all kinds of life including human life, although human beings are not living in the marine environment. On the other hand, the substances considered useful for the marine environment can also be dangerous if they are located in the wrong place. In this case, the action and result will be considered destructive for that specific place.

As was mentioned before, the waste materials can reach the oceans in different ways. The most common ways are through rivers, pipelines, or runoff from agricultural areas, but some countries have developed regulations in order to avoid old existing areas of discharge close to their cities. For example, they have obliged big companies to dump wastes off shore in specific areas, used for that purpose. It is important to say that these measures are regulated under the framework of the London Dumping Convention, which will be explained in chapter IV. This kind of thinking considers the sea as an enormous garbage collector. In some places, these steps to prevent coastal pollution have been self-defeating, since the harmful results are much bigger because these substances are spread in a larger area simply by natural actions.

Waste materials are defined by sources, some of which are, among others, domestic sewage, which reaches the coastal waters by direct disposal; industrial wastes, which come from different activities on land such as manufacturing operations, steel production, pulp and paper manufacturing, inorganic and organic chemical production, and oil exploration, transportation, and use; radioactive wastes, which are considered as a long-term detriment; shipboard wastes and antifouling paints used on the bottoms of ships, which are not confined to a specific area because of the nature of ships' activities.

The effect of pollution depends on the composition of the material or substances disposed of by dumping at sea. This composition can be organic or inorganic. The organic substances may be biodegradable in a short period, but the inorganic substances may take a long period to be assimilated, or to become sediment on the sea floor. In any of these cases, a longer period taken for the substance to

assimilate causes stronger destructive effects on the marine life.

An example of a destructive action is the discharging of fresh water to a specific part of the sea, which can not normally be assimilated. It does not seem to be harmful because it is normal that rivers enter the ocean with large quantities of fresh water. Nevertheless, at the mouth of the river such quantities are assimilated following the normal process of nature. If these kinds of changes take place in another area that is not prepared, the properties of the seawater at that point will change, the salinity mainly. This does not permit normal marine life to survive. In addition, if water is discharged at that point at as high temperatures as those used for cooling electrical and nuclear plants, this will unfailingly cause migration of fish, lack of oxygen, or in extreme cases death of marine life.

Another example of pollution that strongly affects human health is sewage sludge contamination. It finds its way to the oceans through rivers, direct disposal or indirect through the atmosphere. That process facilitates disease transmission. Pathogenic microorganisms are present in the sewage and transferred to the marine species, which are used as food for humans. Some areas around the world have been seriously polluted in this way, and it is prohibited to use these areas either for fishing activities, or for swimming.

It is possible to say, without going into detail that inorganic materials such as metals dissolved in the seawater also strongly affect human beings through the marine species they consume. In others words, the species living in the marine environment are affected by high concentrations of noxious metals that have been found in certain areas, such as the Baltic Sea. Cases in point are mercury, zinc, copper, cadmium, chromium, and lead.

These kinds of pollution already mentioned could be wrongly considered as insignificant in comparison with oil pollution, given that it has called international attention because its effects are highly visible, but all of them are still issues of high importance.

Because of the characteristics of transporting oil, oil pollution seems as if it does not concern anybody. It is due to using the oceans as a way of transport by shipping companies that normally are located out of the affected areas.

Tanker accidents, tanker ballast discharge, oil leaks, land runoff, operational or accidental discharge from refineries, natural leaks from the seabed, disposal of spent lubricants, motorboat activities, and gases emitted by motor vehicles and industries are some of the forms of oil and its derivative that are being taken into the seawater. The effects of oil pollution are much more evident than other kinds of marine pollution. The results can be seen on the coast, and it has lethal effects on the marine species.

There is a special interest in avoiding this kind of pollution, taking into account former cases that needed large investments of money to solve the results of oil spills that have happened around the world.

One of the aims of this paper is to highlight the effects that substances posed on the marine environment could have, if controls are not properly managed. Planning is one of the first steps in order to minimise those effects. Said effects can be analysed by looking at Table 3, which focuses on the results of pollution from ships, which are threatening the Panamanian coastal environment. The threats will be stated in terms of affected activity and process.

Table 3: Effects of threats

Activity	Effects
Ecology	Aquatic and coastal living resources slaughtered Non-lethal effects on other species, e.g., deformation, behaviour changes Chemical and physical changes to the environment, beaches, and coastal areas polluted Species mainly affected: marine birds, larva and juvenile fishes,

Activity	Effects
	and shellfishes
Tourism	Pollution of beaches and sightseeing areas; damages to property and commercial activities in coastal areas
Fishing Industry	Decrease in captures Total or partial loss in aquaculture Social effect: decreasing income for traditional fishing sector
Amenities	Damages to sport vessels Suspension of sporting activities Prohibition of bathing and recreation
Human health	Intoxication Cancerous effects by ingestion of polluted seafood
Coastal Industry	Impossibility of using polluted seawater for cooling of industrial plants, desalinisation, or washing
Governmental Cost	Operational costs for controlling, washing, and amelioration of polluted areas Deterioration of equipment and materials utilised Damages to the coastal and harbour installations Risk of fire, accident, or explosion Maritime safety risks
Others	Costs related to scientific research programmes Costs related to training and information on pollution or spills Insurance costs

Source: CONAMA, 1997.

As it is known, those threats are contradictory to the development and investments that are actually being carried out. It has been observed that the most affected activities of the Panamanian economy are fisheries and tourism, while shipping activities show a steady growth since the beginning of this decade.

Because actions have not been taken by the government in establishing reliable control procedures, costs can not be estimated. In spite of the fact that the government has ratified many international treaties, their implementation has not

been focused properly yet. That is to say, those responsibilities among governmental institutions have not been clearly defined. However, one step ahead in relation with such implementation was the creation of the National Authority for the Environment in 1998, which will be discussed in Chapter V with its functions, objectives, and organisation.

3.3.1 Shipping activities

Merchandise as goods traded through the Panama Canal has been catalogued according to its frequency of transit. The five main commodities are shown in Figure 8. A report presented by the Panama Canal Commission reveals thousands of long tons transiting during the fiscal year 1996. It shows that the five major commodities are grains, petroleum products, containerised cargo, nitrates and phosphates, and coal and coke.

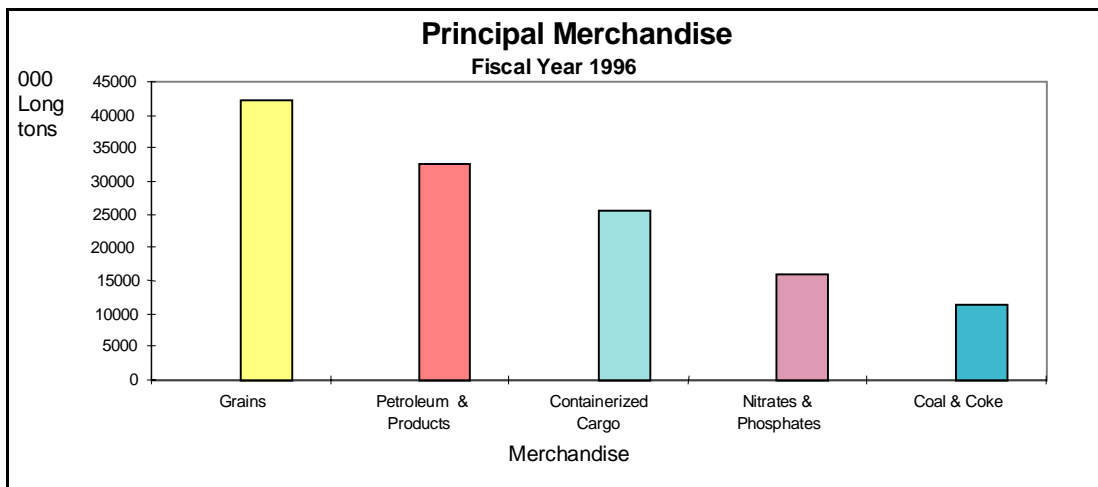


Figure 8: Principal merchandise, fiscal year 1996

Source: Panama Canal Commission, Annual Report 1996.

These five commodities represent 65% of the total cargo transited through the canal in 1996. The importance of the transit of merchandise is based in the demand for such products. For example, the country that had the largest demand of grains was China, and the majority of petroleum was Alaskan North Slope oil destined for gulf coast refineries (Patiño, 1998).

During the past twenty years, transit of these commodities has been affected by different events that have driven their trade, for instance, the opening of the pipeline in the western region of the country, between the provinces of Chiriquí and Bocas del Toro in 1982. Inside the frame of the MARPOL 73/78 Convention, products like chemicals and oil, and its derivatives, among other goods, have maintained a considerable average of traffic. This should be considered in order to create the appropriate conditions for their control and handling in extreme cases, preventing disasters. Such trends can be seen in Figure 9, where they represent approximately 23% of the total cargo transiting the Panama Canal.

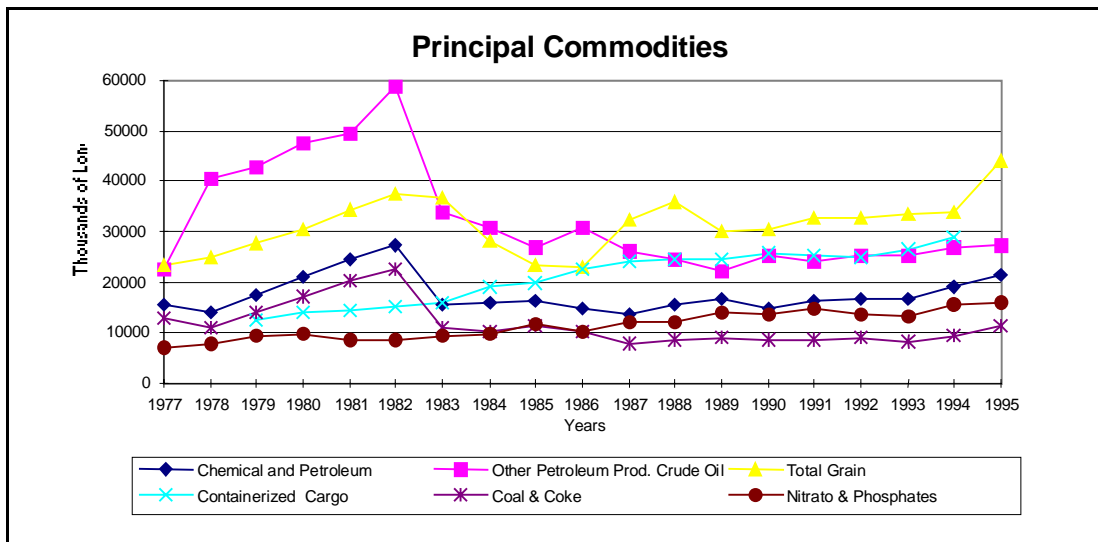


Figure 9: Transit of goods, fiscal years 1977-1995

Source: *Compendio Estadístico de Tránsito por el Canal de Panamá. Panama Canal Commission, Annual Report, 1997.*

Another important factor to be considered is the types of vessels crossing the Panama Canal, or calling at Panamanian ports. The type is closely related to the kind of goods that is transported. Different studies carried out by international organisations have revealed that such ships as bulk carriers and tankers are more likely to have accidents than others. This is due to the highly technical care that they demand, and in most cases, their structural failures are more difficult to detect.

This factor has also been classified under threat issues because of the amount of cargo involved. In fact, according to the annual report of the Panama Canal

Commission of 1996, those types of ships, in terms of tonnage, were the main clients on this route. (See Figure 10)

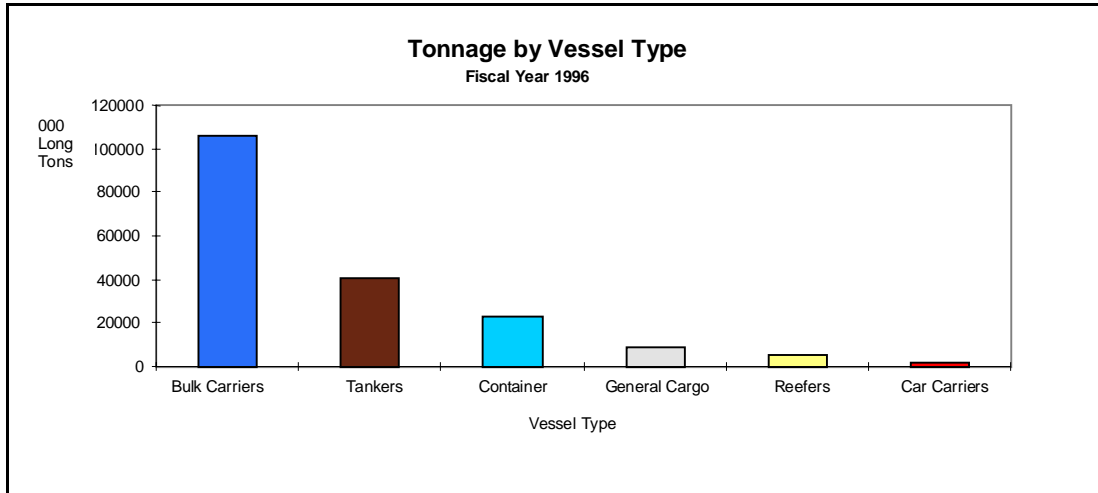


Figure 10: Tonnage by vessel type, fiscal year 1996

Source: Panama Canal Commission, Annual Report, 1996.

