1985

International convention related to the prevention and abatement of marine pollution

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INTERNATIONAL CONVENTIONS RELATED TO THE PREVENTION AND ABATEMENT OF MARINE POLLUTION
THEIR IMPLEMENTATION AND ENFORCEMENT IN GUINEA AND GUINEA-PISSAU

by

Idrissa Sompare

Guinea

November 1985

A paper submitted to the Faculty of the World Maritime University in partial satisfaction of the requirements of the GENERAL MARITIME ADMINISTRATION COURSE.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the UNIVERSITY.

Signature:

Date: 01 November 1985

Directed and assessed by:
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Visiting Professor World Maritime University

Co-assessed by:
Dr. AHMED ABDEL MONSEF
Professor World Maritime University
To my beloved wife, TOURE FATOU MATA, and our dear sons,
    MOHAMED, ABUBACAR and FOGE.
ACKNOWLEDGEMENTS.

I wish to thank Professor Monsef for his guidance and assistance during the preparation of this thesis, and also during my two-year stay in the University. I am also grateful to the other professors of the University for their contribution to my education.

I would like to extend my gratefulness to:
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- The C.D.G. and the Government of the Federal Republic of Germany and the International Maritime Organization (I.M.O.) for my fellowship;
- My family, the people of Guinea and the Government of the Republic for their support.

Finally many thanks to all friends and especially to Mr. Owusu Mensah, my adviser, Mr. Sall Aly Samba, Mr. J. Rath Jorgensen and Mr. A. Camara’s family who have assisted me throughout.
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INTRODUCTION.

Pollution of the seas, which in the 70's was a problem associated only with the industrialized countries of Europe and America, has now gradually become the problem of all nations of the world.

This problem has become increasingly complex since it is difficult to determine with exactitude its negative effect on human beings and marine life in general.

Like an epidemic, it can only be eradicted when its main causes are identified and appreciated after sufficient diagnosis. The world being one family, the only effective way this can be combated is through the process of all nations coming together to exchange ideas and experiences.

Despite the considerable amount of research which has been carried out to prevent and abate pollution of the seas, many pollution risks still prevail. This is mainly ascribed on the one hand to complexity of pollutants and, on the other hand, to the unawareness or ignorance of the authorities of many States, (mostly developing nations) of the serious effects of pollution.

By choosing this subject titled, "INTERNATIONAL CONVENTIONS RELATED TO THE PREVENTION AND ABATEMENT OF MARINE POLLUTION AND THEIR IMPLEMENTATION AND ENFORCEMENT IN GUINEA AND GUINEA-BISSAU ", my intention is not to start again in full the high level work elaborated by some distinguished researchers in pollution matters, but rather to do my best by tackling some essential elements I judge necessary for those who are in charge
of pollution matters and environment protection in the two
countries:
- To understand and to give more attention to pollution matters,
and
- to consider establishing effective legislation in accordance
with the International Standards Regulations and their specific
conditions.

I know straightaway that it is not easy because of some
inherent difficulties in each country.

Guinea and Guinea-Bissau are two small coastal States
located in the Western part of Africa having together roughly
500 km of coastal line.

The two countries have not reached the same level of deve­
lopment as far as maritime affairs are concerned. Guinea has
already started to set up its maritime infrastructure, while
Guinea-Bissau will start in the near future. It can, however,
be said that these two countries have identical problems as
far as the development of the maritime sector is concerned.
These problems can be summarised as follows:

i) Ignorance of the maritime activities considered as a
whole. The consequence of this is the complete absence of a
real policy and an efficient maritime Administration.

ii) Lack of competent and qualified personnel, the small
number of personnel available is not properly employed (bad
management) and

iii) lack of financial resources.
However, these problems notwithstanding, Guinea and Guinea-Bissau have to set up effective machinery to combat Marine Pollution for the following reasons:

a) The nations are located near a main liquid bulk shipping route,

b) They are importers of oil for the development of their domestic industries,

c) There is a high possibility of the existence of oil in the adjacent continental shelves which might be tapped soon.

Many developing countries are parties to various International Conventions but have yet to implement them due to the reasons listed above.

Is it sufficient for a country to be party to a Convention and not implement it? The answer of this question is, of course, negative and I agree with the Secretary of the International Maritime Organization (IMO) when he made the following remarks:

"A number of Conventions, Protocols, Recommendations and Codes of Practices have been adopted containing global technical standards, rules and regulations for the achievement of the I.M.O.'s objectives. But, clearly, the adoption of these global technical standards is not enough. These standards need to be effectively implemented." 1/

Implementation and enforcement mean setting up some effective measures as far as pollution from ships is concerned, both to reduce the amount of oil discharged and to provide against those who accidentally or intentionally discharge oil, and also

in many cases to make the spiller of the oil responsible for the clean-up operations.

From this reality two questions arise:
1) How can a country with limited resources cope with problems related to Marine Pollution of its coastal waters?
2) In addition to that, if the coastal country is unfortunately not a party to some Conventions like the Civil Liability Convention (CLC) and FUND Convention, what will happen as far as the compensation of damages is concerned?

The answers to these questions are the problems I wish to tackle in this Thesis with the aim of submitting to the authorities of Guinea and Guinea-Bissau some views on how to avoid the described situation by following the basic principle, "Prevention is better than cure." Along the same line of thinking particular attention should be given to the international cooperation in that the conventions related to pollution of the seas frequently embody a pledge by the State Parties to promote measures to protect the marine environment within the competent specialized agencies or other international bodies.

Indeed any measure taken separately by a Government of a country will have only a limited scope and measures taken by several Governments, if not co-ordinated, could worsen the problem.

In order to see the law in perspective, I think it is advisable to give in the first chapter of this Thesis a brief account of the reality of marine pollution which will comprise the types, causes and its consequences.

The second chapter concerns the control, prevention and aban-
5.

tement of pollution. In part I will give a brief description of international conventions related to pollution, especially requirements for controlling and preventing pollution. It comprises also overall view of the obligations of a contracting government in the process of controlling marine pollution.

In the third chapter, I will present the reality of the marine pollution in Guinea and Guinea-Bissau, and finally in the fourth chapter I will propose some recommendations and suggestions on how the two countries can set up efficient machinery for the prevention, control and abatement of Marine Pollution in line with the International Maritime Organization's requirements and regulations.
CHAPTER ONE: BRIEF ACCOUNT OF THE REALITY OF MARINE POLLUTION.

1.1 Types and causes of Marine Pollution.

The pollution of the sea originates from various substances among which oil and its by-products represent around a third while the other substances, which are the result of sewage from towns and cities, effluents from factories, pesticides and herbicides used in farming, represent the rest.

All these substances entering the seas whether via direct out-falls and rivers or via run-off from land and sometimes via the atmosphere are very dangerous for both marine animals and human beings.

From the above, one can ask oneself what is the meaning of marine pollution.

According to the UNESCO's International Oceanographic Commission (IOC) and the United Nations Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), this concept is described as, "the introduction by man, directly or indirectly of substances or energy into the marine environment (including estuaries), resulting in such deleterious effects as: harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairing the quality for use of seawater and reduction of amenities." 1/

There is also a similar definition of Marine Pollution in Article I(4) of the United Nations Law of the Sea Convention.

Among the different sources, I will concentrate my efforts on those resulting from shipping activities.

1/ SEBASTAN A. GERLACH, SPRINGER-VERLAG, Berlin Heidelberg N.Y. 1981 "MARINE POLLUTION" (Diagnosis & therapy).
According to the U.S. National Academy of Science, the estimated annual quantity of oil discharged into the sea due to maritime transportation activities was, in 1973, 2.1 and in 1981 1.5 million tonnes. 1/

The total estimated annual quantity in 1973 was 6.1 and 3.2 million tonnes in 1981, including all possible sources, including land-based wastes, offshore production, refineries etc. This means that about 35% of the oil pollution in the seas, at that time, originated from maritime transportation. 2/

Oil pollution from ships originates from two major sources to which the International Maritime Organisation (IMO) gives attention, there are:

i) Operational discharges including oil contaminated ballast and tank washing water, spills at marine terminal, oily water from machinery bilges, fuel oil sludge and oily ballast from fuel oil tanks.

The 1973 estimate concluded that about 85% of the oil discharged from ships originated such operational activities.

ii) Accidental spillages, including both spills due to tanker and non-tanker accidents amounted to an estimated 15% of the total marine oil pollution. According to the International Tanker Owner Pollution Federation (ITOPF), the total quantity of oil spills from 1974 to 1980 was 2,731 thousand tonnes.

1.1a Operational Pollution:

As we know the world's major oil deposits are found a great

1/ IMO, Petroleum in the marine environment (MEPC 17/INF.2).
distance from the industrialized nations which are responsible for the greater part of consumption. Consequently the oil has to be transported many thousands of miles by sea to virtually every country which has a coastline and does not possess its own reserves, as illustrates in Figure 1.

Operational discharges are one of the most frequent types of pollution caused in a variety of ways as described above. Let us look very briefly at what tank cleaning operations consist of.

The problem is that when a crude oil tanker discharges its cargo, a portion of it, which will depend on the type of cargo carried remains in the tanks. After discharge, the tanks must be washed to avoid the following:

i) increasing risk of explosion,
ii) impediment to drainage,
iii) reducing the cargo capacity of the tank, and
iv) incompatibility of the residues with the next cargo.

After washing, the water and oily mixture must be pumped out of the tanks. Until recently the oil/water mixture was not separated before pumping into the sea.

Other forms of operational pollution include the discharge both at sea and in port of raw sewage, crew/catering waste and toxic fuel gases. Control of this type of pollution has to be taken into consideration by the Port State, there being no international jurisdiction problem.

Finally, operational discharges which constitute as much as 85% of the total represent a threat to coastal areas. If not
Fig. 1 MAIN OIL MOVEMENTS BY SEA.

(Source: Institut Francais du Petrole)

Total exports of zone ($10^6 t$)

Sea routes
regulated and reduced, operational discharges may have serious consequences for marine life on a long term basis.

1.2b Accidental Pollution:

From a study carried out on 481 accidents, Bertrand, A. (1981) indicated that the primary cause of tanker accidents is variable according to the type of vessel: Tanker (loaded or not) or barge.

The most frequent causes are:

Grounding (37.4%) and collisions (27.1%) for the loaded tankers, explosions (39.6%) and grounding (27.7%) for the unloaded tankers, and collisions (40.5%) and grounding (24%) for barges.

As far as coastal pollution is concerned, one should not be surprised to see that groundings constitute the main cause of loaded tanker accidents.

The increase of accidents by grounding seems to be related to the increase of ship size. If from the statistical point of view development of the fleet of big tankers (about 320,000 DWT and over) allowed to reduce the congestion of seas and by that the risks of collision, in return the risks of accidents by structural failure and grounding seem much greater.

From the technical side criticisms are frequently directed towards the big tankers as far as their fragility, their weak manoeuvrability and weak margin of buoyancy are concerned.

In conclusion, the causes of major pollution problems in connection with the accidental pollution are as follows:

a) structural failure and grounding,
b) collision,
c) fire and explosion.

For illustrating what I mentioned above, I will give a brief account of the stranding of the "Torrey Canyon" in 1967 and the "Amoco Cadiz" ten years later which came the formulation of various new International Regulations.

I - Torrey Canyon:

The Torrey Canyon was a Liberian oil tanker 297 meters in length. At the time of the loss, she was fully loaded with over 119,000 tonnes of crude oil; her draught was about 16 m and she was proceeding at full speed, about 15 3/4 knots, coming from Mina Al Almadi (Kuwait) to Milford Haven (Wales).

When the tanker ran aground on Pollard Rock a number of cargo tanks were ruptured on impact and crude oil began immediately to spread around the vessel. To make matters even worse, the moment of grounding was within minutes of the high-water neaps, and the vessel was soon to settle down further onto the rocks as she lost her reserve buoyancy and as the sea level fell. Despite almost immediate salvage operations, heavy seas pounding the vessel during the following days caused her to become a complete wreck. During these operations there was an explosion aboard which killed a member of the salvage team. The oil pollution was massive, the worst ever experienced; both British and French coasts suffered.

II - Amoco Cadiz:

The Amoco Cadiz was another Liberian oil tanker, with a length of 334 meters, and a capacity of 232,182 DWT and 109,000 GRT. She was manned by a single crew, and powered with a 30,000 bhp diesel engine. Her maximum draught was 19.8 meters and she was coming from Kharg Island (Iran) to Rotterdam via Lyme Bay (English channel).

The obvious cause of the disaster was the failure of the steering gear. However, the dangers of a lee-shore in the case of a breakdown are well known.

The Amoco Cadiz on her passage to Lyme Bay could have passed much further offshore without increasing her passage distance or time significantly, and thus increasing her safety margin. Vessels are not compelled to enter the traffic separation zone off Ushant, but if they do, they must comply with it. After the breakdown, the hazardous position of the Amoco Cadiz was not fully appreciated by those on board.

Even without steering, engine power could have been used more effectively; more urgent steps could have been taken to summon assistance from tugs and to prepare both anchors. The entire oil cargo was lost and the resulting pollution was far in excess of the previous worst case (the Torrey Canyon).

Although tanker accidents are rare, the heavy concentrations and large quantities of oil slicks generated by them constitute a permanent danger and cause a great concern to the marine environment of the coastal states because of the duration of their harmful effects.
Even though such spillages represent a relatively moderate part of total oil spillages into the marine environment, the effects of these on life and property may indeed be significant. Accidental spills occur for obvious reasons in congested waters and in the close vicinity of land populated areas. Incidents involving laden oil tankers have caused severe concentrations of pollution and damage with immediate and serious consequences for the marine environment, wildlife, fisheries, tourism.

### 1.2. Consequences of Marine Pollution

Pollution is caused when a change in physical or biological conditions in the environment harmfully affects the quality of human life, including effects on other animals and plants.\(^1\)

As it has been stated on many occasions, the protection and preservation of the marine environment provides the most adequate criteria determining the rational and equitable uses of the seas and their wealth in the benefit of humanity today and in the future. We should take into account the importance of the marine environment as the major part of the planet, both in terms of its extent, its significance to transport and communications, and its natural resources.

Defined by the GESAMP as, "the geographical zone seaward of the landward limit of tidal influence, the concept of marine environment includes the seabed, the high seas, the contiguous zones, territorial waters, and estuarine zones." .

The understanding of problems as far as the impact of oil pollution on the marine environment is concerned requires the

\(^1/\) Encyclopaedia Britannica no. 14 pp. 749.
study of various scientific subjects divided into two groups:

i) Biology, ecotoxicology and dynamics of the marine habitats and population necessary for the knowledge of the living milieu, and

ii) Hydrodynamics, geology, sedimentology, topography, hydrography and meteorology necessary for the knowledge of the physical receiving milieu.

In addition to that, there is also another important factor, the knowledge of oil, its behaviour and its evolution in the marine milieu. It is also by nature an important object for understanding the difference between types of impact. For instance according to the experimental work of Jennifer Baker 1/, in the marine environment a wide range of factors influence the extent of biological damage.

These factors can be summarized as follows:

a - Type of discharge,
b - Volume of discharge,
c - Type of oil,
d - Physical properties of oil.

Among these parameters above, great attention must be given to the physical properties of oil which concern essentially density and viscosity as given Table 1.

Indeed the duration of oil in the marine sediment depends upon the modification of its physical properties. The biological impact of oil pollutants can present some very spectacular aspects when the sea retires leaving on the highest part of the tidal

shore some million of marine animals dead.

From the point of view of biologists, oil impact is much more complex and its appreciation is not immediate. Visible signs of death to marine life represent only a small percentage of the total damage. In addition, they constitute the first step of a process which will remain several years later.

Indeed oil modifies for a long time the characteristics of the environment and one generally notes much greater sensitivity in eggs and larvas within the marine species. For those which have a long cycle of generation, this aspect is a great effect at the level of stocks which will need several year to regenerate.

Sometimes when the beaches are cleaned and popular emotion is reduced, the biological impact remains.

This phenomenon is due to the fact that oil products contain mainly hydrocarbons which represent about 98% of their weight. One hydrocarbon contains only carbon and hydrogen; and in an oil there are several thousands of different hydrocarbons which can be considered according to their concentration whether individually or by assembling them into categories.

There are three principal categories of hydrocarbons:
- The aliphatic hydrocarbons;
- The naphtenic hydrocarbons and the aromatic hydrocarbons.

The last category being toxic and more persistent constitutes the essential cause of impact on the marine flora and fauna.

That's why it is often said that of all marine pollutants oil and the hydrocarbons are recognized as the most destructive to aquatic life of all foreign substances entering coastal waters.
Crude type (Wax content) | ORIGIN | Wt % distillation | Density 20°C | Viscosity Cst @ 20°C | Pour Point ° C |
<table>
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<tr>
<td></td>
<td></td>
<td>200°C</td>
<td>300°C</td>
<td>200°C</td>
<td>300°C</td>
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<td>High (&gt; 10%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indonesia, Jalibarang Java</td>
<td>10</td>
<td>20</td>
<td>76</td>
<td>0.88</td>
<td>0.90</td>
</tr>
<tr>
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<td>23</td>
<td>31</td>
<td>67</td>
<td>0.87</td>
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<tr>
<td>Lybia, Amna</td>
<td>21</td>
<td>34</td>
<td>59</td>
<td>0.84</td>
<td>0.88</td>
</tr>
<tr>
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<td>19</td>
<td>35</td>
<td>56</td>
<td>0.84</td>
<td>0.88</td>
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<tr>
<td>Nigeria, Escravos</td>
<td>30</td>
<td>53</td>
<td>34</td>
<td>0.84</td>
<td>0.88</td>
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<tr>
<td>Moderate (5 à 10%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>32</td>
<td>50</td>
<td>42</td>
<td>0.81</td>
<td>0.88</td>
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<tr>
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<td>31</td>
<td>50</td>
<td>41</td>
<td>0.82</td>
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<td>51</td>
<td>39</td>
<td>0.83</td>
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<tr>
<td>Irak, Kirkuk</td>
<td>31</td>
<td>47</td>
<td>45</td>
<td>0.84</td>
<td>0.90</td>
</tr>
<tr>
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<td>28</td>
<td>47</td>
<td>42</td>
<td>0.84</td>
<td>0.89</td>
</tr>
<tr>
<td>Indonesia, Kerindingan</td>
<td>10</td>
<td>41</td>
<td>38</td>
<td>0.92</td>
<td>0.96</td>
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<tr>
<td>Iran, Iranam Heavy</td>
<td>24</td>
<td>39</td>
<td>53</td>
<td>0.87</td>
<td>0.93</td>
</tr>
<tr>
<td>Congo Emeraude</td>
<td>13</td>
<td>23</td>
<td>70</td>
<td>0.91</td>
<td>0.95</td>
</tr>
<tr>
<td>Low (&lt; 5%)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kuwait, Kuwait</td>
<td>22</td>
<td>36</td>
<td>56</td>
<td>0.87</td>
<td>0.93</td>
</tr>
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<td>37</td>
<td>58</td>
<td>32</td>
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<tr>
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<td>24</td>
<td>40</td>
<td>51</td>
<td>0.86</td>
<td>0.91</td>
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<td>20</td>
<td>33</td>
<td>59</td>
<td>0.89</td>
<td>0.94</td>
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<tr>
<td>Iran, Strip Blend</td>
<td>20</td>
<td>30</td>
<td>65</td>
<td>0.89</td>
<td>0.95</td>
</tr>
<tr>
<td>Very low Highly viscous</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Venuzuela, Bachaquero</td>
<td>8</td>
<td>19</td>
<td>74</td>
<td>0.95</td>
<td>0.98</td>
</tr>
<tr>
<td>Venuzuela, Boscan</td>
<td>1</td>
<td>7</td>
<td>89</td>
<td>1.00</td>
<td>1.03</td>
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**TABLEAU I : PHYSICAL PROPERTIES OF CRUDE OIL AND RESIDUAL OIL**
It should also be of interest to mention that a great number of observations of the oil's behaviour in the littoral zone, whether immediately after contamination, or much later when oil is locked in sediment, have progressively permitted to establish a relation between characteristics of littoral milieu and the persistence of oil.

It was Hayes (1976) who first presented a classification of different receiving milieu according to an index from 1 to 10 in connection with the growing persistence of oil contained in them. Two factors are essentially taken into account in this classification as shown in Table 2. There are granulometry (measure of mineral portions of soil or rock) of sediment and hydrodynamism.

This classification has already been adapted to the North-Brittany coast by Ozouville and Al in 1979 and used intensively after the stranding of the Amoco Cadiz.

The reason for showing this classification is to give an idea of the duration of oil in a littoral zone to those who are in charge of pollution matters. It should be an useful tool in the establishment of contingency plans in case of pollution when it would be a question of protecting some sensitive zones and specific areas.

Inconvenients due to oil pollution are more serious for marine faune and flora when the duration of oil in the milieu is prolonged. Between the rocky coasts exposed to the swell of sea on which oil does not reside longer than a few weeks and the

1/ HAYES M.C., BROWN P.J. & MICHEL J., 1976 "Coastal morphology and sedimentation lower with emphasis on potential oil spill impacts".
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<th>Morphosedimentary types</th>
<th>Accumulation of oil</th>
<th>Duration/Pollution</th>
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<tr>
<td>1</td>
<td>Rocky coasts &amp; platforms of abrasion</td>
<td>Lower part of the tidal shore</td>
<td>Some months</td>
</tr>
<tr>
<td>2</td>
<td>Beaches of coarse sand at medium</td>
<td>Interstratification in sediment</td>
<td>1-2 years</td>
</tr>
<tr>
<td>3</td>
<td>Beaches of coarse sand at gravel</td>
<td>Interstratification in sediment</td>
<td>1-3 years</td>
</tr>
<tr>
<td>4</td>
<td>Beaches of pebbles, stones &amp; field of blocks</td>
<td>Quick migration of oil in deep, less or any deposit on surface</td>
<td>3-5 years</td>
</tr>
<tr>
<td>5</td>
<td>Rocky coasts</td>
<td>Accumulation of oil in the crevices of rocks</td>
<td>3-5 years</td>
</tr>
<tr>
<td>6</td>
<td>Beaches of thin sand at medium</td>
<td>Percolation in deep</td>
<td>5 years</td>
</tr>
<tr>
<td>7</td>
<td>Beaches of coarse sand at gravel</td>
<td>Quick percolation in deep</td>
<td>5 years</td>
</tr>
<tr>
<td>8</td>
<td>Beaches of pebbles</td>
<td>Quick percolation in deep till substratum</td>
<td>5 years</td>
</tr>
<tr>
<td>9</td>
<td>Estuaries &amp; &quot;tidal flat&quot; at muddy</td>
<td>Percolation in deep due to burrowing organisms &amp; water movement</td>
<td>10 years</td>
</tr>
<tr>
<td>10</td>
<td>Maritime marshes</td>
<td>Enshrined in surface</td>
<td>10 years</td>
</tr>
</tbody>
</table>

**Table 2: Index of Vulnerability Morpho-Sedimentary.**

maritime marshes where, laid down during the high tides, it can stay almost indefinitely, there exists a whole range of intermediate situations.