Figure 10 also shows a variety of ship types that can use the waterway, but their size is determined by the limits of the canal. These limits are based on to the water level, width, and length existing inside the chambers where the ships are taken in during the passage, for which, the maximum limits of draft, beam, and length overall are better known worldwide as Panamax size.

In spite of that, the considerable size of the Panamax size ships is extremely important, since their capacity of cargo is in such quantity as can produce great damages to the marine environment in the vicinity of the areas where shipping activities take place.

3.3.2 Maritime traffic

Maritime traffic throughout the Panamanian coast is continuous, not only because of the ships transiting the canal, but also because of the services provided through port

terminals. Either for marine transport, or for intermodal practices, Panama has been an important centre of trade. During the last decades, the shipping activities have remained stable, but it is important to note that ships of high risk continue to be the main users of this route of traffic.

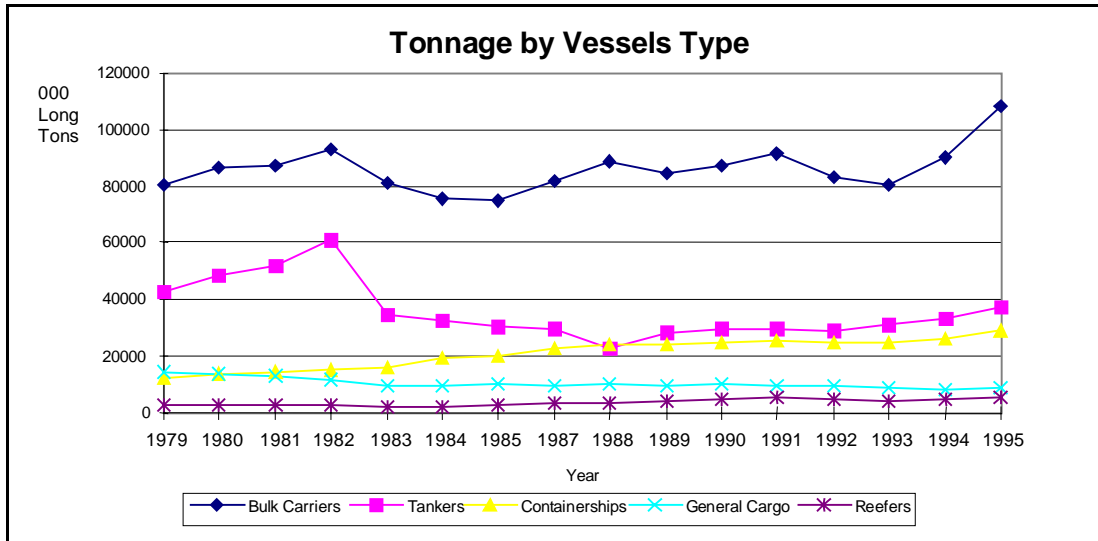


Figure 11: Frequency of transit, fiscal years 1979-1995

Source: *Compendio Estadístico de Tránsito por el Canal de Panamá. Panama Canal Commission, Annual Report, 1997.*

Figure 11 shows the data for the last sixteen years, given in terms of tonnage. The major frequency of passage corresponds to bulk carriers and tankers. Moreover, a report from the Marine Safety Unit of the Panama Canal Commission corresponding to the second quarter of 1997 is presented in Table 4, and it shows the ten most transited chemical and their quantities.

Table 4: The ten most transited chemicals

CHRIS	QUANTITY IN MT	CHEMICAL NAME (IMO CLASS)
1. MBE	200,000	METHYL-tert-BUTYL ETHER (3.1)
2. CSS	95,000	Caustic Soda Solution, 50% (8)
3. EDC	66,000	ETHYLENE DICHLORIDE (3.2)
4. STY	60,000	STYRENE MONOMER (3.3)
5. SFA/OFS/XLM	50,000	SULPHURIC ACID/Fishoil/m-XYLENE (8/3.2)
6. VAM	33,000	VINYL ACETATE MONOMER (3.2)
7. PTN	32,000	PETROLEUM NAPHTHA (3.2)

CHRIS		QUANTITY IN MT	CHEMICAL NAME (IMO CLASS)
8.	EGL	30,000	ETHYLENE GLYCOL
9.	CAN	26,000	ACRYLONITRILE (3.2)
10.	EAL	22,000	ETHYL ALCOHOL (ETHANOL) (3.2)

Source: Henriquez, 1998.

The classification of those chemicals in accordance with the International Maritime Dangerous Goods Code has been included in column three. According to this classification, it can be observed that such quantities represent a hazard for the marine environment and the human health if they were released. Therefore, measures concerning safety during their trade and handling have to be taken in order to prevent or minimise their effect in extreme cases.

3.3.3 Port terminals

Cities all over the world need to develop in accordance with the changes at the world level. This development certainly comes together with creating new structures, which permit taking advantage of natural resources, or a specific area. Panama could not stay behind, because of the proximity of one of the routes of maritime traffic most used in the world, for example, harbour infrastructure development. Whatever the activity is, it will affect the environment, posing to it new threats. The effect of the threats because of port activities will depend on what kind of environment is being affected. Among others, the tropical marine environment that surrounds the Panamanian coasts will be considered, in order to define which the weaknesses could be, in facing the activity therein.

The need to be in accordance with an acceptable economic level makes the Panamanian government develop its economic activities. Most of the cities, due to the nearness to the seas, afford taking advantage of the marine environment. Activities related to the seas are primarily divided into the following areas: extractions of resources existing therein, utilisation to promote services, and investigation of their characteristics for further exploitation. Although these areas of activity seem to be beneficial for mankind, the first two could have negative

consequences for the marine environment, where the level of impact depends on the ways of application, and their controls.

The marine environment is particularly sensitive to human activity. For instance, harbour infrastructure development, and the use of a port itself will certainly pose threats to the coastal environment. This sort of development has been object of changes in functions and uses in order to be in accordance with changes in the technological environment of marine transportation. Normal harbour development needs to consider many activities: ship operation, cargo operation, terminal facilities, operation of transport vehicles, and cargo storage. Moreover, among other substances, mineral resources, organic materials, manufactured equipment, and oil are moved through sea terminals. In addition, port structures that will be placed in the tropical coastal environment will definitely pose threats therein.

Threats posed by port activities in the marine environment will cause a danger to the living resources in the vicinity, and will disturb the normal constitution thereof. Some ecological considerations related with ship operations are disturbances in water motion on the surface as well as in the subsurface. For instance, movement of vessels, manoeuvring, dredging operations with the corresponding disposal of material, and anchoring patterns cause negative effects on the marine environment, as a result of the inadequate use of close coastal zone. Consequently, due to this motion, sediment flow, shore erosion, and silting will increase during operations. Also as ships operate, the likelihood is that leakage coming from tank spaces of vessels, waste disposal overboard, and even grounding or collisions can happen. In addition, air pollution has to be considered, coming from combustion or venting cargo gases and bulk loading operations.

Another dangerous activity is cargo operation. Whether it is dry cargo or liquid cargo, new risks of pollution are expected. The negative effects of this activity will depend on how toxic the substances which compose the cargo are, and what kind of equipment for cargo handling is going to be used. In general, noise and vibrations during operation of facilities can disturb the normal life of species in the environment. What is more, partial discharge of cargo can alter chemical

composition of seawater with permanent or temporary effects.

Besides those operations, oil import and export activities, which are the case at oil terminals, will increase the risk of contamination of seawater with its consequent effect on the marine environment. Because of the characteristics of oil and its derivatives of being natural and organic-based resources, it could be thought that oil could be assimilated by the environment, but in large quantities it certainly will not occur properly. Given the normal operational characteristics of oil terminals, oil spills are bound to occur regularly during connect and disconnect operations as well as due to overflow or rupture of surface floating, flexible riser, or submarine pipelines.

The effect of the oil spills on the chain food is also a threat that will affect the normal behaviour of species. Because of the oil's light density, it and its derivatives remain on the surface affecting firstly one of the links of the chain food. The case in point is the phytoplankton, which can be affected by light interference. On the other hand, the effects on the aesthetic of the area, and the time for biodegradation are characteristics of the oil who need to be taken into account because they reduces the amenities of the marine environment.

Not only the action of oil in spills can affect the waters surrounding port areas, but also water transported by ships from place to place into their tanks can. This water in the form of ballast certainly will bring species from other places, affecting the marine life living in that place. This is the case of ships crossing the Panama Canal, which need to be in certain conditions of seaworthiness. If the ballast water tanks are discharged outside ports or at the Panama Canal entrances, currents or winds will spread its content along the coast.

Besides these activities, new port structure developments have been carried out on the Panamanian coast since 1990. Hence, environmental disturbances from the construction of the port itself or separate port facilities and structures can be observed. Cases in point are area for land transport operations, or cargo storage. In the same way, effects on land and organism that are located at the site can be

observed as a result of ditch excavations, location of foundations, filling operations, as well as bottom sand and gravel removal. Cases in point are the following:

- Manzanillo International Terminal – started in 1991
- Coco Solo North Margarita Island – started in 1994
- Opening of the breakwater east side of Limon Bay in 1996
- Reconstruction of dock 18, Port of Balboa – started in 1998

The threats posed by these projects in such areas will end with the relocation of species. The alterations in the distribution of the marine life are often due to new structures, high concentration of noxious substances, or abnormal activities. It is well known that they frequently result in an imbalance of the concerned ecosystem.

CHAPTER IV

International regulations

4.1 Background

Pollution of oceans and coastal waters is a topic of international concern. Protection of them by means of prevention or control of pollution from ships has been the main issue on which the International Maritime Organisation (IMO) has centred its attention concerning environmental matters. In fact, its mission statement says “Cleaner Oceans, Safer Ships,” the oceans being the medium to carry out shipping activities. It is known that oceans play a vital part in absorbing and emitting atmospheric gases, dissipating energy into the northern and southern latitudes, regulating bio-geo-chemical change cycles, and providing vast reservoirs of life in complex food chains. Protection of the marine environment has been a steady process, which is determined by the joint action of most countries around the world.

In the framework of environmental protection, the earliest intentions of recognising pollution of the seas were actions taken by countries which realised that port basins and harbours were being contaminated by oil coming from ships using such facilities. After that, measures to control the discharge of oil within their territorial waters were adopted, and fines were applied when ships were discharging oil illegally.

This paper is intended to analyse the current implementation of the MARPOL 73/78 Convention in Panamanian territorial waters, as such as it is actually presented regardless of its history. However, it is not less important how it evolved to contain

nowadays the regulations, which exist in its context. After individual measures were introduced by countries that were being affected by oil coming from ships at the end of the First World War, International measures were considered, but no agreement was reached. During the early 1950s, the quantities of oil transported increased, and in the same way the risk of pollution of the marine environment. In 1954, the United Kingdom organised a conference on the subject where the International Convention for the Prevention of the Pollution of the Sea by Oil, OILPOL 1954, was adopted. Later, when the IMO Convention came into force in 1958, the Secretariat functions in relation to the 1954 OILPOL Convention were transferred from the government of the United Kingdom to IMO.

The reason why the 1954 OILPOL Convention was created became weak in the face of the rapid increase in quantities of oil that were being carried by sea during the 1960s. Maritime casualties involving such quantities of oil have not been considered under this convention, independently of the amendments taking place in 1969. For instance, cases such as Torrey Canyon in 1967 demanded more attention from countries to strengthen measures to prevent marine pollution. Furthermore, not only oil was known as pollutant, but also a large number of noxious substances. What is more, other considerations on these matters were powerfully supported by reasons such as accidental and operational discharges.

In 1973, a conference convened by IMO adopted the MARPOL Convention, which was composed of five annexes. It did not come into force until the adoption in consensus of the 1978 Protocol was achieved. The MARPOL 73/78 Convention, as it is known, now has six annexes as follows: Annex I dealing with oil, Annex II with noxious liquid substances in bulk, Annex III with harmful substances in packaged form, Annex IV with sewage, Annex V with garbage, and Annex VI with gas emissions. Consideration of these substances depends on the condition under which they are transported by ships. Although each annex has a different date to have been put into force, the 1978 Protocol established special conditions guiding the implementation of Annex II of this convention. It is important to say that Annexes IV and VI are not in force yet, because the conditions for their entering into force have not been reached yet.

MARPOL 73/78 Convention is believed to have five annexes, but now it is better to say that instead of five annexes, it is actually composed of six annexes. This is because through the Protocol of 1997 adopted on September 26, 1997, the new Annex VI, Regulations for the Prevention of Air Pollution from Ships was added. It consists of three Chapters and six appendices. In this annex, the emissions that have mainly been dealt with are SO_x and NO_x from ships. In the same document has been included the Resolution 8, which states that further actions will be taken to deal also with such emissions of CO₂ that are calling the attention of the international community in the present times. The importance of CO₂ emissions is due to the effect of CO₂ on the ozone layer hole as well as global warming or greenhouse effect, both taken as environmental issues. Because of CO₂ emissions from ships represent 2% of the total world's human production, said level of emissions has been driven the maritime community's opinion, thus, it is believed by many not to have major contribution to the greenhouse effect.

4.2 Regulatory effect of MARPOL 73/78

As many international instruments, the MARPOL 73/78 Convention is an agreement between countries, which are members of the International Maritime Organisation. These kinds of instruments contain regulations, which have to be followed by each party. In other words, parties ratifying the convention shall incorporate into their national legislation the content of such instrument in order to have an appropriate legal base to request people in their territories to comply with it. In the same way, the national legislation shall state measures to ensure its understanding, compliance, enforcement, control, and chastisement upon violation.

This convention, resulting from an ambitious process as described before, is mainly a technical instrument dealing with the operation of ships. Although it started by focusing on pollution coming from accidental discharges from cargo spaces, the observance of other sources created the need to regulate also ship operation procedures. The fact is that through its regulations, the procedures have been

technically improved, increasing the cost of implementation, not only for shipowners, or operators, but also for contracting parties, which have to provide certain conditions such as waste reception facilities for ships calling at their ports.

In another frame of attention, although resources for the implementation of the MARPOL 73/78 Convention are can be achieved during the process. National public awareness has to be developed among citizens because its effectiveness will closely depend on their co-operation.

4.3 Other international legislation

Pollution at sea is not only the result of shipping activities, but also is from shore-based activities that could provide the necessary conditions to affect the marine environment. For example, under the conception of oceans as a dumping place, wastes generated on land find their destiny at sea. Thus, for that reason the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter (LDC), was adopted in 1972. This convention regulates the discharge of waste in the sea. As is known, this type of action could not be considered under the MARPOL 73/78 Convention since it is not an activity related to the operation of ships. Moreover, the origin of that waste is on land, and the sea is only used as a place of discharge.

In another frame, the MARPOL 73/78 Convention was created to be put in practice by signatory states and the marine international community inside their jurisdictional waters. However, the necessity of dealing with those cases in which these discharges were done in international waters, and due to meteorological or hydrographical factors was almost for sure to affect the coast of a close coastal state, was seen. This was the reason for the adoption of the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (INTERVENTION), 1969. It permits a coastal state to act outside its jurisdiction, if it is determined that a discharge that has happened, out of its

jurisdictional waters is going to affect the interests of that state.

Furthermore, states noticed the high costs that it represented to maintain a team only waiting for a pollution disaster to happen. In addition, it was also noted that some states did not have the resources either to keep those teams, or to give a quick answer to such situations of emergency. It was certainly the sense, which motivated the international community to work on the International Convention on Oil Pollution Preparedness, Response, and Co-operation (OPRC), 1990. It promotes the organisation and the development of the capacity of answer of states in order to act, supported either by regional or international co-operation at the time of an incident.

Other conventions have been the result of regulations existing under the MARPOL 73/78 Convention. These resulting instruments were created in regard to the responsibilities of shipowners toward affected parties, and include also compensation for persons, companies and groups, who act to minimise effects after a polluting incident occurs as well as the prevention thereof. Brief descriptions of these main instruments are explained in the next paragraphs.

The 1969 International Convention on Civil Liability for Oil Pollution Damage (CLC, 1969), as amended by the Protocol of 1992 governs the liability of shipowners for oil pollution damage. It is actually known as the 1992 Civil Liability Convention, and entered into force on May 30, 1996. These two conventions, 1969 and 1992, lay down the principle of strict liability for shipowners and create a system of compulsory liability insurance. The shipowner is normally entitled to limit his liability to an amount that is linked to the tonnage of his ship.

The 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1971 Fund Convention) was amended by the Protocol of 1992, known as the 1992 Fund Convention. It is supplementary to the 1969 and 1992 Civil Liability Convention.

Differences between the old regimes of CLC 1969 and 1971 Fund Conventions in

comparison with the 1992 conventions can be summarised as follows.

- The 1969 and 1971 conventions apply to pollution damage suffered in the territory specifically the territorial sea of a state party to the respective convention. Under the 1992 conventions, however, the geographical scope is wider, with the coverage extended to pollution damage caused in the exclusive economic zone (EEZ) or equivalent area of a state party.
- The definition of pollution damage in the 1992 conventions has the same basic wording as the definition in the original Conventions. The addition of the phrase "for environmental damage, other than loss of profit from impairment of the environment", was for clarification so that compensation is being limited to costs incurred for reasonable measures to reinstate the contaminated environment.
- The 1969 Civil Liability Convention and the 1971 Fund Convention apply only to damage caused or measures taken after oil has escaped or been discharged. These conventions do not apply to pure threat removal measures, for instance, preventive measures which are so successful that there is no actual spill of oil from the tanker involved. Under the 1992 conventions, however, expenses incurred for preventive measures are recoverable even when no spill of oil occurs, if there was a grave and imminent threat of pollution damage.
- The 1969 and 1971 conventions apply only to ships which actually carry oil in bulk as cargo that is to say, laden tankers. Spills from tankers during ballast voyages are therefore not covered by these conventions, nor are spills of bunker oil from ships other than tankers. The 1992 conventions apply to spills from sea-going vessels constructed or adapted to carry oil in bulk as cargo, laden or in ballast, including spills of bunker oil from such ships.
- The limit of the shipowner's liability under the CLC 1969 is the lower between 133 Special Drawing Rights (SDR) per ton or 14 million thereof. Under the 1992 Civil Liability Convention, the limits have been adopted taking into account the tonnage of the ship. The tonnage has delimited three groups in accordance with Table 5.

Table 5: Rates for Limitation of Liability of the Shipowner according to the tonnage of the ship.

TONNAGE	UNIT OF ACCOUNT
Up to 5,000 tons	3 million SDR
Between 5,000 and 140,000	3 million SDR plus 420 SDR for each additional unit of tonnage
140,000 or over	59.7 million SDR

Source: CLC 92 Convention.

- Under the 1969 Civil Liability Convention, the shipowner is deprived of the right to limit his liability if the incident occurred as a result of the owner's personal fault "*actual fault or privity*" (CLC 69 Convention, Art V.2). Under the 1992 Convention, the shipowner is also deprived of this right, with the condition that it has to be proved that the pollution damage resulted from "*the shipowner's personal act or omission, committed with the intent to cause such damage, or recklessly and with the knowledge that such damage would probably result*" (IMO, 1992a). This is not really in favour of the affected party, instead it gives the burden of proof to the affected party, which has to demonstrate that the shipowner had the knowledge that such incident would probably occur.
- Claims for pollution damage under the Civil Liability Conventions can be made only against the registered owner of the ship concerned. This does not preclude victims from claiming compensation outside the conventions from persons other than the owner. However, the 1969 Civil Liability Convention prohibits claims against the servants or agents of the owner. The 1992 Civil Liability Convention prohibits not only claims against the servants or agents of the owner, but also claims against the pilot, the charterer including a bareboat charterer, and manager or operator of the ship. In addition, any person carrying out salvage operations, or taking preventive measures with regard to the situation falls under the same consideration.
- The compensation payable procedure in the 1971 Fund Convention, taking into account conditions under the 1969 Civil Liability Convention, has been simplified by the procedure stated in the 1992 Fund Convention for increasing the maximum amount payable by this Fund.

- Under the 1971 Fund Convention, the shipowner, under certain conditions, is indemnified for part of his liability pursuant the 1969 Civil Liability Convention. There are no corresponding provisions in the 1992 Fund Convention. (IOPCF, 1997)

Similar to these conventions, which apply only for substances included in Annex I of the MARPOL 73/78 Convention. The International Convention on Liability and Compensation for Damages in Connection with the Carriage of Hazardous and Noxious Substances (HNS) by Sea was adopted on May 3, 1996. Although this convention has not entered into force yet, its main objective is to make possible an amount being paid out in compensation to victims of accidents involving HNS, such as chemicals. Besides pollution, it also covers the risk of fire and explosion.

CHAPTER V

National legislation

5.1 Introduction

This chapter is presented in order to highlight the importance of the Panamanian government fulfilling the requirements stated in the international instruments of which it is a signatory party. Since the Panamanian government has been taking part in international forums, and ratifying different international treaties in regard to environmental protection, such related to the marine sector among others have to be implemented, to be in accordance with the expected response. In fact, there are many international treaties needing to be implemented in a proper way, but this paper reflects only those closely related to the MARPOL 73/78 Convention, either for technical implication or for supporting economic reasons. (See Appendix 2: List of conventions and treaties ratified by the Panamanian Government concerning MARPOL 73/78).

Ratifying conventions has been a custom reflecting the international political interest rather than the national concern for responsibilities. It is quite clear that such instruments have been adopted as national legislation, but at the time of being ratified, their implementation remained behind other responsibilities, which demanded less investment. In addition, the disposition of implementing a convention such as the MARPOL 73/78 Convention has been blocked by the economic capability of the state because of the high cost involved.

The next section tries to present in a simple manner what the international

instruments are that have been ratified by Panamanian government and the relation with the activities carried out in order to comply with them. These instruments are only those related to, as well as those whose content has implication for implementing the MARPOL 73/78 Convention.

5.2 Actual legislation

The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, was adopted following the consideration of IMO given that it is a combination of two international treaties. That means that as to the effects of its implementation, first was incorporated into the Panamanian legislation its main body, being the Convention of 1973 itself through Law N 17 of November 9, 1981. Second, as it was convened under IMO, was adopted the Protocol of 1978, being incorporated as Law N 1 of October 25, 1983.

Before this convention and its protocol, the OILPOL 54 Convention had been ratified by the Panamanian government through Law N 63 of February 4, 1963. This was superseded by MARPOL 73, and repealed, according to Article 9 of Law N 17.

Concerning the composition of the MARPOL 73/78 Convention of five annexes, it is important to say that they were ratified in full content at the same time, although Annexes III, IV, and V were referred to as "Optional Annexes" in Article 14 of the convention. Consequently, the dates for entry into force correspond to those in which the IMO conditions were achieved. In the case of Annex IV, such a date has not been achieved yet globally, but the process of implementation is independent for countries that have ratified its content.

As MARPOL 73/78 was modified by the Protocol of 1997, it is actually composed of six annexes. The addition of the new Annex VI, on Regulations for the Prevention of Air Pollution from Ships, is a new challenge for the Panamanian Administration, which has not yet ratified it.

5.3 The MARPOL 73/78 Convention: related national legislation

5.3.1 United Nations Convention on the Law of the Sea (UNCLOS), 1982

Following the interest of the international community in using as much as possible the natural resources contained in the marine environment; this convention was adopted after three attempts to making a consensus among parties. Some countries have not ratified it, although its adoption took place on December 10, 1982. Despite that, as a normal proceeding, its content was incorporated into Panamanian legislation through Law N 38 on June 4, 1995. Panamanian considerations under this convention were stated in Chapter II.

In general terms, the dispositions contained in the Law of the Sea establish a new and wide juridical order for the seas and oceans, also including terms related to the environmental dispositions. In the same way they establish important norms on the environment and apply other important dispositions concerning pollution of the marine environment (CONAMA, 1997).

The legal framework established by this convention determines those jurisdictional marine areas of state parties. This new regime determines the corresponding areas, and the inherent responsibilities. Cases in point are Territorial Sea, Contiguous Zone, and Exclusive Economic Zone. Furthermore, it also state the freedom on the High Seas, which includes freedom of navigation, flying over, and tending cables and pipelines. Besides these activities, other are considered such as freedom of building artificial islands, fishing, and scientific research, as well as the benefits of landlocked states of enjoying accessing to and from the sea as well as freedom of transit.

Another important disposition is that of creating the Area, which corresponds to such, outside of the jurisdiction of any state. The Area involves any resource existing in, at or beneath the seabed, and the Area itself as well as its resources is the common heritage of humankind. In order to organise and control activities in the

Area, the International Seabed Authority was established, which look for the correct administration of the resources therein. Finally, it was determined that all state parties of this convention are members of the Authority.