The evolution of oil in the marine milieu constitutes an important element in the assessment of the economic consequences of oil pollution.

1.2a Economic Consequences:

The value placed on an environment study is purely related to economics including numerous factors which involve much expense i.e. commercial fisheries, amenity beaches, tourism and so forth. One of the most important questions will be how to make an analytic assessment of the economic consequences of the damages due to marine pollution?

In practice, it is difficult to obtain any convincing results as far as the economic assessment is concerned because consequences are directly connected to the live milieu and a result of the loss of commercial activities from the exploitation of marine resources.

For fisheries the short term economic losses consist in damages caused to ships and fishing tackle, are a decrease of the fishing activities and the production. For the touristic activities, the cleaning of certain beaches overlaid with important quantities of oil costs a lot of money.

With regard to all these difficulties, the International Maritime Organization (IMO) in connection with certain international organizations dealing with pollution have taken measures
granting the payment of an adequate compensation to those who are victims of pollution damage.

The reader will find in the next pages more details about the compensation schemes.

1.2b Social and Ecological Consequences:

a - Social consequences:

There are certain social consequences resulting from oil pollution, and some of these are:
- Unemployment (to fishermen) due to closure of fishing zones,
- Inability of beach-goers to enjoy the beaches leisure activities,
- Need of personnel for cleaning operations which causes a great problem in some administrative services i.e. national Navy; Army and Security etc...

b - Ecological consequences:

In the marine ecology, pollution affects much more the marine animals and mainly the sedentary animals of the littoral such as shellfishes, molluscs, varied larvae and others which are in the reproduction zone at sea. The old animals are partially attained. 1/

From the paragraph above, we can say that the impact of oil on the marine fauna and flora comprises the following:

i) Impact on the pelagic milieu,

ii) Impact on the benthic milieu,

iii) Special case of exploited resources such as the population

- The impact on the pelagic milieu includes effects on bacteria, phytoplankton, plankton and zooplankton. The role of bacteria in the marine milieu is of great importance for the degradation of the organic substances whose oxidation, leads to renewal of nutritious salt used by the phytoplankton during the process leading to primary production.

There is a great amount of bacteria which contribute to the oxidation of the organic substances at each level of the marine milieu.

Scientists studying the marine milieu have established experimentally or after an oil disaster, that there is an increase of the number of heterotrophe germs and the simultaneous degradation of oil characterizing a biodegradation. Such a multiplication of these bacteria is limited by abiotic factors such as substrat, solubility, temperature, dissolved oxygen, disponibility of azote and mineral phosphorus.

So, in a natural ecosystem, the population of bacteria cannot exceed the limited concentration by the natural disponibility of the nutritious substances.

Phytoplankton is the first link of food process in the marine milieu. It holds the first position in the ecosystem, for the nutrition of herbivores which constitute a part of zooplankton and a part of necton. Presence of oil in this complex milieu reaches the abiotic factors (bound to environment) and the biotic factors (bound to the survival of species).

In case of pollution, the cell algae presents some modifi-
cations which concerns the global biomass of phytoplankton, its chemical quality and its floristic composition. Such kinds of changes have repercussions on the behaviour of the zooplankton; presence of zooplankton can be directly bound to quality of food species of presented phytoplankton to their size, to their chemical composition.

- In comparison to other ecosystems, mainly the pelagic one, the benthic ecosystem particularly becomes sensitive to the immediate effects of oil pollution. Indeed, fixed organisms can with difficulty escape from that pollution which concentrates on the rocky substrates in sediments of the coastline. The importance of damages also depends on the behaviour of oil in the sea and in the coastline some days and months later after the oil pollution.

Damages to flora and in particular macrophytes are often limited and algae linked to the substrat are contrary to the marine invertebrates, more sensitive and damages are greater during the oil pollution.

- As for live exploited resources, they present the same biological aspects as the other marine species. However, they are particular because of their exploitation which already modifies the natural stability. Harvesting of algae, and fishing of other kinds of seafood has not only a direct impact on the stocks, but also on restocking because it reduces in advance a part of the begetters. The oil pollution contributes to aggravate this imbalance.

Moreover, the economic importance of the exploited resources
justifies that a certain priority has to be given to them as far as the evaluation of impact due to oil pollution is concerned.

When all is said and done, the major ecological consequence is the loss of marine foods which is defined by the GESAMP as, "any reduction in the quantity or quality of marine products available to man as a consumer, resulting from accidental or intentional discharges of oils or refined products, or natural seepage, to the marine environment". 1/

Our aim in the chapter is to stress on the one hand the main sources and main causes of marine pollution, and on the other hand its consequences to the marine environment vital for both marine animals and human beings. The following points have to be borne in mind:

- The pollution of the sea is generated from different sources and the main causes to which a great attention is given are the accidental and operational pollution from ships when they are in duty.

- During a serious case of oil pollution, marine animals are contaminated in different ways. They are poisoned and killed. When pollution enters into the food cycle, it becomes harmful to human beings.

- The knowledge of the behaviour of oil and the environment in which it has to evolve is the prerequisite condition to better understanding of the abatement process and to a great extent the value of investigating the environmental impact of oil spills is to apply such knowledge during the setting up of a contingency plan and clean-up response in order to minimize environmental damage.

CHAPTER TWO : POLLUTION CONTROL, PREVENTION AND ABATEMENT.

Pollution control consists of the legal, institutional, scientific and technological arrangements established to avoid or mitigate such excesses in the marine environment. It can be accomplished by containing pollutants at the source, that means on board ships or at the offshore installations, by finding out new technologies of manufacture that eliminate or reduce pollutants, and by recycling materials and commodities through reprocessing and resource recovery.

Except for highly toxic substances or for substances concentrated by nature (accumulation in ground-water or concentration in the food chain), pollution control does not only mean the diminution of all substances introduced into seawater by the various ways described in the preceding chapter, but the setting up of an efficient machinery for supervising and applying measures for maintaining oceans as clean as possible.

At the international level, the global policy is defined on the one hand by the International Maritime Organization (IMO) which is the specialized Agency of the United Nations responsible for facilitating co-operation among countries in the field of shipping safety and the prevention and control of marine pollution from ships and other craft, and on the other hand by the United Nations Environment Programme (UNEP) which is also the United Organization concerned with protection of the environment.

These two organizations are frequently consulted by various international organizations responsible for the oil and tanker industries and mainly during the drafting of international conven-
tions in order to continuously improve safety, minimise pollution and effect efficient clean-up and compensation schemes.

Table 3 illustrates the scope of activities covered by certain organizations and the points which are involved in each specific activity are summarized as follows:

<table>
<thead>
<tr>
<th>Fields of Activity</th>
<th>Items involved</th>
</tr>
</thead>
</table>
| (I) POLLUTION | • Identification of causes of accidents  
|                  | • Design & equipment of oil tanker & offshore rigs/installations |
| PREVENTION | • Development of techniques to prevent operational pollution  
|                | • Training personnel |
| (II) CONTINGENCY PLANNING | • Evaluation of risk of spill  
|                          | • Decision on priorities of protection  
|                          | • Development of response capability  
|                          | • Establishment of structure for immediate action |
| (III) RESPONSE TO SPILLS | • Stopping pollution at source  
|                            | • Implementation of Contingency Plan  
|                            | • Clean-up  
|                            | • Disposal of oil and debris |
| (IV) LIABILITY & COMPENSATION | • Compensation for clean-up costs & pollution damage. |

2.1 Role of the International Maritime Organization (IMO).

Without having in mind to underestimate the considerable efforts made by all the international organizations involved in pollution matters, it is my intention in this thesis to state in
<table>
<thead>
<tr>
<th>INTERNATIONAL ORGANIZATIONS</th>
<th>POLLUTION MATTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. International Maritime Organization (IMO)</td>
<td>x</td>
</tr>
<tr>
<td>2. United Nations Environment Programme (UNEP)</td>
<td>x</td>
</tr>
<tr>
<td>3. International Association of Drilling Contractors (IADC)</td>
<td>x</td>
</tr>
<tr>
<td>4. International Association of Independent Tank Owners (INTERTANKO)</td>
<td>x</td>
</tr>
<tr>
<td>5. International Chamber of Shipping (ICS)</td>
<td>x</td>
</tr>
<tr>
<td>6. International Oil Pollution Compensation Fund (IOPC)</td>
<td>x</td>
</tr>
<tr>
<td>8. Inter. Tank Owners Pollution Federation Limited (ITOPF)</td>
<td>x</td>
</tr>
<tr>
<td>9. Offshore Pollution Liability Association Limited (OPOL)</td>
<td>x</td>
</tr>
<tr>
<td>10. Oil Companies Institute For Marine Poll. Compens. Ltd (CRISTAL)</td>
<td>x</td>
</tr>
<tr>
<td>11. Oil Companies International Marine Forum (OCIMF)</td>
<td>x</td>
</tr>
<tr>
<td>12. Oil Ind. Inter. Exploration and Production Forum (E &amp; P Forum)</td>
<td>x</td>
</tr>
<tr>
<td>13. Protection and Indemnity Clubs (P &amp; I CLUBS)</td>
<td>x</td>
</tr>
<tr>
<td>14. International Association of Classification Societies (IACS)</td>
<td>x</td>
</tr>
</tbody>
</table>

*These numbers refer to the fields of activity mentioned earlier.*
a summarizing way, the role of the International Maritime Organization (IMO) as far as requirements for controlling and preventing pollution are concerned.

Since 1959, conventions and other standards adopted by the IMO approach the problem of pollution under varied aspects such as:

- Safeguard human life at sea, prevention of collision, prevention of pollution by oil and other substances, compensation for damages due to pollution by oil, right of states to act for preventing pollution, qualification and training of crews on board, etc...

The aims of all these preventive and curative measures can be summarized as follows:

- To see to it that ships are built, equipped and exploited in such a way as to avoid operational pollution (deliberate pollution);
- To make every effort to prevent accident;
- To make sure that if accidents happen, their effects from the pollution point of view will be reduced;
- To set up some efficient and fast measures in order to face the event of pollution; and
- To grant an equitable compensation to people who suffer damages by pollution.

These aims can mainly be reached through strict control of applicable standards of ships and navigational procedures which are practised by the national maritime administration of the world.

As I mentioned earlier, the stranding of the Torrey Canyon
prompted half a dozen I.M.O. Conferences and Conventions between 1969 and 1974, mainly regarding oil pollution, such as MARPOL 1973, and inspired the SOLAS 1974, which came into force in 1980.

The most international conventions related to the prevention and control of marine pollution and liability for pollution damage can be divided into four (4) categories:

A - Conventions on vessel-source pollution;
B - Conventions on Dumping;
C - Conventions on Pollution from the Continental Shelf;
D - The Regional Conventions.

Mention should be made of the work of the United Nations Environmental Programme (UNEP) and, in particular, of its Regional Seas Programme under which marine pollution is being attacked through a series of regional conventions and action plans.


By describing these categories of Conventions related to marine pollution, I have the intention of giving to the reader a clear idea of the main provisions needed to be understood. The main parts of these international instruments are as follows:

A) THE CONVENTIONS ON VESSEL-SOURCE POLLUTION.

This category comprises the instruments dealing with pre-
venting of operational and accidental pollution, and the compensation schemes.

**A-1 THE INTERNATIONAL CONVENTION FOR THE PREVENTION OF POLLUTION OF THE SEA BY OIL, 1954-69 (OILPOL).**

The Convention was amended in 1962, 1969 and, in minor aspects in 1971. It deals with oil substances, and is presently in force.

The Convention applies (Art.II) to ships registered in any of the territories of a contracting government and to unregistered ships having the nationality of a contracting party, except tankers of under 150 tons gross tonnage and other ships of under 500 GRT.

With respect to discharge from cargo tanks of tanker, Article III(6) states that such discharge shall be prohibited except when the following conditions are all satisfied.

i) The tanker is proceeding en route;

ii) The instantaneous rate of discharge of oil content does not exceed 60 litres per mile;

iii) The total quantity of oil discharged on a ballast voyage does not exceed 1/15,000 of the total cargo carrying capacity;

iv) The tanker is more than 50 miles from the nearest land (defined as from the baseline from which the territorial sea of the territory in question is established in accordance with the Geneva Convention on the Territorial Sea and the Contiguous Zone, 1958).

Similar restraints are placed on non-tankers (Art.III(a)). The merit of this 1954 Convention was to attempt to solve the problem of deliberate discharge of the tank cleaning water to sea
as I mentioned in the first chapter. Indeed following the 1962 Conference reviewing the OILPOL Convention, the major oil companies decided to find how the problem could best be solved.

After several investigations, they found a method commonly called Load-on-top (or LOT).

J.H. Kirby indicates that the solution was to separate the oil and water on board, discharge the water to sea, retaining the oil residues aboard. The next cargo could then, in most situations, be loaded on top of the residues.

The Load-on-top procedure can be summarized as follows, (detailed and practical explanations are contained in Clean Seas Guide for Oil Tankers (see reference).

1) After discharge of cargo from the cargo tanks, sea water is taken on as ballast into some of the tanks (Nos 1, 4, 7, 9 and 11). Other tanks are washed with sea water (Nos 2, 3, 5, 8 and 10).

2) The cargo tank washings are transported through "stripping" pipes to a ship tank (No12), (which may be just another cargo tank). These washings settle in the slop tank.

3) a - Clean ballast water is pumped into the cleaned tanks (Nos 2, 3, 5, 6, 8 and 10).

b - The dirty ballast water taken on at start has by now partially settled, so the lower layer of water is discharged to sea (from Nos 1, 4, 7, 9, and 11) and

c - The residual oil and water is stripped to the slop tank (No12) to settle.

4) After settling in the slop tank the water layer is discharged to sea (from No12) or to port reception facilities when available.
5) A new cargo is loaded on top of the slop tank oil residues (not shown).

The accompanying Figure 2 illustrates what is said above.

The only thing we can state is, that the Load-on-top method was positive at the time when it was introduced. Although containing certain imperfections, it constitutes an important step and a real anti-pollution device having permitted to avoid the discharge of a great quantity of oil to seas.

The 1954 Convention provided also that each contracting State must take all appropriate steps to promote the provision of adequate reception facilities according to the needs of ships using them.

However, the installation of sufficient reception facilities has not progressed satisfactorily due, in the main to the large capital investment required and the uncertainty in assessing the required capacities.

Several proposals are made in the sense to help some poor countries like Guinea and Guinea-Bissau, to provide such facilities in their ports. For instance, the I.M.O., in collaboration with UNEP, also has in hand now a scheme to help developing countries meet the cost of providing these facilities. In fact, the provisions of these facilities need not necessarily involve undue expense (Reference MEPC VII/19 paras 33-34). Another proposal made by INTERTANKO certifies that the problem can be solved quickly and economically by using converted elderly tankers as reception facilities, which would have the added advantage of mopping up much of the current surplus of such tonnage.

Moreover, whatever type of facility is installed, the means
Figure n°2: LOAD-ON-TOP PROCEDURES.

(Source: Joint ICS/OCIMF publication (Study III) 1973.)
The rest of the cost may be covered either by charging a fee for the use of the facilities, or by increasing port dues (Reference MEPC V/8/5 - MEPC VI/17 para 58).

It was envisaged that OILPOL would be superseded by MARPOL in 1983 when the latter entered into force.


The Convention as modified by the Protocol 1978, and known as MARPOL 73/78 came recently into force on 2nd of October 1983.

This Conference was one of the largest ever convened by the I.M.O., its main objective being the elimination of wilful and intentional pollution of the sea by oil and noxious substances other oil, and the minimisation of accidental spills.

It contains five (5) Annexes:

ANNEX I: Pollution by oil,
ANNEX II: Pollution by noxious liquid substances carried in bulk,
ANNEX III: Pollution by harmful substances carried in packages, portable tanks, freight containers, or rail tanks wagons, etc...
ANNEX IV: Pollution by sewage from ships, and
ANNEX V: Pollution by garbage from ships.

The Annexes I & II are compulsory while the others are optional.

MARPOL 73/78 applies (Art. III) to ships entitled to fly the
flag of a party to the Convention and for those operating under its authority.

In Annex I (Reg. 2(1), it is stated that unless expressly provided otherwise the provisions of the Annex apply to ships of all size, but tankers of 150 T GRT and above and every other ships of 400 T GRT and above shall be subject to the surveys specified in (Reg. 4) and meet the requirements in Regulations 9-14-15-16-17-20-24 & 28.

In addition to OILPOL 54, in MARPOL 73/78 (Reg. 1(1) the meaning of oil has been expanded to petroleum including crude oil, fuel oil, sludge, oil refuse, and refined products (other than petrochemicals which are subject to provision of Annex II of this Convention).

As far as the discharge from the cargo area of a tanker is concerned, MARPOL 73/78 has introduced more stringent requirements such as:

i) A new and important feature which is the designation of "special area". The main special areas are the Mediterranean sea area, the Black sea area, the Red sea area, the "Gulfs" area and the Baltic sea area. These specified areas are considered to be particularly vulnerable to pollution;

ii) The requirement "as far as practical from land" has been well defined and limited to not less than 12 miles from the nearest land within or not special area;

iii) The oil content of discharge is no more than 100 p.p.m. in certain zones but reduced to not more than 15 p.p.m.;

iv) The ship must have (Reg. 16) an oil monitoring and control
system which shall come into operation when there is any dis-
charge of effluent into the sea and shall be such as will ensure
that any discharge of oily mixture is automatically stopped when
the oil content of the effluent exceeds what is permitted by
Reg.9. For existing ships, the stopping device may be performed
manually.

v) The ship must have in operation an oily-water separating
equipment or filtering system ensuring that any oily mixture dis-
charged into the sea after passing through the separator or fil-
tering system shall have an oil content of less than 100 p.p.m.;

vi) In addition to that, an oil filtering system shall be in
operation and will accept the discharge from the separating sys-
tem and produce an effluent, the oil content of which does not
exceed 15 p.p.m.;

Consequently, MARPOL 73/78 provided the discharge criteria
of oil from machinery spaces of all ships such as :
- Oil tankers of all sizes and other ships of 400 GRT and above;
- Ships less than 400 GRT other than oil tankers.

The two amendments introduced in Reg.9(1)(a) of Annex I are
the following :

1) The total quantity of oil discharged into the sea does not
exceed for existing tankers 1/15,000 of the total quantity carried
during the previous voyage. And for new tankers only 1/30,000 of
the total quantity carried during the voyage.

A new ship means, a ship :

1) For which the building contract is placed after 31 December
1975 or
ii) The keel of which is laid or which is at a similar stage of construction after 30 June 1976, or
iii) The delivery of which is after 31 December 1979, or
iv) Which has undergone a major conversion.

A further additional criteria has been introduced: The tanker is not within a special area.

2) When discharging oil, tankers and other vessels must have in operation an oil discharge monitoring and control system and an oily-water separating equipment.

**MARPOL 73/78 contains more positive and specific provisions regarding reception facilities than the 1954 OILPOL Convention.**

Each contracting State is obliged to ensure that the necessary reception facilities for residues and oily mixtures all provided at loading terminals, repair ports and in other ports in which ships have such residues to discharge. In certain special areas, these facilities must be provided by 1st January 1977 and must be adequate for the reception of all dirty ballast and tank washings from tankers, without causing undue delay to the ship (Reg. 10-12).

However in order to comply with the above requirements, the I.M.O. guidelines for the provision of adequate reception facilities in ports assure that oil tankers operate in a responsible manner having regard to the "Method of retention on board" in association with the "Load-on-top system" which considerably reduces the need for the disposal of large volumes of oily residues to discharge to reception facilities.

This procedure is almost similar to the latter described earlier.
MARPOL 73/78 introduced also certain requirements for the construction and equipment of ships with respect to the prevention of operational discharges of oil and the mitigation of uncontrolled release of oil should accidents to tanker occur.

The new requirements are as follows:

a) Oil tankers must be fitted with oil discharges and monitoring equipment, with recording device to provide a continuous record of the discharge.

b) Oil tankers must be provided with suitable arrangements of a slop tank or a combination of slop tanks with a capacity necessary to retain the slop generated by tank washing oil residues and dirty ballast residues.

c) Every ship of 400 GRT and above must be provided with a tank or tanks of adequate capacity, to receive the oily residue (sludge) such as those resulting from the purification of fuel and lubricating oils and oil leakages in the machinery spaces.

d) New crude oil tankers of 20,000 DWT and above and new product carriers of 30,000 DWT and above (as defined in MARPOL 78) must be provided with Segregated Ballast Tanks (SBT) which must be protectively located (PL); i.e., they must be arranged in such locations as to provide protection of cargo tank against rupture in the event of grounding or collision and limit the outflow of oil.

e) In addition, new crude oil tankers must be provided with Crude Oil Washing System (COW) instead of water for the cleaning of residues left clinging to the tank walls after the discharge of cargo oil. This new system is more effective than water washing and also virtually eliminates the accumulation of sludge.
f) Existing crude oil tankers of 40,000 DWT and above must be provided with Segregated Ballast Tanks (SBT) or dedicated Clean Ballast Tanks (CBT) or Crude Oil Washing System (COW) which are tanks using the same pumping and piping arrangements for both cargo oil and ballast water; or finally Crude Oil Washing System (COW).

g) Existing product carriers of 40,000 DWT and above must be provided with Segregated Ballast Tanks or dedicated Clean Ballast Tanks (CBT).

h) However CBT is recognised as an interim measure for existing crude oil tankers of 70,000 DWT and above for two (2) years after the entry into force of the Protocol and four (4) years for those between 40,000 and 70,000 DWT.

Therefore, there is no oil/water mixture resulting from ballasting cargo tanks and the risk of operational pollution is greatly decreased. These tanks must be of sufficient capacity to enable the ships to operate safely on ballast voyages without recourse to the use of oil tanks for water ballast except in very severe weather conditions or exceptional cases (Reg. 13(3)).

i) Further the 1978 SOLAS Protocol states that the Inert Gas System (IGS) is mandatory requirement and must always be fitted on ships with (COW). Inert Gas System (IGS) reduces the oxygen content of the atmosphere in cargo tanks during and after discharge of cargo oil in order to eliminate the risk of explosion. Inert Gas which is normally produced as boiler flue gas containing less than 5% of oxygen is pumped into cargo spaces in which the oxygen content should not exceed 8%.

The MARPOL Protocol 78 defines a new oil tanker for the pur-
poses of the implementation of CBT, SBT, COW and IGS, as an oil tanker to which any of the following dates apply:
- Contract of building placed after 1st June 1979,
- Keel laid after 1st January 1980,
- Delivery after 1st June 1982.

MARPOL 73/78 requires the limitation of the size and arrangements of cargo tanks in order to minimise the outflow of oil in cases of collision or stranding.
- New oil tankers must comply with the subdivision and damage stability requirements to ensure that they can survive assumed side or bottom.