5.3.2 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (LDC), 1972

Although this convention has nothing to do with operational and accidental discharges from ships, its content is important from the point of view of pollution coming from such acts. This convention was ratified by the Panamanian government through Law N 18 on October 23, 1975. Its implementation resides in the concept that such dumping could be done near the coast, and its effects are bound to have an environmental impact.

5.3.3 International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (INTERVENTION), 1969

The main objective of this convention is to allow countries to take measures in cases of pollution on the high seas given that such pollution is likely to affect their coastal interests. The INTERVENTION Convention was ratified by the Panamanian government through Law N 16 on October 23, 1975. An important consideration acting in such cases is that measures taken to avoid such pollution affecting their interests do not affect the freedom of navigation stated in the Law of the Sea.

5.3.4 International Convention on Civil Liability for Oil Pollution Damage (CLC), 1969, and amendments of 1992

The convention CLC was described before, being composed by the original instrument of 1969 and its amendments of 1992; their differences have also been described. The Panamanian government has adopted a special position facing them. This position implies that being party of the CLC 69, the Panamanian

government agreed to ratify the amendments of 1992 to this convention. This was done through Law N 96 on December 15, 1998. At the same time, the FUND Convention of 1971, and its Protocol of 1992 was ratified through the same law. Furthermore, it was decided to denounce the CLC 69, and FUND 71. Such denunciations are not going to enter in force before May 2000. This will permit the applicability of two regimes during a short period before that date. According to Mr. E. Peñaloza, Permanent Representative of the Panamanian Government at IMO, if this had not been done, the amendments would have come into force when CLC 69 was not applicable under Panamanian legislation (personal communication, June 9, 1999).

Having said that, the incorporation of these instruments into the Panamanian national legislation will allow support of the implementation of the MARPOL 73/78 Convention, given that liabilities will be based in those two new regimes. C. Rios, Department of International Organisations at the Ministry of Foreign Affairs, Panama (personal Communication, March 16, 1999).

5.3.5 International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea (HNS), 1996

The HNS is another convention, which supports the implementation of the MARPOL 73/78 Convention. As described before, it will cover only economic impacts of pollution from substances considered under Annex II of MARPOL 73/78. Unfortunately, it has not been ratified by the Panamanian government yet. There is no information concerning its consideration, but the important point is that through ratifying this instrument, it will be possible to frame liabilities and compensations for damages caused by the Hazardous and noxious substances considered in this annex.

5.3.6 The Basel Convention

Besides the above conventions, other regimes are also applicable in connection to the treatment that hazardous substances receive after use. In this respect, the Panamanian government has ratified the Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal of March 22, 1989 (Basel Convention). This international instrument was approved through Law N 21 on December 6, 1990, and it is mainly applicable in the case of ships transiting the Panama Canal or approaching Panamanian coasts.

Under this consideration, and taking into account the applicability of MARPOL 73/78, the Republic of Panama as a Coastal State has definitely to take measures in order to minimise the risk of pollution posed by such ships during their transit.

Also, the movement of hazardous substances has been considered under Part 113.22 of the Code of Federal Regulations (CFR) Title 35, stating that vessels transporting such kind of substances shall provide that information in advance to the Panama Canal Authorities.

5.4 Other related agreements

As agreements, those regional instruments that have been joined by the Panamanian government have been mainly considered, based on recommendations coming from international instruments. All these agreements have the objective of applying the same principle upon the same situation within a specific region. They denote the high responsibility of the government concerning the need for combating pollution incidents within the region.

In the same way, they also establish co-ordinating measures upon emergencies, and the exchange of information about such emergencies.

5.4.1 Latin-American Agreement on Port State Control, 1992 (Viña del Mar Agreement)

As a regional agreement, this has been adopted, based in the IMO Resolution A.682 (17), by which the intergovernmental body invites governments to establish a co-ordinate system among countries within the same region. The co-operation should be oriented to enhance the supervision measures taken by port states over ships calling at their ports. The aim of this co-operation is to look for an effective action of port states in order to prevent the operation of substandard ships.

However, there is no accurate information concerning the national instrument by which the Panamanian government adopted this agreement as national legislation. It is quite sure that its application at Panamanian ports has taken place since its adoption by the maritime authorities of the region.

At the meeting held at Viña del Mar, Chile, the Panamanian government was represented by the Consular and Vessels Section, the former Maritime Administration. At the same time were represented the governments of Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, and Venezuela. In this context the representatives agreed also on the necessity of a harmonised system of Port State Control and of strengthened co-operation and exchange of information.

It is important to say that this agreement is supported by relevant instruments such as SOLAS, MARPOL, STCW, LL, and COLREG. Special emphasis was placed on the provision that parties of the agreement have to apply those regulations, which they accepted, including the related protocols and amendments. Besides those instruments, Annex 1 of the agreement "Guidelines for Surveyors" includes IMO resolutions such as A.466 (XII), as amended, A.542 (13), A.597 (XV) and MEPC 26(23). These documents have been revoked by IMO Res. A787 (19) "Procedures for Port State Control" adopted on November 23, 1995. Another instruments that were referred to in this annex, and are still in force, are the IMDG Code, IMO Res. A.481 (XII) "Principles of Safe Manning" and annexes, and IMO Res. A.681 (17) "Procedures for Supervising Operational requirements."

5.4.2 Agreement for the Protection of Marine Environment and Coastal Zone of Southeast Pacific Region

This agreement was ratified by Panama through Law N 4 on March 25, 1986. It establishes as a primary measure the protection of the marine environment and coastal zone against pollution. Among other sources of pollution in its Article 3, it considers pollution from ships, or any installation located in the marine environment. Actions thereof can be taken not only within the territorial waters of state parties, but also beyond those limits, if such pollution is going to affect the interests of that coastal state. Actually, this agreement involves many considerations from the MARPOL 73/78 Convention and others from the INTERVENTION Convention, except its content is applicable at regional level, involving co-operation between states.

5.4.3 Agreement on the Regional Co-operation to the Combat against Pollution of the Southeast Pacific by Oil and Other Noxious Substances in Case of Emergency

This agreement, being approved on November 12, 1981, was ratified by Panama through Law N 6 on March 25, 1986. Its content refers to the protection of the Southeast Pacific's marine environment against pollution by oil and other noxious substances in case of emergency. Moreover, its Article IV establishes that parties have to promote and maintain contingency plans to combat marine pollution by oil and other noxious substances. Furthermore, the Protocol, which was approved on July 27, 1983, was also ratified by Panama through Law N 5 on the same date

In the protocol was stated that parties have the compromise of designating the authority through which solicitude and facilitation of assistance has to be arranged. Beside this, such authority has to make an inventory of equipment and technical means in existence to combat pollution, as well as to specify the elements of the national contingency plans stated in Article 4 of the agreement. Finally, parties have also to elaborate regular training programmes.

5.4.4 Agreement for the Protection and Development of the Marine Environment of the Wider Caribbean

This agreement was approved on March 23, 1983, and ratified by Panama through Law N 13 on June 30, 1986. Its main objective is to protect and order the marine environment and coastal zones within the Wider Caribbean Region.

Among other dispositions contained in this document, those in order to prevent, minimise, and control the pollution within the region, and thus related to this investigation, are as follows:

- Art 5 Pollution because of discharges from ships
- Art 6 Pollution because of dumping activities
- Art 7 Pollution resulting from land-based sources
- Art 8 Pollution resulting from activities related to the seabed
- Art 9 Pollution transported through the atmosphere

5.4.5 Protocol of Co-operation to Combat Oil Spills into the Wider Caribbean Region

This protocol was adopted in relation with the Agreement for the Protection and Development of the Marine Environment of the Wider Caribbean. Its main objective is to facilitate a framework for regional co-operation and assistance in the case of an oil spill within the region. Again, as with other agreements, it is looking for preparedness and co-operation among parties, as well as their organisation in preparing procedures on the prevention and combating of such incidents. Into this framework, it also establishes the exchange of information about designated authorities, laws, institutions, and proceedings against such kind of pollution. This protocol was ratified by the Panamanian government through Law N 16 on July 31, 1986.

5.5 Regulatory status of the Panama Canal waters

The condition of country of transit conferred by the Panama Canal is another of the important factors that support the decisions of the Republic of Panama in facing the delimitation of jurisdictional maritime areas. It is very well known that to the entrances of the canal arrive ships from all over the world, but always approaching from specific routes. Ships transiting the canal are considered as “ships in transit”; therefore, they are using the right of innocent passage. However, at the same time, they have similar status as if they were navigating in international waters.

Nevertheless, the right to use the services of the canal depends on the fulfilment of the regulations that have been established. It is obvious that inside this enclosed waterway, ships are obliged to comply and closely controlled by the inspectors. Most of the time, the necessity of fulfilling those regulations should be in accordance with maintaining the appropriate conditions for the safety of the vessel. Sometimes, crews carry out illegal activities that finish in the contamination of the marine environment in the proximity of the entrances of the Panama Canal. Cases in point are changing, or discharging the water of ballast, cleaning tanks of fuel, discharging served waters as well as operations of cleaning and maintenance of the vessel. These activities are not only done when approaching the entrances, but also when anchored nearby.

All these situations give the Panamanian government the full freedom of exercising its rights as a sovereign country in its jurisdictional waters. As a coastal state, it will ensure that the national interests are protected, as is the national industry.

Given the actual status of the bilateral administration of the Panama Canal, the regulations in terms of pollution from ships are mainly given in the following instruments:

- Code of Federal Regulation (CFR) Title 35, specifically Part 113 DANGEROUS CARGO stating application, procedures, and responsibilities
- MARPOL 73/78 Convention, because it is totally included into CFR. Any annex thereto applies to vessels in waters of the Panama Canal beginning the date on which the annex enters into force by its terms.
- Basel Convention
- International Maritime Dangerous Goods Code (IMDG)

About the CFR, any reference to codes, international agreements, or other regulations shall also be deemed to refer to any amendments or additions thereto on or after the date such amendments or additions become effective.

CHAPTER VI

Implementation of MARPOL 73/78

6.1 Background

The main concern in the ratification of MARPOL 73/78 for the Panamanian government is its implementation. As party of this international instrument, coming from its incorporation into the national legislation was accepted the responsibility of enforcing its content. Therefore, the applicability of this legislation will depend on the procedures that have to be stated for its compliance. That is to say, the consideration to be taken into account is the regimentation of such instrument in accordance with national customary procedures: surveillance, inspections, documentation, and conditions based on agreement with other governments.

Whatever the reason is by which the party has been motivated to ratify this convention, it has to be borne in mind the objectives that want to be reached, for example, marine environmental concerns for waters under jurisdiction, well-being of shipowners of ships flying the Panamanian flag around the world, benefits for port areas in controlling pollution from ships, or general environmental concern as a worldwide initiative.

Throughout MARPOL 73/78 there is a wide responsibility given by its technical requirements. It poses obligations on the government as well as gives some privileges. In general terms, the obligations are oriented to avoid the discharge of wastes into the sea, and the privileges give to the party the right to prosecute such offenders to the legislation.

The instruments described in the last chapter give to the Panamanian government the rights and obligations according to the issues that have been considered by them. Far from the intended purposes, their implementation has been truncated either for economic reasons, or due to planning deficiencies that have come about as a result of the political instability during the last decades.

Although, the situation of implementation seems to be uncertain, administrative reorganisation and the creation of new authorities are some of the measures that the government has taken to deal with this dilemma. Besides this, the government is facing the need to define clearly the legal and technical aspects concerning the implementation of the MARPOL 73/78 Convention.

6.2 Governmental institutions

In accordance with the instruments described in the last section, the Panamanian government has designated and in some cases created related institutions to deal with them. This has been done through specific laws, decrees, and resolutions in order to give them the necessary legal support to carry out their responsibilities in the best possible manner. These documents also contain the provisions under which the relationship between them is going to be held, although the appropriate level of relation has not been reached yet.

6.2.1 Maritime administration

The Maritime Authority of Panama (MAP) was established on February 10, 1998 under Law Decree N° 7. The project was proposed by the executive power, and it is the result of the need for reorganisation of maritime activities and reduction of bureaucracy among institutions. Under the new administration are located mainly the General Directorate of Ports and Marine Ancillary Industries, the General Directorate of Marine and Coastal resources, the General Directorate of Seafarers, and the General Directorate of the Merchant Marine. In addition, into this authority

has been created the Panamanian Institute for Maritime Research. The organisational chart is shown in Figure 12 to illustrate the connection between entities and departments.

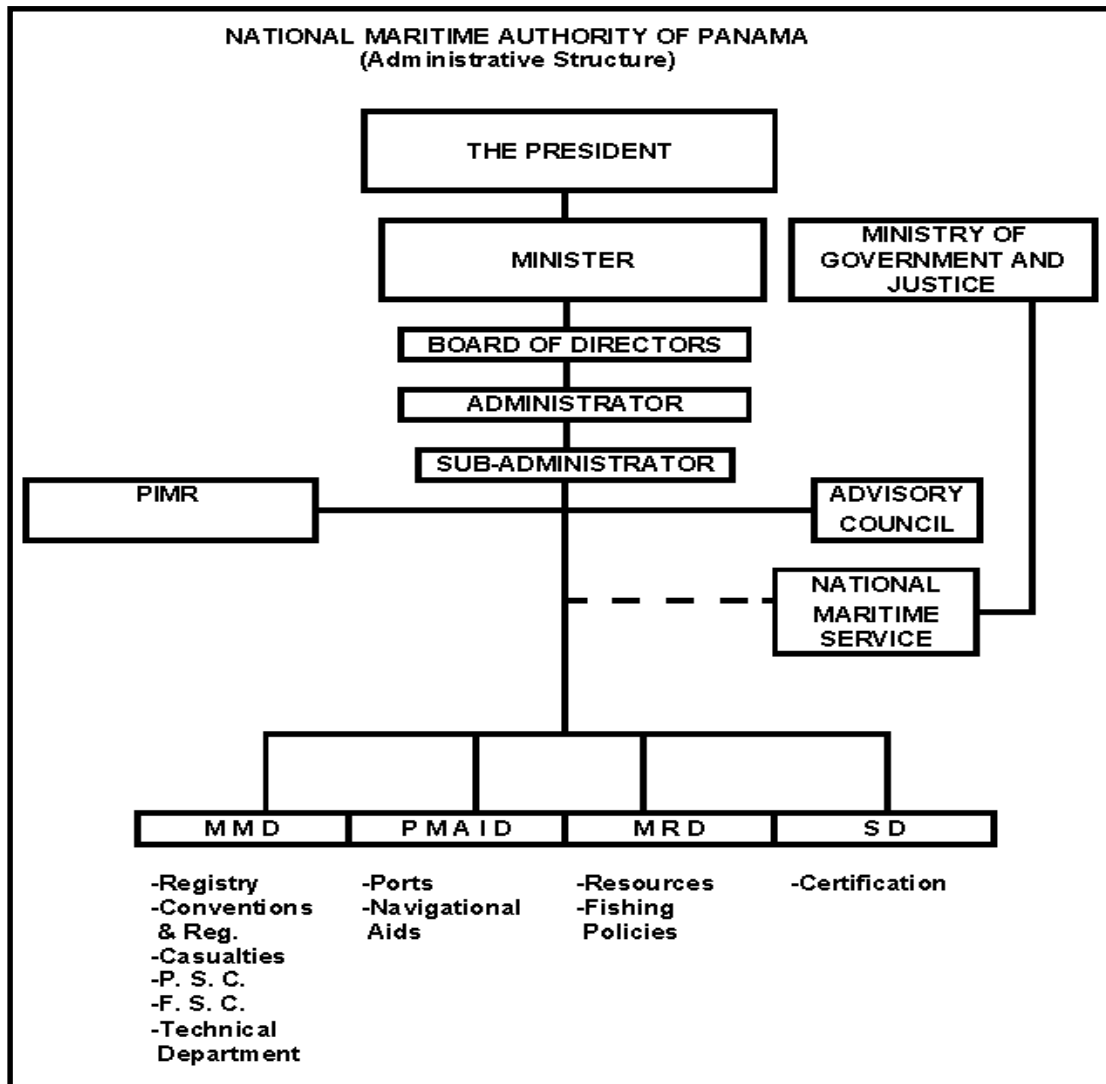


Figure 12: The maritime administration of Panama, main structure

The Maritime Administration, based on this structure, has been created as an autonomous institution, and it is depending of the President through a designated minister, who is appointed for specific period. The administrative organisation consists of four levels, which are the Superior level, the level Services and Execution of programs, the Advisory Council, and the Panamanian Institute for

Maritime Research. The superior level includes the Board of Directors, the Administrator, and the Sub-administrator. The level of services includes the directorates of technical responsibilities. The executive organ exercises its functions through the ministry whose minister presides over the Board of Directors.

The legal representation and full administration fall on the Administrator. Other activity such as internal operations, public acts, and signing of conventions or treaties are his responsibilities, but subject to the authorisation of the board of directors (Panamanian Government, 1998a).

Beside this, the MAP works together with the National Maritime Service, which is under the Ministry of Government and Justice, in accordance with Article 4 Paragraph 9 of Law Decree N 7. This co-operation has been developed because of the need to implement the national maritime policy on the jurisdictional waters, which is done by following the activities carried out by the National Maritime Service throughout the coasts.

Among the directorates, the functions in accordance with their responsibilities have been distributed as follows:

The Merchant Marine Directorate is in charge of the Panamanian Registry of ships, patents, accident investigations, port state control, and Flag State Control. In the same way, it is responsible for processing documents through the consulates around the world. It was a department of the former Consular and Vessels Section "Sección Consular y de Naves (SECNAVES)," which was in itself the earliest maritime administration.

The Ports and Marine Ancillary Industries Directorate has the responsibility for the administration of all ports except those that are being administrated by private corporations. Another responsibility is to provide and maintain all navigational aids in order to ensure the safe approach and access to Panamanian ports, including safe navigation along the coast for transiting ships. Under this directorate is located the Department of Contamination. This department carries out all functions related

to the prevention and control of marine pollution from ships, but up to now these functions have been concentrated to be conducted mainly inside the port areas. Outside these limits, these functions are not being carried out.

The Marine Resources Directorate is mainly dedicated to formulating the policy and regulating on the use of marine, river and coastal resources, focusing on the preservation of marine species. That is to say, it is responsible for creating fishing policies, and supervising the coastal management based on an integrated and sustainable approach.

The Seafarers Directorate is mainly in charge of verifying the fulfilment of national and international regulations related to the competence of seafarers to carry out their jobs. Moreover, as the STCW 95 Convention states its responsibilities as "ADMINISTRATION", it also verifies the correct functionality of maritime education and training centres as well as Classification Societies and shipping companies or operators.

Although the activities related to the maritime sector seem to be distributed among directorates, there is still one that has not been clearly defined, namely, control of pollution, which is one of the points that needs to be strengthened. In the past years this responsibility has jumped from one department to another, because it involves a high cost to be carried out. Beside this, the economic policy in Panama is now oriented to safe economic resources rather than investment to promote environmental protection. Moreover, in the last 10 years several projects for harbour development along both the Caribbean and Pacific coasts have been approved. Consequently, the risk of pollution from ships has increased affecting long distances of coastline. What is more, there are three projects looking to tourism development that are going to be undertaken during the next 10 years. It is strange that these projects are in contrast with the harbour development, because although one of the harbours is for passenger ships, the others are for cargo ships and even more for fuel terminals.

Considering the situation mentioned above, it is supposed that environmental impact

assessments have been carried out for all projects, and in the same way their profitability has been ensured as regards feasibility studies. Now the inconvenience is that the government has not given the responsibility to any institution to verify the fulfilment of corresponding regulations. At this point, it is necessary to think that it could be assigned to the National Maritime Service, which is in charge of enforcing the law on the territorial waters. This institution, whose functions will be explained later, should look at maritime law enforcement at sea, on the coastline as well as in the river areas or internal waters.

6.2.2 National Authority for the Environment

The National Authority for the Environment (NAE) was established on July 1, 1998 under Law N 41. This project was also proposed by the executive power. In its Article 5, it is established that this authority is created as an autonomous institution concerning natural resources and the environment. In this regard, it shall ensure the fulfilling and application of the laws, regulations, and national policy for the environment.

The functions assigned to this authority have been oriented to the preservation of the environment in general. First, it is entrusted with formulating the national policy on the environment and the use of natural resources, in accordance with the plans of development of the state. Besides this, it has been given the responsibilities of directing, supervising, and implementing the execution of said policy, as well as dictating norms and procedures for the preparation, presentation, and evaluation of environmental impact assessments. In a continuous process, this will promote civic participation in the application of the law and prosecution of violators.

As was mentioned previously, within the co-operation with the Ministry of Education, the possibilities for publicising information will be considered, so that the citizens learn the sense and the benefits of the preservation of the environment. Finally, another attribution is that it has the competence of imposing sanctions on the offenders of the laws which regard the environment, and to request of them the

consequent restoration of the areas that have been affected by pollution.

6.2.3 National Maritime Service

After Just Cause Operation on December 20, 1989, the National Navy, formerly part of the Defence Forces of Panama, became the National Maritime Service, a Directorate under the section of Public Security, Ministry of Government and Justice. It was legalised through Executive Decree N 38 on February 10, 1990, which was retroactive from December 22, 1989.

Through this instrument were given as operational functions the following:

- Provide means of transportation for all governmental institutions to co-operate with the socio-economic plans of the government, because of the need to reach rural villages far away from the urban areas.
- Control illegal activities carried out in Panamanian territorial waters, such as smuggling, piracy, illegal immigration, illegal fishing, narcotraffic, or any violation of national laws.
- Protect the security of all Panamanian and foreign people as well as their properties in Panamanian waters in accordance with national and international regulations, conventions, or treaties.
- Carry out search and rescue activities and evacuations resulting from aerial, maritime, or natural disasters.
-

As with other legal instruments at the national level, either responsibilities or operational functions are given in general terms such as "*Control illegal activities...or any other violation of national law*". However, that creating executive decree does not state any relation to pollution of the marine environment, although such an act is a clear violation of national law. It is the same wording, which can be found in the laws creating the Maritime Authority of Panama and the National Authority for the Environment. The point is that none of these national instruments makes any of those institutions responsible for any specific law dealing with the MARPOL 73/78 Convention. This inconsistency creates instability within the

structure because it is difficult to determine which entity is going to take the decision in the first place.

Illegal activities could be allocated within any of the existing laws; it is the duty of those institutions to prevent, control, correct, or punish violators to such laws. Hence, the idea is to save efforts and expenses, carrying out co-ordinated actions, which otherwise will represent waste resources. It is true that all these institutions are related to the marine environment in one way or another. It is also true that the actions to be taken have to be in co-ordination between them, but conducting operations could be disastrous where the leading institution can not be recognised.

6.2.4 Panama Canal Authority

Before 1977, the Panama Canal Authority (PCA) was known as Panama Canal Commission (PCC), and before that as the Panama Canal Company, under total control of the United States Federal Government. Activities, functions, responsibilities, and internal procedures were regulated by the Code of Federal Regulations Title N 35 of the Federal Government of the United States of America. From September 7, 1977 until December 31, 1999 has been a "Transition Period", and it started to be implemented from October 1, 1979. Since then, administrative, operational, and technical functions have been in the process of are being transferred to the Panamanian Government. This transfer will end on December 31, 1999.

Although its functions are purely related to the maritime field, they are mainly focused on canal operation. The complexity of its activities, in spite of being related to and regulated by international maritime conventions are looked at mainly from the commercial point of view rather than from a social, public security, or public administration point of view. However, maritime safety and environmental protection are topics of high importance. As an autonomous institution it will be subordinated to the executive power, and regulated by national legislation, keeping its international neutrality status as it is considered today.

Notwithstanding, environmental protection has been an issue calling the world's attention nowadays. The fact that ships transiting the Panama Canal waters involve activities that put at risk the wellbeing of the surroundings is enough reason to keep measures for safety and prevention of pollution in the first place.

According to Silverio Henriquez, Jr., “accidents involving vessels with dangerous cargo, especially tankers, have been a concern to the Panama Canal Commission for many years”. The main goal for this agency has been to prevent accidents by applying international regulations and circulating marine directives indicating vessels' requirements for transit, but the likelihood of accidents is still there (Henriquez, 1998).

6.3 Activities resulting from national legislation

Considering the implementation of the MARPOL 73/78 Convention, there has been intention by the government in assigning functions to the corresponding entity in accordance with the recommendation of international instruments. Based on the national legislation, and given that control and supervision is needed to comply with each instrument, the government has developed action plans looking for the fulfilment of responsibilities as party of those treaties.

In the following section, the responsibilities of the Panamanian State in implementing the MARPOL 73/78 Convention will be considered. First, it is necessary to define its participation, in relation to the marine environment, in order to determine its duties as flag, coastal, or port state.