The Article II of MARPOL 73/78 contains provisions concerning exceptions for

i) dumping.
ii) off-shore processing
iii) scientific research in the pollution abatement or control and Regulation II of Annex I(a)(i) for discharges into the sea of substances approved by the Administration containing oil when this substance is being used for the purpose of combating an oil pollution incident in order to minimise the damage from pollution.

Furthermore this Convention has efficiently facilitated the practices regarding contraventions for violation of the requirements with respect to unlawful discharges, within or not the territorial seas of a party. These practices have been a difficult question throughout all these years under OILPOL 1954, and the penalties have been too small, and not severe enough to really discourage all these unlawful acts. With MARPOL 73/78 a significant progress has been achieved during the last few years,
throughout the world, as far as the establishment of reception facilities; for the reception and treatment of oily wastes and residues is concerned. This is the case particularly in ports and terminals situated within the "special areas". The requirement of reception facilities has been very difficult to enforce under OILPOL 1954.

Finally MARPOL 73/78 has considerably tightened the requirements for inspections, certification, and control of the Port State; and it has also provided a list Codes and Guidelines necessary for the implementation of this Convention.


The main objective of this Convention is to lay down minimum standards for the construction, equipment and operation compatible with the safety of ships.

It deals in a detailed manner with stability requirements, watertight compartments, machinery maintenance and electrical installations under various conditions, while of particular relevance to tankers are specifications for the fire protection and extinction, and lifesaving appliances.

The 1978 meeting at which the Protocol to SOLAS was developed was entirely tanker oriented and produced some extra requirements for both new and existing ships.

A "new tanker" for the purpose of both the SOLAS and MARPOL Protocols is as defined in the preceding page.

The principal provisions of particular significance to product tankers were as follows:

i) New tankers of 20,000 DWT and above were to be fitted with an Inert Gas System (IGS),
ii) Existing crude oil tankers of 70,000 DWT and above were to be fitted with Inert Gas System (IGS) two (2) years after coming into force of the Protocol. Smaller ships of between 20,000 and 70,000 DWT were to be so fitted two (2) years later,

iii) Existing product tankers of 70,000 DWT and above were to be fitted with Inert Gas System (IGS) two (2) years after the coming into force of the Protocol.

Product tankers of 40-70,000 DWT and tankers of 20-40,000 DWT where fitted high capacity washing machines are to be fitted with (IGS) two (2) years later than that.

There are in addition new requirements for the provision of navigational equipment, in particular radars, the duplication of steering gears and power units for operating the rudder. In connection with that, it is also interesting to note that the Amoco Cadiz added urgency to the requirements for dual steering gear systems in certain classes of ships, as well as to recommendations for improved steering gear specifications.

The new requirements of the 1978 Protocol provide that:

1 - All tankers of 10,000 Gross tons and above have two or more identical power units, and be capable of operating the rudder while operating with one or more power units. Ships so equipped must also have an alarm on the navigating bridge to warn of system failure and an alternative power supply that will start to operate automatically within 45 seconds of a failure.

For existing tankers, the above requirements must be implemented within two years after date of entry into force of the Protocol (1st May 1981).

2 - The Conference agreed that all ships between 1,600 and 10,000
GRT be fitted with radar, while all ships of 10,000 GRT and above must have two radars, each capable of operating independently of the other, on the date the SOLAS Protocol enters into force. It was also resolved that performance standards for collision avoidance aids, and requirements for their carriage on all ships of 10,000 GRT and above be developed by I.M.O. as a matter of urgency and not later than 1st July 1979.

All these new requirements of MARPOL 73/78 and SOLAS 74 and Protocol 78 are summarized in Figure 3 while the Table 4 gives an indication on timetable for the implementation of Regulations under these Conventions.

Moreover, important new measures and procedures have been introduced in order to improve the safety of oil tankers by the Conference; those related to inspections and certification are the following:

1 - Institution of mandatory annual survey (or unscheduled inspections),

2 - Inspecting organization has to ensure that corrective action is taken,

3 - Administrations are required to provide a clear delineation of the Authority to act on their behalf,

4 - An annual survey for tankers of 10 years of age and over was added,

5 - An intermediate Cargo Ship Safety Construction Certification survey for tankers of 10 years of age and over,

6 - The Ship Safety Construction Certificate survey has been extended to include the cargo, pumping, piping and venting arran-
Fig. 3 MARPOL 73/Protocol 78 and SOLAS 74 requirements for clean or segregated ballast and cargo tank inert gas systems

(Source: INTERTANKO, The Middle East Refinery Expansion & the Product Tanker Market, Oslo, April, 1984).
7 - Between surveys, ships and their equipment have to be maintained in a satisfactory condition.

Table 4: TIMETABLE FOR THE IMPLEMENTATION OF REGULATIONS UNDER SOLAS 1974 - 1978 AND MARPOL 1973-1978.1/

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<td>New Crude Oil Tankers!</td>
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<td>20,000 DWT +</td>
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<td>Existing Crude Oil T.</td>
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<tr>
<td>20-40,000 DWT +</td>
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<td>Existing Crude Oil T.</td>
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<td>40-70,000 DWT +</td>
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<td>Existing Crude Oil T.</td>
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<tr>
<td>70,000 DWT +</td>
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<tr>
<td>New Product Tankers 20-30,000 DWT</td>
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<tr>
<td>New Products Tankers 30,000 DWT</td>
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<tr>
<td>Existing Product T. 20-40,000 DWT</td>
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<tr>
<td>Existing Products T. 40-70,000 DWT</td>
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<tr>
<td>Existing Product T. 70,000 DWT</td>
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</tr>
</tbody>
</table>

1/ Assuming MARPOL 73/78 ratified by end 1981.
(+ ) by 81-05-01.

(Source: The Impact of New Tanker Regulations- Published by H. P. Drewy (Shipping Consultants) Ltd. London.)

Further improvements to the SOLAS 74 were still needed, and that's why in June 1983 the Maritime Safety Committee (MSC) adopted a second set of amendments to SOLAS 74 which comprises a new Chapter III and a new Chapter VII and is expected to enter into force on 1st July 1986.

At the same time, the Committee decided that a Conference should be held to adopt the harmonized survey and certification requirements for the SOLAS 74 Convention and related amendments to the SOLAS and the International Bulk Chemical Code and the International Gas Carrier Code. Simultaneously a Conference should be held to extend the harmonized system to survey and certification into the Load Line Convention as well as all other amendments so far agreed.

The main reason for adopting this system goes back to the 1978 Conference where it was established that there were a number of different periods of validity for the certificates required by SOLAS, MARPOL and Load Line Conventions as well as different intermediate surveys or inspections required by those Conventions.

The Conference, to put this problem right, recommended that the I.M.O. take the necessary action to amend the appropriate instruments with a view to standardizing the periods of validity of the certificates as well as the intervals of intermediate surveys and inspections required by the Conventions.

For that purpose, a joint MSC/MEPC Working Group on surveys and inspections was established which prepared a set of guidelines
for surveys and certification under the SOLAS 74, (SOLAS 78 Protocol), the 1966 Load Line Convention, and MARPOL 73/78. The final agreed position by the MSC 49/9/2 session is schematized in Figure 4 and its main contents are the following:

i) Maximum period of validity of five (5) years of all certificates,

ii) Annual surveys, with intermediate surveys,

iii) No extension provision beyond five (5) years,

iv) Sufficient flexibility to enable surveys to be arranged so that a ship is not unduly delayed.


This important Convention, which came into effect in 1968, assigns freeboard to ships according to their type and area of operation.

Tankers under this Convention are considered as of a type designed to carry only liquid cargoes in bulk, having small access openings with watertight covers. Freeboards are computed after an examination of the principal dimensions of the ships superstructures and deckhouses. Stability requirements are also detailed with this Convention.

In addition to the review of the procedures as far as the surveys and inspections are concerned and as mentioned earlier, a systematic review of the Convention shall be carried out as requested by the Maritime Safety Committee (MSC). Among the items mentioned as the first priority for the review, there are:

- Consideration of the adequacy of freeboard tables which would include seaway/ship motion studies, a reduction in the number of freeboard corrections, and watertight integrity.
### Harmonized System - Final Agreed Position

<table>
<thead>
<tr>
<th>Years</th>
<th>Months</th>
<th>0</th>
<th>9</th>
<th>12</th>
<th>15</th>
<th>21</th>
<th>24</th>
<th>27</th>
<th>33</th>
<th>36</th>
<th>39</th>
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<th>48</th>
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<tbody>
<tr>
<td><strong>Passenger</strong></td>
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<td><strong>SAPCON</strong></td>
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<td>Alt.1</td>
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<td><strong>SEC</strong></td>
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<tr>
<td><strong>Load Line</strong></td>
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<td>A</td>
<td>Alt.2</td>
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<tr>
<td><strong>MARPOL</strong></td>
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</table>

* Except for inspection of outside of ship's bottom and related items which is at least two within certificate's period of validity and not more than 36 months between such surveys.

**CODE:**
- P = Periodical
- R = Renewal
- A = Annual
- I = Intermediate

**Note:** Although the harmonized system is shown above with the same anniversary date for all certificates, this is not a requirement of the system.

- Latest IMO documents with respect to the harmonized system are MSC 51/WP.12 & MSC 51/WP.12/Add.1
- Simplication of the seasons and zones,
- A review of the conditions of assignment, including such matters as stability, strength, freeing port areas, hatches and ventilator heights,
- Possible alternatives for freeboard circulation.

For easy reference a table of contents of the draft revised Load Line Convention and corresponding Articles and Regulations of the 1966 Load Line Convention is given in Annex I (MSC 49/9/1). The text of the draft revised Load Line Convention is set out in Annex II (MSC 49/9/1). This new Load Line Convention is expected to enter into force in 1988 (see MSC 51/3... 51/WP 12 & Add.1).

As a concluding remark for this convention and the previous, it is necessary to mention that there are certain legal issues which are involved in the adoption and entry into force of amendments to the survey and certification requirements such as:
- The implementation of the harmonized system should take effect only upon formal entry into force of amendments to the SOLAS Convention and of the new Load Line Convention.
- The SOLAS amendments and the new Load Line Convention should enter into force at the same time.
- The 1988 amendments to SOLAS introducing the harmonized system should, upon their entry into force, supersede the existing requirements of both SOLAS 74 and the 1978 SOLAS Protocol.

The technical requirements laid down in the three previous major international conventions of special significance to the design of tankers aim at improving the safety of ships and their equipment. In addition to them I.M.O. has also endeavoured to raise the standards to the crew which man these ships. It is
interesting to note that before the I.M.O., some important works had been elaborated by the International Labour Organization (ILO) as far as the pollution aspect of safety at sea is concerned. There are three important Conventions which have been drawn up under the auspices of I.L.O. and related to matters mentioned above, and which are as follows:
- ILO Convention No 53 (1936),
- ILO Convention No 74 (1946), and

One should also keep in mind that the stranding of the Amoco Cadiz in March 1978, gave urgency to another international conference which was mainly concerned with the element of human error in accidents and the Resolution 8 of the 1978 Tanker Safety and Pollution Prevention Conference urges the adoption of adequate training and certification of tanker crews.

A-5 THE INTERNATIONAL CONVENTION ON STANDARDS OF TRAINING, CERTIFICATION AND WATCHKEEPING FOR SEAFARERS, (STCW 78).

The draft convention has been prepared in collaboration with I.L.O., whose general sphere of interest includes employment, safety and health aboard ships. The Conference met in 1978 and was attended by delegates from 72 countries. It was the maritime world's first ever convention laying down globally acceptable minimum standards of training, certification and watchkeeping for seafarers.

Previously the standards of training, certification and watchkeeping of officers and ratings were established by individual Governments, usually without reference to practices in other
countries. As a result, standards and procedures varied widely, even though shipping is the most international of all industries.