6.3.1 Flag state

This position owes to the fact that the Republic of Panama has one of the first merchant fleets in the world, and it is its responsibility to guarantee for the correct fulfilment of regulations by ships flying its flag. The first step in doing so is enforcing

those regulations, before marine pollution takes place. That means, measures have to be adopted in order to verify that such ships comply with them. For example, design, equipment, and safety standards have to be in accordance at least with the minimum requirements of the international instruments. It also relates to the procedures for the safe manning of ships as well as the certification of competence of crews that is needed for the safe operation of ships.

In the case of dealing with ships under the Panamanian flag, the Panamanian State uses two procedures. First, those ships flying the Panamanian flag and visiting Panamanian ports are inspected by surveyors from the national maritime authority itself. This means periodical inspections are scheduled for ships near Panamanian coasts. Furthermore, statutory certificates in relation with the MARPOL 73/78 Convention are issued on behalf of the Panamanian maritime administration, mainly by classification societies. Second, ships flying the Panamanian flag, but trading on routes outside Panamanian territorial waters are inspected by appointed surveyors and controlled by Panamanian consulates around the world.

As flag state of a ship involved in a pollution incident, Article 12 of MARPOL 73/78 states that it is its duty to carry out an investigation. Such investigation will look at the circumstances, and origin of the incident. In such case, if the causes and their analysis are considered as the basis of improving the present regulations, IMO has to be informed of this to determine the necessary changes to the existing and related instruments. This position involves not only investigating such casualties for the purpose, but also receiving information of any incident or action taken by other state party against its ships, being into the territorial waters of that state. This privilege is given by article 5(3) of the convention.

The Panamanian government has taken the necessary measures to investigate casualties involving its ships through appointed investigators, which in most cases represent classification societies that have issued the certificates for specific ship. These investigators submit their reports to the Panamanian maritime administration, and informing the IMO Secretariat is done through the representative office in New York, namely SEGUMAR.

Acting as flag state involves responsibilities beyond MARPOL 73/78, such as those contained in other international instruments. This does not mean that those responsibilities have to be faced separately. On the contrary, they have to be taken into account by the inspectors when supervising, controlling, investigating, or evaluating the condition of the ships under its flag. Such evaluation is bound to determine the capability of the ships, which are going to be certified for a specific purpose, as well as their responsibility facing an incident.

These related responsibilities can be found under other instruments such as UNCLOS, SOLAS 1974, STCW 95, and Load Lines 1966 Convention. In addition, detailed provisions are contained in the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code).

6.3.2 Coastal state

This condition has been incorporated taking into account the adoption of UNCLOS back in 1982. It gives to the states parties the right to enforce their national legislation over the waters limited by this convention, but applying different regimes in accordance with the established areas. However, when those limits have been mainly established to regulate the use of the resources in those areas, the right of the coastal state remains concerning the preservation of the marine environment. The provisions of this convention allow to the coastal state to act against pollution as well as other activities that are considered as illegal, and could affect the interests of that state.

The primary duty of the Panamanian government is to facilitate the safe transit of ships throughout the Panamanian coast, providing the best navigational aids in order to prevent accidents that could result in pollution of the environment. That means that in offering good conditions for safe navigation, it is possible to minimise the likelihood of incidents of both ships on innocent passage and ships calling at Panamanian ports. This responsibility is under the Port and Marine Ancillary Industries Directorate.

The specific duty to verify compliance under MARPOL 73/78 along territorial water is responsibility of the National Maritime Service, which through patrolling the coast makes effective control of activities carried out by ships when transiting nearby or thereon.

Another duty is the preparedness to respond to an incident occurring inside territorial water. This responsibility is closely related to those provisions contained in the OPRC Convention. Such provisions establish the implementation of developed contingency plans to respond to pollution incidents taking place inside Panamanian jurisdiction. These plans could be developed either as individual or as regional agreements. It is important to say that actions taken by following those plans are intended to avoid or reduce the effect of the pollution on a specific area. Although contingency plans do exist, their implementation has not been carried out in accordance with the procedures stated therein. Normally, the reactive response is always governing the process of implementation. In fact, there is no information on training, practices, or proactive activities in order to act against an emergency pollution situation.

In the cases where the pollution occurs inside jurisdictional waters, but it is unlikely to affect the coast, it is the obligation of the Panamanian government to advise any neighbouring country of the possibility of being affected if necessary. This obligation is stated in Articles 194(2) and 198 of UNCLOS.

In other frame, as coastal state is allowed to intervene against a pollution casualty that takes place outside its jurisdictional water, namely, on the high seas, if it is demonstrated that such pollution is likely to affect Panamanian interests. Such a right is given under the provisions stated in the 1969 Intervention Convention

All these considerations and instruments have to be utilised when cases of pollution occur, in order preserve the marine environment and the interests associated with the resources therein.

6.3.3 Port state

The measures to be taken under the condition of port state are supported by the provisions stated in MARPOL 73/78. As provided in Article 5(2) of the convention, every ship calling at a port or offshore terminal of a state different from its flag is required to hold the certificates in accordance with the regulations. These certificates can be inspected by a duly authorised officer in order to verify its compliance, and that there is no condition representing any threat for the marine environment.

Under this provision, the port state activities become preventive measures against marine pollution in the sense that through verifying such requirements, the administration could ensure that operational and accidental discharges could be avoided. The way that the port state activities are carried out will determine the effectiveness of the regulations under MARPOL 73/78. Actually, the responsibility corresponds to the Merchant Marine Directorate of the MAP, which has been enforcing this legislation throughout the territory. However, contrary to the expected results, a low level of port state implementation has been observed due to the cost involved and the incompatibility of no income coming from such activities. On the one hand, opposite to flag state inspections, where the cost has to be borne by the shipowners, the costs related to port state inspection correspond to the government, unless a second inspection is needed. On the other hand, the lack of trained personnel makes it more difficult to achieve the effectiveness of such inspections. It has been said also that the Merchant Marine Directorate does not have enough experienced inspectors, but according to the economic policy of the state, recruitment have been avoided. Taking into account the present situation, existing personnel have to be re-trained, and if it is possible, the functions need to be delegate to other department avoiding overlap thereof.

6.3.4 Prevention and control of pollution

As was mention previously, actions to prevent and control pollution of the marine

environment have to be put in practice. On the one side, taking the governmental point of view, the technical department, which depends on the General Directorate of the Merchant Marine, has dealt with technical aspects concerning inspection of vessels. On the other side, the Panama Canal Commission implements an inspection plan to verify compliance in accordance with MARPOL 73/78, and to avoid pollution incidents within the Panama Canal waters, but only considering ships in transit.

In order to ensure the welfare of the marine environment and the safe operation of the canal, and looking to prevent casualties, procedures for inspecting vessels have been put in practice at first, based on MARPOL 73/78. There is a huge difference between the application of these procedures by the Technical Department and by the Panama Canal Commission, given that the implementation of those plans by the Panama Canal Commission inside its area has been in place since their creation during the mid-seventies. This includes annual revisions and modifications in accordance with new techniques, equipment, and procedures, whereas the Technical Department has been limited by the resources assigned by the state.

The difference that has to be taken into account is the budget that is assigned to each organisation. The budget assigned to the Technical Department depends on the policy adopted by the government on this matter, while for the PCC, these activities occupy one of the main priorities in order to maintain the proper conditions within its area of responsibility. The inspections carried out by the Panama Canal Commission are intended to verify the status of ships that are going to transit through the canal, while those carried out by the Technical Department have national scope excluding ships inspected by the PCC.

It is the responsibility of the Technical Department to carry out inspection of vessels calling at Panamanian ports without restrictions, whether or not the ports are being managed by the government. The Technical Department in representation of the MAP should reach the minimum level of inspections of 15% of the individual foreign ships calling at Panamanian ports, during a representative period of 12 months. It is stated in Section 1.1.3 of Viña del Mar Agreement. However, there are not clear

procedures as basis for achieving this commitment.

The initial aspect that has to be considered in preventing pollution from ships when inspecting them is the control of the certificates that have to be carried on board ship. In relation to MARPOL 73/78, the six annexes establish technical specifications that have been adopted for the purpose of each annex. As was explained before, each annex deals with certain kinds of substances that are produced or carried by ships. Based on that, those specifications relates to design, equipment, and operational procedures that have to be certified, so that control officers know the status of the ships using the Panamanian territorial waters according to different intentions.

The control of certificates is a procedure of not only verifying that the document itself exists, but also observing that such information is being maintained. That means that certificates have to be in accordance with the actual status of the ship. The documents "Certificates" refer not only to the ship itself, but also to the crew who has to have a certain level of competence depending on different factors, which determine the required knowledge. Under the responsibilities given to the port state, it is allowed to carry out a superficial inspection. If it was necessary, because of certain differences found during this superficial inspection, a more detailed inspection to determine whether such differences can be considered as deficiency in relation to a specific regulation can be carried out. An important consideration in this matter is that in carrying out either a superficial or a detailed inspection, efforts shall be made to avoid the ships being unduly detained or delayed. Such situation could result in compensation for any loss or damages suffered by the ships, as is stated in Article 7 of MARPOL 73/78.

The list of certificates that have to be carried on board ships in relation to MARPOL 73/78 is presented in Appendix 3.

6.4 The role of the government and its operational aspects

6.4.1 Planning for implementation

In order to decrease the amount of waste contained at sea, from seaborne sources, initiatives such as those implemented by European countries have overtaken another countries adopting new legislation, for example, the adoption of common procedures for the inspection of vessels to be applied within the EU countries' ports through Paris MOU, as well as the development of joint programmes. A case in point is the Community action plan, which includes the Community Information System, a Training Programme, Studies and Pilots Projects, and a Task Force which looks for the consolidation of the experiences gained among the different administrations (CEC, N.D.).

There is no accurate information concerning planning for implementation of the MARPOL 73/78 Convention in Panamanian Territorial waters.

6.4.2 Reception facilities

About 20% of the marine waste polluting the seas is because of ships operation. Again, because of their size, oceans were believed to have had a large capacity to degrade all kinds of trash, but new compositions of wastes make governments think in terms of new regulations to control pollution. That is the case with the establishment of reception facilities for wastes from ships through the MARPOL 73/78 Convention. In the same way, the International Safety Management (ISM) Code that entered into force from July 1, 1998 requires that ships should include a management plan for marine wastes in accordance with existing regulations. The International Chamber of Shipping has successfully developed a guideline for shipowners about their new responsibilities. Moreover, those plans have to be audited in order to verify their applicability and compliance with them.

Reception facilities have been one issue, beside the necessity of qualified personnel

that has limited the capacity of states to comply with MARPOL 73/78. This activity can be directly managed by the government or not, but in the end the supervision will be its responsibility, to ensure its compliance as party of this convention. It is not an easy task, but measures taken in order to develop these services can be adopted with the co-operation of all involved sectors.

A very early attempt by the Panamanian government was a concession given to a private company through a contract signed on December 3, 1997. The company called *Ocean Pollution Control*, was given rights concerning management of wastes in Panamanian territorial waters.

The following is a translation of the content of the first clause of the contract between the former National Port Authority and the company Ocean Pollution Control:

The National Port Authority grants in concession to the company the right to perform the clean up of pollutants coming from either land-based, or ship-based sources within the Panamanian territorial waters. In addition, the company is authorised for the collection and final disposal of pollutants, waste, garbage, and bilge residues from ships anchored in Panamanian territorial waters. Besides these, those caused by oil spills, or from the truck cistern, or other means inside the port enclosures, including those granted in concession to private operators. (APN, Contract N 2-033-97, 1997)

With this contract, activities of reception facilities, transport, and final treatment were given as exclusive rights to this company for a period of twenty years. Although the service of this company was expected to begin one year ago, its functions have not been carried out yet. In fact, when this contract was signed, the company had no infrastructure to support its responsibilities. What is more, through the same contract, equipment belonging to the National Port Authority was transferred in order to help the company to start operations.

Today, there is no information either on how the company carries out its functions,

or on how wastes are being managed in Panamanian ports. In addition, no information has been obtained concerning what the procedures are which are followed by the government to verify that this company is fulfilling its obligations under the contract.

6.5 The role of industry

National industry has an important role in supporting the policy to prevent the pollution of the marine environment. If the industry deals with shipping activities, measures to avoid pollution from ships should start with the appropriate planning and supervision so that ships transporting their cargo comply with the corresponding regulations. In the same way, facilities have to be provided at ports or terminals to manage the cargo or residues accordingly.

In order to comply with these needs, non-governmental organisations such as the International Chamber of Shipping have promoted the development of ship-specific plans in document form. These are to provide guidelines for the shipping industry, according to the existing conventions and codes concerning safe and clean management.

Under international conventions, maritime industries from parties are compelled to fulfil all the rules; if not, they could be fined. There is some unconfirmed information that the oil refinery, oil pipeline and some other terminals are implementing their own plans to prevent and respond to cases of pollution relating to kind of cargo they handle at their terminals.