The convention prescribes minimum standards which countries are obliged to meet or exceed. In the majority of established maritime countries, standards are often higher than those stipulated in the convention. In some countries however, standards are not so high and by ratifying or accepting the convention governments undertake to implement and enforce its requirements. The effect of the convention is to raise standards in the world as a whole.

The convention does not deal with manning level, I.M.O. provisions in this area are covered by Regulation 13 of Chapter V of the 74 SOLAS Convention, whose requirements are backed up by Resolution A481 (XII) which was adopted by the I.M.O. Assembly in 1981.

One important feature of the convention is that it will apply to ships of non-party states when visiting ports of states which are parties to it. The convention consists of eleven articles and one annex which contains the technical provisions divided into six chapters which deal with the following subjects:

- General provisions;
- Master deck department;
- Engine department;
- Radio department;
- Special requirements for tankers, and
- Proficiency in survival craft.

The importance of tankers in world shipping today is recognised by the inclusion in chapter V of special requirements for tankers.

The purpose of the chapter is to ensure that officers and ratings who are to have specific duties related to the cargo and
cargo equipment of tankers should have completed an appropriate shore-based fire-fighting course, and have completed either an appropriate period of shipboard service or an approved familiarization course. Requirements are more stringent for masters and senior officers. Attention is paid not only to safety aspects but also to pollution prevention.

The chapter contains three regulations dealing with oil tankers, chemicals tankers and liquefied gas tankers, respectively.

The universal implementation of this convention should help to better equip the seafarers to meet the requirements of today's shipping and navigation.

A-6 THE INTERNATIONAL CONVENTION RELATING TO INTERVENTION ON THE HIGH SEAS IN CASE OF OIL POLLUTION CASUALTIES, 1969 (INTERVENTION 69, AND PROTOCOL RELATING TO INTERVENTION, 1973, INTERVENTION PROT. 73).

The scope of the convention and protocol comprises the area of the high seas, that is, the area beyond the outer limit of the territorial sea or, if and when the Exclusive Economic Zone is generally recognized, the area beyond it. The Convention entered into force on 6th May 1975, and the Protocol on 30th March 1983.

Parties may take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil; following a maritime casualty or acts related to such a casualty which may reasonably be expected to result in major harmful consequences. The related interests include commercial fishing and tourist interests, the
health of the coastal population and the conservation of living marine resources and of wild life. The measures taken must be proportionate to the damage actual or threatened and reasonably necessary.

The Protocol of 1973, will extend the Convention to cases of pollution by substances other than oil, which are liable to cause serious damage.

The grounding in 1967 of the Torrey Canyon resulted in serious pollution of the English and French coasts. This case revealed the inadequacy of existing compensation schemes and prompted IMO, to adopt the Civil Liability Convention 1969 (CLC) and the Fund Convention (FC), to ensure that pollution victims receive adequate compensation.

**A-7 THE INTERNATIONAL CONVENTION ON CIVIL LIABILITY FOR OIL POLLUTION DAMAGE, 1969 (CLC) AND PROTOCOL 1976.**

As regards geographical scope, CLC applies exclusively to pollution damage caused on the territory including the territorial sea of a contracting State and to preventive measures in order to minimise such damage. It should be noted however, that the Convention also covers damage causes in the area outside the territorial sea by preventive measures designed to prevent or minimise pollution damage inside the territorial sea.

There are six (6) main areas not covered by CLC, and these are as follows:

1) Oil escaping from river and lake vessels, offshore installations and pipelines,

2) Oil escaping from dry cargo ships and tankers not carrying oil in bulk as cargo,
3) Damage caused by non-persistent oils,
4) Damage suffered by installations outside the territory or territorial sea of a party to CLC and all damage suffered on the territorial or territorial sea of a non-party to CLC,
5) Damage caused by oil spilling into the sea and then catching fire.


The purpose of CLC is to provide uniform international rules and procedures for determining questions of liability and providing adequate compensation to persons who suffer damage caused by the escape or discharge of oil from ships.

Liability is placed upon the owner of the ship. It is strict (no need to prove fault or negligence). The owner may limit his liability per incident to approximately $ U.S. 160 per ship's ton, with a ceiling of $ U.S. 16.8 million and the ship must be covered by insurance in such an amount. As a proof of guarantee, it will keep on board a CLC Certificate recognizing that the 1969 CLC might not provide adequate compensation in the event of a catastrophic spill, the Brussels Conference in 1969 adopted a resolution requesting I.M.O. to initiate a draft for a compensation scheme based upon an international fund.


This Convention is supplementary to the Civil Liability Convention 1969 and its main purpose is to ensure the availability of additional compensation in cases where the protection afforded by the 1969 Convention is inadequate.

Compensation is paid from a fund financed by levies on importers of oil and the International Oil Pollution Convention Fund's major contributors. Moreover, since the amount of contribution may be affected by the definition of pollution damage, and the claims which it covers.

The present aggregate ceiling of compensation available from the CLC and the Fund is U.S. $ 54 million.

Following the introduction of the two new Protocols dealing with liability and compensation for oil pollution damage, victims of major oil pollution disasters will be able to claim greater compensation. By amending the Civil Liability and Fund Conventions for oil pollution damage, the amount of compensation payable to persons who suffer pollution damage from accidents involving oil tankers will be raised from the present limit of about U.S. $ 63 million to more than U.S. $ 200 million. 1/

The 1984 Protocols make a number of other changes to the 1969 and 1971 Conventions. The new protocols have not yet entered into force.

In addition to the preceding conventions, there are also two other compensation schemes for oil pollution damage: TOVALOP & CRISTAL.

1) **TOVALOP** (Tanker Owners' Voluntary Agreement concerning Liability for Oil Pollution Damage), in operation since 1969 as amended

1 June 1978, applies to pollution damage on territory or in the territorial sea of a state, except when the Civil Liability Convention applies to the damage. It also applies, as noted above, in case of a threat of an escape or discharge.

The agreement that tanker owners (owner includes bareboat charterer) will compensate persons (including governments) who sustain pollution damage resulting from the escape or discharge of oil, including persons who take preventive measures to remove the threat of a discharge of oil, even if no discharge occurs. The basis of liability is as strict as under the Civil Liability Convention.

ii) CRISTAL (Contract regarding an Interim Supplement Tanker Liability for Oil Pollution Damage).

This contract supplements the Civil Liability Convention, TOVALOP or other sources of compensation to assure adequate compensation to parties suffering pollution damage. It also applies in the case of threat removal and indemnifies tanker owners for part of their liability under the Civil Liability Convention, TOVALOP or national or local law.

CRISTAL is an Agreement among cargo Owners and is in effect since 1971 and most recently amended 1 June 1978.

It applies to territory or territorial seas of any State, although discharge may have occurred elsewhere and tankers must be owned (or bareboat chartered) to a party to TOVALOP.

Its methods of funding is based on contributions by parties to CRISTAL and by individual contributions assessed pro-rata based on the amount of crude and fuel oil received by parties to CRISTAL which has been transported by sea. Its sources of compen-
sation, if any, and can be increased up to 72 million by the Institute (Oil Companies Institute for Marine Pollution Compensation Limited) in charge of its administration.

The brief description of these compensation schemes laid down in the CLC and FUND conventions certifies without a doubt advantages for a coastal country to be a party to and to enforce them.

From the practical point of view, in case of serious pollution, the spiller can only care of the damages if the endangered country is a party to the previous conventions. The second category of conventions elaborated under the auspices of I.M.O. concerns the Convention on Dumping.

8 - CONVENTION ON THE PREVENTION OF MARINE POLLUTION BY DUMPING OF WASTES AND OTHER MATTER, 1972.

While the Oslo Convention on Dumping is only applicable to the North East countries, the Convention on the Prevention of Marine Pollution by Dumping of wastes and other matter, 1972 (hereafter referred to as London Dumping Convention (LD) is of global effect although the pattern of control is similar to that established in the first one.

The initial importance of the London Dumping Convention, should be underscored as representing a significant step in the international management of a most important resource, the ocean. By combining technology and resources in the context of an international treaty the hope was conveyed that the nations of the world could work to ensure that the marine environment would become safe from the danger of dumping.

The London Convention consists of 22 Articles and three (3)
Annexes that make the body of the text.

Article I of the Convention directs the Contracting Parties (to)...take all practical steps to prevent the pollution of the sea by dumping of wastes..."In a similar vein, Article II provides that the "Contracting Parties shall...take effective measures individually, according to their scientific, technical and economic capabilities, and collectively, to prevent marine pollution caused by dumping and shall harmonize their policies in this regard".

The essence of the London Dumping Convention (LDQ) text though, are the articles that define dumping, make contracting parties responsible to regulate dumping, and establish the standards applied when dumping wastes.

Article III defines dumping. Dumping for the purposes of the Article means any deliberate disposal at sea of wastes or other matter from vessels, aircraft, platforms or other man-made structures at sea or any deliberate disposal at sea of vessels, aircraft platforms or any other man-made structures at sea. Article III also defines what is not dumping.

Article VII requires each contracting party to...regulate dumping by vessels flying its flag or loading in its territory.

Article IV establishes the standards to be applied when dumping wastes. Annex I enumerates a number of "black-list" substances that are prohibited under Article IV. Annex II lists "grey-list" substances that require a special permit before they are dumped. The dumping of all other wastes requires a prior general permit pursuant to Annex III.
In emergencies however, the provisions of Article IV shall not apply when it is necessary to secure the safety of human life or of ships and aircraft. A contracting party may issue a special permit as an exception to the above Article. He shall also consult any other country or international organizations as appropriate, which shall, in accordance with Article XIV promptly recommended to the party the most appropriate procedures to adopt (Art. V).

In the light of the provisions of the Third United Nations Conference on the Law of the Sea (UNCLOS III) as far as the enforcement aspect is concerned. Article VII(3) states that the parties agree to co-operate in the development of procedures for the effective application of the Convention, particularly on the high seas.

The provisions of Article IX are dealing with support from other parties for those aparties which request it for

i) the training of scientific and technical personnel;

ii) The supply of necessary equipment and facilities for research and monitoring;

iii) The disposal and treatment of waste.

The parties will also promote, within the appropriate international organization, the codification of signals to be used by vessels engaged in Dumping (Art. XII).


The status of Conventions relating to marine environment protection is given in Table 5.
In addition to these International Conventions on Marine Pollution elaborated under the auspices of the I.M.O., there are also a few elaborated whether at the level of the United Nations or other international organizations such as the U.N.E.P., which constitute respectively the third and the fourth categories of the conventions which will be described in this chapter.

Table 5: STATUS OF CONVENTIONS RELATING TO MARINE ENVIRONMENT PROTECTION (as at 1 March 1985).

<table>
<thead>
<tr>
<th>Conventions</th>
<th>Date of entry into force</th>
<th>Contracting Parties</th>
<th>Number % of WT</th>
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<tr>
<td><strong>Prevention of accidental pollution</strong></td>
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<tr>
<td>- The International Convention for the Safety of Life at Sea (SOLAS 74)</td>
<td>25.5.80</td>
<td>82</td>
<td>94.58%</td>
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<tr>
<td>- The Protocol of 1978 relating to SOLAS 74 (SOLAS PROTOCOL 78)</td>
<td>1.5.81</td>
<td>50</td>
<td>85.83%</td>
</tr>
<tr>
<td>- The International Convention on Load Line (LL 66)</td>
<td>21.7.68</td>
<td>102</td>
<td>98.15%</td>
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<tr>
<td>- The Convention on the International Regulations for Preventing Collisions at sea (COLREG 72)</td>
<td>15.7.77</td>
<td>88</td>
<td>197.28%</td>
</tr>
<tr>
<td>- The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978 (STCW 78)</td>
<td>28.4.84</td>
<td>37</td>
<td>66.47%</td>
</tr>
<tr>
<td><strong>Prevention of operational pollution</strong> &amp; mitigation of pollution in cases of accidents**</td>
<td></td>
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<tr>
<td>- The International Convention for the Prevention of Pollution of the sea by oil, 1954 as amended in 1969 (OILPOL 54/69)</td>
<td>26.7.58</td>
<td>72</td>
<td>88.63%</td>
</tr>
<tr>
<td>Convention</td>
<td>Percentage of World Tonnage</td>
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<td></td>
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<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td></td>
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<tr>
<td>- The International Convention for the Prevention of Pollution from Ships, 2.10.83</td>
<td>35% (60.39%)</td>
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<tr>
<td>1973 as modified by the Protocol of 1978 relating thereto (MARPOL 73/78)</td>
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<tr>
<td>- The International Convention relating to Intervention on the High Seas in cases of Oil Pollution Casualties, 1969 (INTERVENTION 69)</td>
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<tr>
<td>- The Protocol relating to Intervention on the High Seas in cases of Pollution by Substances other than Oil, 1973 (INTERVENTION PROT.73)</td>
<td>48% (68.39%)</td>
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<tr>
<td>Liability &amp; Compensation</td>
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<tr>
<td>- The International Convention for Oil Pollution Damage, 1969 (CLC 69)</td>
<td>56% (68.39%)</td>
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<tr>
<td>- The International Convention on the Establishment of an International FUND for Compensation for Oil Pollution Damage, 1971 (FUND 71)</td>
<td>30% (68.39%)</td>
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</tr>
<tr>
<td>Pollution by Dumping</td>
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<tr>
<td>- The Convention on the Prevention of Marine Pollution by Dumping of Wastes &amp; other Matter, 1979 (LDC 72)</td>
<td>56% (68.39%)</td>
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</tr>
</tbody>
</table>

(+ ) Percentage of world tonnage.


C - THE UNITED NATIONS CONVENTIONS.

This category comprises the Conventions on Pollution from the Continental Shelf and the Law of the Sea Convention.
C-1 GENEVA CONVENTION ON THE HIGH SEAS, 1958 AND GENEVA CONVENTION ON THE CONTINENTAL SHELF, 1958.

The High Seas Convention entered into force on 30 September 1962 and the Continental Shelf Convention on 10 June 1964. Article 24 of the High Seas Convention requires every state to draw up regulations to prevent pollution of the areas by the discharge of oil from pipelines or resulting from the exploration and exploitation of the seabed and its subsoil.

In addition, the Continental Shelf Convention embodies a number of rules designed to ensure safety of offshore operations and prevention of pollution.

Article V(7) requires the coastal state to undertake in the safety zones around shelf installations all appropriate measures for the protection of the living resources of the sea from all harmful agents.


One of the functions of the United Nations Convention is to allocate responsibility to states for standards in relation to the various maritime zones and sources of pollution.

As regards standard setting, Section V of Part XII deals in turn with six sources of marine pollution among which there is the pollution of sea from ships.

Article 211 deals with this type of pollution. Under this article, states have an obligation to establish international rules and standards and national laws and regulations of at least the same effect. They have also to promote the adoption of routing systems, wherever appropriate.

Article 211 goes on to provide for standard-setting in ports
and national waters, the territorial sea, and the Exclusive Economic Zone.

Where states have established particular anti-pollution requirements as a condition for the entry of foreign vessels into their ports or national waters, or for calling at their offshore terminals, they have an obligation to publicise them. In cases where co-operative arrangements have been made by two or more states to impose such requirements in identical form, foreign masters are to be placed under a duty to provide information about their destination and capacity to comply with these requirements when navigating in the territorial sea of one of these states.

There are two provisions on the Exclusive Economic Zone. First, the coastal state may adopt laws and regulations giving effect to generally accepted international rules, thus making these rules enforceable in the Exclusive Economic Zone. Secondly, provision is made for especially vulnerable areas of the Exclusive Economic Zone where the normal international rules are inadequate to meet the special oceanographical and ecological circumstances.

Subject to stringent safeguards to be applied by the competent international organization, the coastal state may adopt special mandatory measures implementing international norms applicable to such special areas.

Subject to the agreement of the competent international organization, the coastal state may also adopt additional national laws and regulations on discharges or navigational practices.

Finally, provision is made to ensure that incidents involved
or threatening discharges will be promptly notified to states which may be affected.

Part XII of the Law of the Sea Convention laid down global standards containing more stringent and precise provisions as far as the enforcement aspect by the contracting party is concerned. In the second part of this chapter, I will point out the main articles which have to be taken into consideration.

The last category of conventions concerns the Regional Seas Program of the U.N.E.P. in collaboration with the I.M.O. in order to prevent and reduce marine pollution but also to ensure effective compliance with the international agreed rules on this subject. Among these regional instruments, I will mention "The Abidjan Convention" which includes countries concerned by this thesis. The convention and its protocol are broadly similar to those adopted for the Mediterranean and Kuwait Regions.


The Conference held on 21 March 1981 in Abidjan adopted (3) three important documents:

1) The Action Plan for the Protection and Development of the Marine environment and coastal areas of the West and Central African Regions;

2) The Convention for Co-operation in the Protection and Development of the marine and coastal environment of the West and Central African Region; and

3) The Protocol concerning Co-operation in Combating Pollution in cases of Emergency (for which the U.N.E.P. is the Organization responsible for Secretariat duties).

The Convention which consists of 31 Articles and one Annex related to the guidelines for for the report to be made pursuant to Article VII of the Protocol entered into force on 5th August 1984 after ratification by six (6) countries which were: The Ivory Coast, Guinea, Cameroon, Senegal, Togo & Nigeria.

The geographical coverage is defined in Article I of the Convention as the marine environment, coastal zones and related inland waters falling within the jurisdiction of the states of the West and Central Region, from Mauritania to Namibia inclusive, which have become contracting parties to this Convention.

Under Article IV(4) of the Abidjan Convention, the contracting parties shall co-operate with competent international regional and sub-regional organizations to establish and adopt recommended practices, procedures and measures to prevent, reduce, combat and control pollution from all sources, and to assist each other in fulfilling their obligation under this Convention and its related protocol.

In addition, the contracting parties shall develop and coordinate national research and monitoring programmes concerning all types of pollution in the convention area and shall establish in co-operation with competent international and regional organizations, a regional network of national research centres and institutions to ensure compatible results (Art. XIV(2)).

Article V of the Protocol states that each contracting party shall provide the other contracting parties and the organization
with information concerning:

a) Its appropriate national authority;

b) Its laws, regulations and other instruments relating generally to matters referred to in this Protocol, including those concerning the organization and operation of the appropriate national authority, to the extent that this organization and operation relate to matters referred to in this Protocol.

c) Its national marine emergency contingency plans.

The reader will find the complete text of this Convention and its Protocol in the Annex I of this paper.

By describing very briefly the main requirements of the International Conventions, it is my intention to help the competent authorities of Guinea and Guinea-Bissau to better appreciate both the political and scientific complexity of the problem. Indeed, I think an understanding of the scientific aspects of marine pollution is a prerequisite for any useful examination of legal and political arrangements for its prevention and control.

That fact is a reality because if we look over the status of these international instruments given in Table 5, we will see that the percentage of ratification for the most part of the basic instruments is very small in comparison with the number of the I.M.O.'s member states (125 in October 1983).

In addition, it is easy to deduce that in spite of the measures taken by I.M.O.; till now marine pollution persists. Nowadays, it would be desirable not to adopt new measures but to ensure that those which have already been adopted are implemented as rapidly and as effectively as possible. In this process, what should be the role of a contracting party?
2.2 Role of a Contracting Government.

In his document on "Establishment of Maritime Affairs in Developing Countries", Professor Vanschiswar assesses the various maritime activities which are to be attended to in any developing maritime country. Among these activities, I will point out the following which I think are essential

i) Membership of I.M.O.;

ii) Preparation and implementation of merchant shipping legislation (i.e. Merchant Shipping Act);

iii) Development of maritime administration infrastructure (capable of implementing the I.M.O. Conventions).

Articles 67 and 68 of the International Maritime Organization (IMO) define the procedure applicable for membership to the Organization which operates by way of reminder such as:

The I.M.O. provides a forum where member governments and interested organizations mentioned earlier, exchange information on and discuss and endeavour to solve problems connected with technical, legal and other related questions concerning shipping and the prevention of marine pollution from ships.

Matters considered are proposed or raised by member governments or organizations. As a result of such discussions, the Organization may adopt and recommend appropriate regulations for adoption by member governments. In appropriate cases, the Organization may prepare for and convene international treaty instruments which enter into force on dates determined by member governments.

As we know, before enforcing a convention, a member state must be party to it and we also know that signature, ratification
acceptance, approval or accession to any treaty are the acts of states by which their consent is expressed to be bound by a treaty. For that purpose, the Vienna Convention on the Law of Treaties, 1969 in its Articles 6-18 is largely declaratory of customary international law.

At the national level, the process of approval or accession differs from one country to another according to the political situation which prevails in each country. The same case is valid for the implementation and enforcement process. In any case, the process for implementation of any international convention requires three important steps summarized in the self-explanatory Table 6.

After becoming a member of the I.M.O., the most urgent need for a contracting government is to set up an efficient maritime infrastructure and personnel capable of implementing the I.M.O. Conventions. Indeed, it would be very difficult to obtain an efficient Merchant Shipping Act without some qualified people in charge of maintaining the maritime infrastructure and functions. The lack of qualified personnel capable to elaborate the national legislation has obliged most maritime administration to leave the Merchant Shipping Act as far as the legal aspects are concerned in the hands of the appointed lawyers from the Ministry of Justice.

The principal reason for this practice is that the Merchant Shipping Act will always have to be in compliance with the country’s jurisdiction as far as the application of the penalties for violations of anti-pollution rules are concerned.

Moreover, in many merchant shipping legislations, there are also some conflicts of competences or attributions, between the
<table>
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<tr>
<th>PHASE 1</th>
<th>PHASE 2</th>
<th>PHASE 3</th>
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<tbody>
<tr>
<td>a) Ratification/Accession</td>
<td>Implementation of National Legislation through the exercising of appropriate functions by the officials of Maritime Administr.</td>
<td>Certification of Ships/Seafarers &amp; Issue of clearances to ships to proceed to sea</td>
</tr>
<tr>
<td>b) Prepare National legislation (Primary &amp; Subsidiary)</td>
<td></td>
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<tr>
<td>c) Documentation</td>
<td></td>
<td></td>
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<tr>
<td>d) Prepare the Executive Orders Instructions to Officials concerned</td>
<td></td>
<td></td>
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<tr>
<td>e) Develop appropriate and adequate Maritime Administration Infrastructure</td>
<td></td>
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</table>

(Source: Establishment of Maritime Affairs in developing countries by Prof. Vanchiswar - WMU, 1984.)
legislation jurisdiction and the enforcement jurisdiction.

The first one consists in prescribing legislation for individuals or ships while the second, which includes arrest and judicial jurisdictions, consists of measures to enforce the legislation this prescribed.

The application of a jurisdiction, for instance by a member state on a particular ship (in case of claim due to violation of anti-pollution regulations) depends on whether it is Flag, Coastal or Port State. Understanding of the difference between the three functions is important for those who are called upon to observe the provisions of the Merchant Shipping Acts.

A Flag State is defined as the state whose nationality a particular vessel has. A Coastal State is the state in one of whose maritime zones a particular vessel is whereas, a Port State is the state in one of whose ports a particular vessel is.