CHAPTER VII

Conclusions and recommendations

7.1 Conclusions

After an analysis of facts, there is an understanding of the importance of pollution prevention initiatives by countries to preserve the marine environment. The International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), provides a detailed framework on which efforts can be based to reach an acceptable level of pollution. The legal support for actions taken to reach that objective is the enacted legislation that countries should adopt and apply into their jurisdictions.

Given that such legislation already exists in the Panamanian administrative structure, the following are the findings resulting therefrom:

7.1.1 Structure and legal aspects

In the case of the MARPOL 73/78 Convention, Panama was one of the first countries to ratify its five annexes. The responsibility for their implementation was given to the former Section of Vessels and Consular Affairs (SECNAVES), a department of the Ministry of Finance and the Treasury. The main responsibility was the management of the Panamanian Registry and Certification for seafarers working on board Panamanian vessels. At the same time, given that this convention was closely related to shipping activities, the related functions to accomplish its implementation were supposed to be carried out by this section.

All these proceedings having become as complicated matters when trying to determine those related functions, the need for information obliged the author to visit the offices of this department. This visit was not as productive as was wished. Instead, no real information on the manner these functions were being carried out was found. Actually, that section has been divided, so the Merchant Marine Directorate is supposed to be responsible for pollution matters under MARPOL 73/78. In fact, the Department of Pollution itself belongs to the Port and Ancillary Industries Directorate, also under the Maritime Administration of Panama (MAP).

Although activities related to the implementation of MARPOL 73/78 Convention have been developed through the years, there was no information on either administrative procedures or operational practices following the existing international guidelines. No structure has been found for carrying out neither the general duty as state, nor defined duties for surveyors. For instance, there is no specific department within that directorate dealing with control procedures for foreign ships transiting Panamanian waters. Beside this, there is lack of information about the scope of MARPOL 73/78 in terms of technical aspects required by the convention.

Following the general concept of an international treaty, which is going to be implemented, the process for MARPOL 73/78 concluded when enabling the corresponding national legislation, but other legal aspects have not been considered yet. Procedures have not been established either to determine the direct responsible department implementing its content or to define the way its content is going to be applied.

Because it is important for MAP to make Panamanian ships comply with the convention at the international level, the certification of those ships, according to the required conditions for pollution prevention, has been delegated to classification societies around the world. In contrast, at the national level, activities such as coastal and port state control have not been developed to demand that foreign ships calling at Panamanian ports comply. The only exception to this situation is encountered under the Panama Canal Administration, where procedures have been

clearly stated for ships crossing the canal.

7.1.2 Personnel: training, duties, and operational plans

General information about MAP has demonstrated that there are insufficient personnel to carry out a proper implementation of the MARPOL 73/78 Convention. Moreover, most of the personnel are not immersed in its content. However, there are very good qualified personnel, which are not precisely dealing with duties of inspection, required under Article 5(2) of the MARPOL 73/78 Convention. Furthermore, without consideration of what the levels of training are, personnel belonging to the Merchant Marine Directorate carry out administrative functions with regard to verification of statutory certificates, but mainly oriented to ships under the Panamanian Registry. That is to say, only flag state duties have priority.

During the last ten years, the administration has been taking care of personnel training. They have been instructed in several training centres around the world, but their duties have not been construed to develop a better action plan looking for compliance with the obligations under this convention.

It is also noted that the law by which MAP was created does mention in its Article 4.9 a connection with the National Maritime Service, but this connection has not been regulated in terms of procedures. What is more, activities in relation to pollution prevention performed beyond the coastline by this service are not coordinated with MAP, because of lack of communication between these institutions.

Finally, as was mentioned, many international instruments have been ratified by the Panamanian government, related with pollution matters and the marine environment. It is true that they are not being implemented in the proper way, but it is also important to realise the relationship between them, where there is support from one to another. In that respect, the fact that there are three institutions dealing with marine environmental matters gives as a result situations in which the existing legislation is implemented using different criteria. In some cases, there exist

overlaps in functions resulting in extra expenses for the Panamanian government.

7.1.3 Reception facilities

There is no provision at all regarding reception facilities in the national legislation. Steps have been taken in the attempt to give these activities in concession to private companies, taking into account requirements stated textually in Law 17 and Law 1 by which MARPOL 73/78 was approved.

In any case, those attempts at looking for compliance with the requirements again have not been clearly stated in terms of procedures. The role of the government in ensuring the provision of reception facilities was done by delegating those functions to a private company, but the supervision and monitoring of the activities regarding its operation have not been considered yet. The needs of ships calling at Panamanian ports are not being met. Moreover, due to the lack of reception facilities, ships discharge their residues before entering to port.

There are some terminals providing the service for ships using their facilities, namely oil Refinery, oil pipeline, and some bunkering terminals. They have developed their plans because of the substance object of their trade.

7.2 Recommendations

From the above observations, it seems the maritime administration is failing in its objectives of preventing pollution. The facts previously stated are not intended to diminish its professional capacity, as responsible for the implementation of the MARPOL 73/78 Convention. On the contrary, they have been pointed out in order to look for the best way of correcting them, because the efforts put forth by the government in trying to reach its objectives are recognisable.

The following items try to propose actions in order to improve the actual status of the

implementation of MARPOL 73/78. At the same time, they try to highlight new gateways that could offer better conditions to help the Panamanian government fulfil its obligations in accordance with the international requirements.

7.2.1 Structure and legal aspects

Regimentation of Law N 17 of November 9, 1981 and Law N 1 of October 25, 1983, by which MARPOL 1973 and its Protocol of 1978, respectively, were incorporated into the Panamanian legislation, must be created.

Such regimentation has to include the responsible departments and sections that will carry out the convention duties as well as such duties that based on this convention, have to be applied for domestic trade and ships below convention size. With these provisions, measures looking for prevention of pollution within the Panamanian territorial waters are going to be co-ordinated among such departments and applied to every ship therein.

In addition, this structure has to be comprehensive, taking into account the administrative, technical, and operational practices in relation with other institutions and giving support in developing the responsibilities. There should be a link between shipping, ports, and the institution dealing with marine emergencies. What is more, safety, control, and prevention of pollution are other features that have to be linked in a practical way, by organising action plans to fulfil the obligations under MARPOL 73/78.

Besides the activities and organisations at the internal level, it is necessary to consider the important relation with the International Maritime Organisation, in reporting procedures that have to be followed. The ability to carry out national responsibilities has to be related to international co-ordination in order to standardise those procedures and enhance the exchange of information.

In another frame of consideration, specifically of State duties, the assignment of port

and coastal state duties to the National Maritime Service, which is in itself the institution dealing with cases on the field, is recommended. Since its beginning, the main function of the NMS has been oriented to coastal state duties, but these duties have not been recognised from the structural or organisational point of view of MARPOL 73/78. Instead, They have been considered as a focus only of national security rather than environmental safety matters.

Given that there is a lack of personnel in the MAP to deal with port state control duties, activities carried out by the NMS can include them, although they are going to be performed at national ports.

7.2.2 Training, duties and operational plans

Although, there are personnel with enough qualifications regarding general duties of the state such as those required by international instruments, the demand for more inspectors to carry out port state control functions can not be ignored. The lack of trained personnel does not permit the Panamanian Maritime Administration to fulfil the requirements of the Viña del Mar Agreement of at least 15% of ships calling at Panamanian ports being inspected. This performance is not consistent with the objectives of pollution control stated in the national legislation, so new alternatives can be found in joint task groups involving other governmental institutions.

After an analysis of the actual situation of the Technical Department of the Merchant Marine Directorate, it is easy to understand the factors involved in the process. First, it is supposed that all duties, namely flag, port, and coastal state duties are going to be carried out by this department. With the consideration that only flag state duties produce revenue, either for the state or for the inspector himself, the economic point of view determines, without difficulties, which activity is going to have priority over the others. Second, this revenue is only valid when the duty has been performed in its entirety. In addition, for inspectors, the duty performed represents increment in their personal income. Hence, no inspections, no profit. Based on that, it is easy to understand why there is a general resistance to

participating in training courses. Training courses keep inspectors out of inspections for long periods; thus during these periods the inspectors do not earn anything from inspections. The author believes this is the main reason most of the existing personnel at the Maritime Administration of Panama refuse to take part in upgrading courses when this is weighed against economic factor.

In contrast, activities about duties of the state are seen as such from the point of view of the National Maritime Service. Duties carried out by a servant of this institution can not be seen as profitable; therefore, funds have to be provided by the government to support the activities. However, in carrying out these duties, it is possible to enhance their applicability, because of the "*presence factor*", which plays an important role in enforcing and implementing the law.

By assigning those functions to the NMS, it does not mean that they will be developed separately. What is more, they will be carried out in total co-ordination with the MAP and NAE, in order to avoid the overlapping of functions and extra expenses. Still training is needed, but not conditioned for its profitability. On the contrary, it will be stressed as enhancement for professional support to the Maritime Administration.

7.2.3 Reception facilities

As it is stated in the regulations of MARPOL 73/78, in ensuring the provision for reception facilities, the Panamanian Government has the duty to undertake in order to do so. In doing so, it is not necessary for the government to provide such facilities by itself; instead, terminal operators can be made responsible thereby. However, according to the convention, the government is responsible for the implementation of reception facilities within its jurisdictional waters.

Besides passing over activities of reception facilities to a company, or terminal operators, it is important for the government to supervise and monitor their compliance. The proper way is to develop a plan involving administrative

procedures led by the pollution department, and operational procedures conducted by the National Maritime Service not only within the port areas, but also for ships at anchorage and throughout the coastline. The operational procedures have to be oriented to the detection of violations. In the same way, it is necessary to consider the treatment given to residues after being received from ships.

Reception Facilities as such involve not only the fact of receiving residues of different kinds from ships. They embrace post activities such as treatment of residues and final disposal. The treatment of residues includes the handling, selection of the site where they are going to be dealt with, assessment of wastes, and process or technology to be applied. Furthermore, their final disposal relates to the end of such substances that can not be processed further, and need to be placed where no harm or at least a minimum thereof, can result.

In the process of implementing the MARPOL 73/78 convention, other considerations have to be taken into account to achieve the objectives. After supervising compliance, reports of inadequacy have to be submitted in order to act against violators, either for corrections or for prosecution of cases. Given that such activities have to be supported by the government, inspections of the installations will demonstrate the level of achievement in preventing environmental pollution from ships.

Appendix 1

Historical report on the number of transits and volume of cargo transported through the Panama Canal.

Panama Canal traffic: oceangoing-commercial			
Fiscal year	Number of transits	Long tons of cargo	Tolls revenue
1915	1,058	4,888,400	4,366,747
1916	724	3,093,335	2,403,089
1917	1,738	7,054,720	5,620,800
1918	1,989	7,525,768	6,428,780
1919	1,948	6,910,097	6,164,291
1920	2,393	9,372,374	8,507,939
1921	2,791	11,595,971	11,268,681
1922	2,665	10,882,607	11,191,829
1923	3,908	19,566,429	17,504,027
1924	5,158	26,993,167	24,284,660
1925	4,592	23,956,549	21,393,718
1926	5,087	26,030,016	22,919,932
1927	5,293	27,733,555	24,212,251
1928	6,253	29,615,651	26,922,201
1929	6,289	30,647,768	27,111,125
1930	6,027	30,018,429	27,059,999
1931	5,370	25,065,283	24,624,600
1932	4,362	19,798,986	20,694,705
1933	4,162	18,161,165	19,601,077
1934	5,234	24,704,009	24,047,183
1935	5,180	25,309,527	23,307,063
1936	5,382	26,505,943	23,479,114
1937	5,387	28,108,375	23,102,137

Source: *Compendio Estadístico de Tránsito por el Canal de Panamá. Panama Canal Commission. Instituto del Canal, Universidad Nacional de Panamá, 1997*

Appendix 1 (continued)

Panama Canal traffic: oceangoing-commercial			
Fiscal year	Number of transits	Long tons of cargo	Tolls revenue
1938	5,524	27,385,924	23,169,889
1939	5,903	27,866,627	23,661,021
1940	5,370	27,299,016	21,144,675
1941	4,727	24,950,791	18,157,740
1942	2,688	13,607,444	9,752,207
1943	1,822	10,599,966	7,356,685
1944	1,562	7,003,487	5,456,163
1945	1,939	8,603,607	7,243,602
1946	3,747	14,977,940	14,773,693
1947	4,260	21,670,518	17,596,302
1948	4,678	24,117,788	19,956,593
1949	4,793	25,305,158	20,541,230
1950	5,448	28,872,293	24,430,206
1951	5,593	30,073,022	23,906,082
1952	6,524	33,610,509	26,922,532
1953	7,410	36,095,349	31,917,515
1954	7,784	39,095,067	33,247,864
1955	7,997	40,646,301	33,849,477
1956	8,209	45,119,042	36,153,649
1957	8,579	49,702,200	38,444,128
1958	9,187	48,124,809	41,795,905
1959	9,718	51,153,096	45,528,728
1960	10,795	59,258,219	50,939,428
1961	10,866	63,669,738	54,127,877
1962	11,149	67,524,552	57,289,705
1963	11,017	62,247,094	56,368,073
1964	11,808	70,550,090	61,098,312
1965	11,834	76,573,071	65,442,633
1966	11,925	81,703,514	69,095,129
1967	12,412	86,193,430	76,768,605
1968	13,199	96,550,165	83,907,062
1969	13,146	101,372,744	87,423,430
1970	13,658	114,257,260	94,654,468
1971	14,020	118,626,906	97,380,036
1972	13,766	109,233,725	98,764,959
1973	13,841	126,104,029	111,032,088
1974	14,033	147,906,914	119,422,568
1975	13,609	140,101,459	141,898,218

Source: *Compendio Estadístico de Tránsito por el Canal de Panamá. Panama Canal Commission. Instituto del Canal, Universidad Nacional de Panamá, 1997*

Appendix 1 (continued)

Panama Canal traffic: oceangoing-commercial			
Fiscal year	Number of transits	Long tons of cargo	Tolls revenue
1976	12,157	117,212,266	134,204,402
TQ*	3,037	30,888,300	35,272,300
1977	11,896	122,978,785	163,826,571
1978	12,677	142,518,288	194,773,111
1979	12,935	154,110,866	208,376,741
1980	13,507	167,214,935	291,838,590
1981	13,884	171,221,762	301,762,600
1982	14,009	185,452,332	323,958,366
1983	11,707	145,590,759	285,983,805
1984	11,230	140,470,818	286,677,844
1985	11,515	138,643,243	298,497,802
1986	11,925	139,945,181	321,073,748
1987	12,230	148,690,380	328,372,714
1988	12,234	156,482,641	337,866,211
1989	11,989	151,636,113	327,850,613
1990	11,941	157,072,979	353,725,982
1991	12,572	162,695,886	372,279,573
1992	12,454	159,272,618	365,716,456
1993	12,086	157,703,910	398,232,479
1994	12,337	170,538,437	416,803,062
1995	13,459	190,303,065	460,043,676
1996	13,536	198,067,990	483,114,903
1997	13,043	189,777,856	491,635,113
1998	**n/a		
1999	**n/a		
	695,890	6,099,780,398	9,438,721,087

* Effective 10-7-76, the fiscal year for all U.S. Government agencies was changed from July 1 through June 30, to October 1 through September 30. For continuity purposes, July, August, and September were designated the transition quarter.

** n/a: No available information

Source: *Compendio Estadístico de Tránsito por el Canal de Panamá. Panama Canal Commission. Instituto del Canal, Universidad Nacional de Panamá, 1997*

Appendix 2

List of conventions and treaties ratified by Panamanian government concerning MARPOL 73/78

INTERNATIONAL INSTRUMENT	SCOPE	NATIONAL INSTRUMENT	DATE	OFFICIAL JOURNAL N	DATE OF PUBLICATION
Boundaries Treaty	Bilateral Panama-Colombia	Law N 65	Dec 23, 1924	4,550	Jan 1, 1925
Boundaries Treaty	Bilateral Panama-Costa Rica	Law N 51	May 20, 1941	8524	May 30, 1941
OILPOL 54	Global	Law N 63	Feb 4, 1963	14,820	Feb 19, 1963
INTERVENTION 69	Global	Law N 16	Oct 23, 1975	18,080	May 5, 1976
CLC 69	Global	Law N 17	Oct 23, 1977	18,016	Jan 29, 1976
Treaty on Delimitation of Marine and Submarine Areas	Bilateral Panama-Colombia	Law N 18	Nov 10, 1977	18,610	June 30, 1978
Treaty on Delimitation of Marine and Submarine Areas	Bilateral Panama-Costa Rica	Law N 5	Nov 5, 1981	19,482	Jan 12, 1982
MARPOL 73	Global	Law N 17	Nov 9, 1981	20,545	May 5, 1976
MARPOL Protocol 78	Global	Law N 1	Oct 25, 1983	20,141	Sep 12, 1984

Appendix 2 (continued)

INTERNATIONAL INSTRUMENT	SCOPE	NATIONAL INSTRUMENT	DATE	OFFICIAL JOURNAL N	DATE OF PUBLICATION
Convention on the Protection of the Marine Environment and Coastal Zone of the Southeast Pacific	Regional	Law N 4	Mar 25, 1986	20,534	Apr 17, 1986
Agreement for the Regional Co-operation on Combating Pollution of the Southeast Pacific by Oil and Other Noxious Substances in Case of Emergency	Regional	Law N 6	Mar 25, 1986	20,532	Apr 15, 1986
Complementary Protocol to the Agreement for the Regional Co-operation on Combating Pollution of the Southeast Pacific by Oil and Other Noxious Substances in Case of Emergency	Regional	Law N 7	Mar 25, 1986	20,530	Apr 11, 1986
Wider Caribbean Convention on the Protection and	Regional	Law N 13	Jun 30, 1986	20,613	Aug 7, 1986

Appendix 2 (continued)

INTERNATIONAL INSTRUMENT	SCOPE	NATIONAL INSTRUMENT	DATE	OFFICIAL JOURNAL N	DATE OF PUBLICATION
Development of the Marine Environment					
Protocol of Co-operation Combating Oil Spills in the Wider Caribbean Region	Regional	Law N 16	Jul 31, 1986	20,613	July 10, 1996
Protocol for the Conservation and Arrangement of the Protected Marine and Coastal Zones of the Southeast Pacific	Regional	Law N 11	Jun 18, 1991	21,814	Jun 24, 1991
UNCLOS	Global	Law N 38	Jun 4, 1995	23,056	Jun 12, 1996
Fund 71/92	Global	Law N 95	Dec 15, 1998	23,703	Dec 31, 1998
CLC 92	Global	Law N 96	Dec 15, 1998	23,704	Jan 4, 1999

Appendix 3

Certificates and documents to be carried on board ships in relation with MARPOL 73/78

CERTIFICATES AND DOCUMENTS REQUIRED TO BE CARRIED ON BOARD SHIPS	
NAME	DESCRIPTION
All Ships	
International Oil Pollution Prevention Certificate (IOPP)	An International Oil Pollution Prevention Certificate (IOPP) shall be issued after survey in accordance with regulation 4 of Annex I of MARPOL 73/78, to any oil tanker of 150 gross tonnage and above of any other ship of 400 gross tonnage and above which are engaged to voyages to ports of offshore terminals under the jurisdiction of other parties to this convention. The certificate is supplemented by a Record of Construction and Equipment for Ships Other Than Oil Tankers (Form A) or a Record of Construction and Equipment for Oil Tankers (Form), as appropriate. (IMO, MARPOL 73/78, Annex I, Reg. 5)
Oil Record Book	Every oil tanker of 150 gross tonnage and above and every ship of 400 gross tonnage and above other than oil tanker shall be provided with an Oil Record Book, Part I (Machinery space operations). Every oil tanker of 150 gross tonnage and above shall also be provided with an Oil Record Book, Part II (Cargo/ballast operations). (IMO, MARPOL 73/78, Annex I, Reg. 20)
Shipboard Oil Pollution Emergency Plan	Every oil tanker of 150 gross tonnage and above and every ship of 400 gross tonnage and above other than oil tanker shall carry on board a Shipboard Oil Pollution Emergency Plan approved by the Administration. In the Case of ships built before April 4, 1983 this requirement shall apply 24 months after that date. (IMO, MARPOL 73/78, Annex I, Reg. 26)

Source: SOLAS 1974, Consolidated edition 1997, Part 2, Annex 3, pp 512 to 520.

CERTIFICATES AND DOCUMENTS REQUIRED TO BE CARRIED ON BOARD SHIPS	
NAME	DESCRIPTION
Additional for Cargo Ships	
Certificate of Insurance or other Financial security in Respect of Civil Liability for Oil Pollution damage	A Certificate attesting that insurance or other financial security is in force shall be issued to each ship carrying more than 2,000 tons of oil in bulk as cargo. It shall be issued or certified by the appropriate authority of the State of the ship's registry after determining that the requirement of article VII, paragraph 1, of the CLC Convention have been complied with. (IMO, CLC 69, art. VII)
Enhanced survey report file (Subject to enter in force the amendments adopted by the 1994 SOLAS Conference on May 24, 1994).	A survey report file and supporting documents complying with paragraph 6.2 and 6.3 of annex A and annex B of resolution A.744(18), Guidelines on the enhanced programme of inspections during survey of bulk carrier and oil tankers. (IMO, MARPOL 73/78, Annex I, reg. 13G)

CERTIFICATES AND DOCUMENTS REQUIRED TO BE CARRIED ON BOARD SHIPS	
NAME	DESCRIPTION
In addition, where appropriate, any ship carrying noxious liquid chemical substances in bulk shall carry	
International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate)	Shall be issued, after survey in accordance with the provisions of regulation 10 of Annex II of MARPOL 73/78, to any ship carrying noxious liquid substances in bulk and which is engaged to voyages to ports of offshore terminals under the jurisdiction of other parties to this convention. In respect of chemical tankers, the certificate of fitness for the carriage of Dangerous Chemicals in Bulk, issued under the provisions of the Bulk Chemical Code and the International Bulk Chemical Code, respectively, shall have the same force and receive the same recognition as the NLS Certificate. (IMO, MARPOL 73/78, Annex II, reg. 12 and 12a)
Cargo Record Book	Every ship to which Annex 11 of MARPOL 73/78 applies shall be provided with a Cargo Record Book, whether as part of the ship's official logbook or otherwise, in the form specified in appendix IV to the Annex. (IMO, MARPOL 73/78, Annex 11, reg. 9)

CERTIFICATES AND DOCUMENTS REQUIRED TO BE CARRIED ON BOARD SHIPS	
NAME	DESCRIPTION
In addition where applicable, any chemical tanker shall carry.	
<p>Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk</p> <p>Note: The Code is mandatory under Annex 11 of MARPOL 73/78 for chemical tankers constructed before 1 July 1986.</p> <p>Or</p> <p>International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk</p> <p>Note: The Code is mandatory under both chapter VII of SOLAS 1974 and Annex II of MARPOL 73/78 for chemical tankers constructed on or after 1 July 1986.</p>	<p>A certificate called a Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, the model form of which is set out in the appendix to the Bulk Chemical Code, should be issued after an initial or periodical survey to a chemical tanker engaged in international voyages which complies with the relevant requirements of the Code. (IMO, BCH Code, section 1.6)</p> <p>A certificate called an International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, the model form of which is set out in the appendix to the International Bulk Chemical Code, should be issued after an initial or periodical survey to a chemical tanker engaged in international voyages which complies with the relevant requirements of the Code. (IMO, IBC Code, section 1.5)</p>

CERTIFICATES AND DOCUMENTS REQUIRED TO BE CARRIED ON BOARD SHIPS	
NAME	DESCRIPTION
In addition, where applicable, any gas carrier shall carry.	
Certificate of Fitness for the Carriage of Liquefied Gases in Bulk or International Certificate of Fitness for the Carriage of Liquefied Cases in Bulk Note: The Code is mandatory under chapter VII of SOLAS 1974 for gas carriers constructed on or after 1 July 1986.	A certificate called a Certificate of Fitness for the Carriage of Liquefied Gases in Bulk, the model form of which is set out in the appendix to the Gas Carrier Code, should be issued after an initial or periodical survey to a 92s carrier which complies with the relevant requirements of the Code. (IMO, GC Code, section 1.6) A certificate called an International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk, the model Form of which is set out in the appendix to the International Gas Carrier Code, should be issued after an initial or periodical survey to a gas carrier which complies with the relevant requirements of the Code. (IMO, IGC Code, section 1.5)

CERTIFICATES AND DOCUMENTS REQUIRED TO BE CARRIED ON BOARD SHIPS	
NAME	DESCRIPTION
Miscellaneous Certificate	
Additional certificate for Offshore Supply Vessels	<p>When carrying such cargoes, offshore supply vessels should carry a Certificate of Fitness issued under “Guidelines for the transportation and handling of limited amount of hazardous and noxious liquid substances in bulk on offshore support vessels”.</p> <p>If an offshore supply vessel carries only noxious liquid substances, a suitably endorsed International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk may be issued instead of the above Certificate of Fitness.</p> <p>(IMO, Resolution A.673(16); MARPOL 73/78, Annex II, reg. 13(4))</p>

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