Under the customary international law, the member state’s competences as far as legislative and enforcement jurisdiction are concerned can be summarized as follows in Table 6.

From this table, it appears that a contracting government’s obligations under the convention system as far as the enforcement provisions of maritime safety and pollution prevention are concerned are of two principal categories:
1 - As a Flag State;
2 - As a Port and Coastal State.

As a Flag State, it must ensure that its ships meet the standards or the convention and that it carries out certain other duties in respect of:

i) safe manning;
ii) investigating casualties to its ships;
## Table: 6 STATE'S COMPETENCES.

### A- LEGISLATIVE JURISDICTION.

<table>
<thead>
<tr>
<th>AUTHORITIES</th>
<th>COMPETENCE'S JURISDICTION</th>
<th>LEGAL INSTRUMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAG STATE</td>
<td>Can prescribe anti-pollution rules applicable to its vessels, wherever in the world they might be.</td>
<td>OILPOL 54 Art. 3 &amp; 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MARPOL 73/78 Art. 3 &amp; 4</td>
</tr>
<tr>
<td>COASTAL STATE</td>
<td>May prescribe any legislation relating to pollution that it wishes for foreign vessels in its territorial sea, provided that such legislation does not have the effect on innocent passage.</td>
<td>MARPOL 73/78 Art. 4(2)</td>
</tr>
<tr>
<td>PORT STATE</td>
<td>Can adopt anti-pollution legislation for foreign vessels in its ports and even make the observance for such legislation or particular international conventions a condition of entry to its ports.</td>
<td>OILPOL 54 Art. XI</td>
</tr>
</tbody>
</table>

### B- ENFORCEMENT JURISDICTION.

<table>
<thead>
<tr>
<th>AUTHORITIES</th>
<th>COMPETENCE'S JURISDICTION</th>
<th>LEGAL INSTRUMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLAG STATE</td>
<td>Can exercise judicial jurisdiction in respect of violations committed anywhere by its vessels.</td>
<td>MARPOL 73/78 Art. 4(1) &amp; 6(4)</td>
</tr>
<tr>
<td></td>
<td>Must inform the IMO of the enforcement action it takes against its vessels, whether acting on its own initiative or as the result of information provided by other States.</td>
<td>OILPOL 54 Art. X(2), XII</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MARPOL 73/78 Art. 4(3), 6(4), 11.</td>
</tr>
<tr>
<td>COASTAL STATE</td>
<td>Is permitted to enforce violation of its pollution legislation committed in its territorial sea by foreign ships by arresting suspected vessels and instituting legal proceedings against them or to forward to the flag state.</td>
<td>Terr.Sea Conv. Art. 19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MARPOL 73/78 Art. 4(2), 6(3) &amp; 6(4)</td>
</tr>
<tr>
<td>PORT STATE</td>
<td>Can exercise enforcement jurisdiction against a foreign vessel violating its anti-pollution legislation in one of its ports or territorial sea, but it cannot take any action in respect of violations committed before the ship enters its territorial sea.</td>
<td>OILPOL 54 Art. IX(5) &amp; X</td>
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<td>MARPOL Art. 5(2) &amp; 6(7)</td>
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</table>
iii) reports to the Organization.

Under the terms of the I.M.O. Conventions described in this thesis, contracting governments may organise surveys which include: Initial, Periodical, Intermediate and Annual surveys, before issuing Convention Certificates to its ships.

These certificates prove that the ship complies with the relevant convention requirements and other governments are expected to accept these certificates and permit ships holding such certificates to travel freely to their ports.

The most important certificates are given in table below.

<table>
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<tr>
<th>CONVENTIONS</th>
<th>CERTIFICATES</th>
<th>VALIDITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLAS &amp; PROTOCOL</td>
<td>Passenger Ship Safety</td>
<td>1 year</td>
</tr>
<tr>
<td></td>
<td>Cargo Ship Safety Construction</td>
<td>not more than 5 years</td>
</tr>
<tr>
<td></td>
<td>Cargo Ship Safety Equipment</td>
<td>2 years</td>
</tr>
<tr>
<td></td>
<td>Cargo Ship Safety Radio</td>
<td>1 year</td>
</tr>
<tr>
<td>LOAD LINE</td>
<td>International Load Line</td>
<td>not&gt;5 years</td>
</tr>
<tr>
<td>MARPOL 73/78</td>
<td>International Oil Pollution (IOPP)</td>
<td>not&gt;5 years</td>
</tr>
<tr>
<td></td>
<td>Internat. Poll. Prevent. (Annex II)</td>
<td>not&gt;5 years</td>
</tr>
<tr>
<td></td>
<td>Internat. Sewage Poll. Prevention</td>
<td>not&gt;5 years</td>
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<td></td>
<td>(Annex IV)</td>
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</tbody>
</table>

As a Port and Coastal State, it must ensure that foreign ships visiting its ports are safe to proceed to sea. That means that it may inspect ships to verify whether the ship has discharged any harmful substance in violation of the Regulations and detain sub-standard vessels until faults are corrected, though the Flag State's competence extends to all offenses except for those committed within waters under the Coastal State's jurisdiction.
In the national legislation of a contracting party, the organisation of the control of ships and certification must be clearly defined according to the country's capability and the provisions of the convention. For instance, the I.M.O.'s Marine Environment Protection Committee has developed a scheme which has to be followed in the implementation of the requirements of MARPOL 73/78. The reader will find in the Annex of this thesis an extract of this scheme.

In addition to the control of ships and certificates, it is necessary to mention that the procedures of control of discharges laid down under OILPOL 54/69 are still now valid.

Moreover, it was considered that while I.M.O. was to be responsible for developing technical standards, rules on jurisdiction should also remain regulated by the Law of the Sea Convention which challenges the existing primacy of Flag State jurisdiction and gives additional powers to Port States to prosecute ships for pollution offences. The following Articles of the Law of the Sea Convention have to be taken into consideration when drafting the National Legislation:

- Article 217: Enforcement by Flag States
- Article 218: Enforcement by Port States
- Article 219: Measures relating to seaworthiness of vessels to avoid pollution
- Article 220: Enforcement by Coastal States
- Article 221: Measures to avoid pollution arising from maritime casualties, and
- Article 225: Investigations of foreign vessels.

One problem which maritime administrations in developing
countries are facing is how to be able to fulfill these international obligations for both Flag and Port State activities taking into account the lack of qualified and experienced marine surveyors and also the high cost involved.

Under the convention system, these obligations can be undertaken by nominating surveyors or using recognised organisations such as Classification Societies acting on the Administration's behalf. For example, Regulation VI of Chapter I of SOLAS 1974 provides that an Administration may authorise a Classification Society to undertake the inspection and survey of ships and to issue the relevant Certificates.

The main Classification Societies are:

- Bureau Veritas
- Det Norske Veritas
- Lloyd's Register of Shipping
- American Bureau of Shipping
- Germanischer Lloyd
- Nippon Kaiji Kyokai
- Polish Register of Shipping
- Registro Italiano Navale
- USSR Register of Shipping.

With respect to what kind of surveys and plan approvals for which the Classification Societies may be of assistance to a contracting Government, the following areas may be considered:

- Plan approvals and surveys related to 1966 Load Line Convention,
- Tonnage measurements,
- Plan approvals and surveys related to SOLAS 1974 Convention,
- Plan approvals and surveys related to MARPOL 73/78,
— Plan approvals and surveys related to I.M.O. Codes and Guidelines.

However, this delegation does not relieve an Administration of its responsibilities and in particular its obligations.

This fact is pointed out in Regulation 6 / chapter I of SOLAS 74 and of the Protocol 1978 of SOLAS 1974 which states:

"In every case, the Administration shall fully guarantee the completeness and efficiency of the inspection and survey, and shall undertake to ensure the necessary arrangements to satisfy this obligation."

The contracting government may choose to select certain areas to be plan approved and surveyed by governmental surveyors, while the remaining areas are delegated to the Classification Societies.

In concordance with the enforcement of the safety standards and pollution prevention, the contracting government must attach a great importance to the enforcement of training and personnel standards because it is an inestimable contribution to it. Indeed, there is no doubt that the good navigation and safety in general are dependent on good personnel and I agree with Mr Srivastava when he indicates, "No matter how many standard rules you have, if those who are called upon to observe them are not trained, you cannot ensure safety."

The acceptance and implementation of the I.M.O. Conventions depend very much on the availability of skilled personnel and sometimes the lack of financial resources, because conventions require changes which cost money.

To overcome these difficulties, I.M.O. through its Secretariat provides guidance and assistance to states in various fields. In the field of marine environment protection, technical assis-
Distance programmes cover such areas as:

- Advisory services;
- fellowships;
- seminars;
- workshops and training courses;
- meeting of Government experts;
and preparation of manuals and training materials (all of this in the consideration of acceptance and implementation of I.M.O. Conventions).
CHAPTER THREE : MARINE POLLUTION IN GUINEA AND GUINEA-BISSAU.

3.1 Sources of Pollution and Effects.

The main sources of marine pollution which both Guinea and Guinea-Bissau are facing are the more mundane ones including sewage from cities and some deliberate discharges such as:

- Discharge both at sea and in port of raw sewage,
- Discharge overboard of previous cargo sweeping and general rubbish from the ships' hold. Such material could be contaminated for a variety of reasons,
- The discharge of crew/catering waste, including plastic containers or sheeting and other refuse, and
- The discharge of toxic fuel gases from the ship's engine due to inefficient combustion or malfunction of the equipment.

There is also the discharge from ships in course of duties in port (terminal operations, refuelling, etc...)

A particular attention has to be given to this latter category of discharge commonly called oil spill in port, which are small in size but in fact very important.

In Guinea-Bissau, the fact had not seriously been observed because of the expansion and modernization works of its main port Bissau. But we can note that despite this fact, the potential sources of pollution exist in Guinea-Bissau.

This land of rivers and estuaries covers around 36,125 sq. km including an archipelago of about forty (40) small islands (BIJAGOS) and has also an important fluvial network which penetrates inside of the country. The three (3) main rivers are each
navigable for about 150 km,
- From RIO CACHEU to FARIM,
- From XAYANGA to BAFATA, and
- From RIO CORUBAL to MADINA DO BOE.

It is not excluded that these waterways could be continuously polluted by these shipping activities.

As for Guinea, marine pollution is a perplexing problem for the Maritime Administration which is not able to abate it, especially in the port of Conakry which is short of cleaning-up facilities (minor oil spills). Indeed, when a visitor comes to the port of Conakry, the first thing he/she can observe is the colour of water in the central dock which is congested by the laid-up ships and by the floating wrecks, potential sources of pollution.

One of the principal source of the pollution of the sea is the sewage from the city of Conakry and its suburbs where people through lack of good information and sensitization think that the sea is a rubbish dump.

That is why it is not amazing to see everywhere around the peninsula of Kaloum all kinds of rubbish.

The port of Conakry is also facing another type of pollution from some bulk products dispersed here and there in the port area among which there are bauxite, clinker and alumina.

The port of Kamsar is polluted by bauxite.

Moreover the very bad storage conditions of bauxite and clinker in port, the defectiveness of the alumina store cannot permit one to evaluate the quantity of products entering the sea.
In addition to that, alumina escaping from its stores also seriously pollutes the environment near the port area before entering the seawater via run-off.

Finally the most important source of pollution of the sea originates from the effluent of the alumina plant, FRI-GUIA which is located 150 km from Conakry. What constitutes this kind of pollution?

In 1958, a Consortium started production of alumina from bauxite in the City of Fria. The transformation of bauxite, which is a chemical process needs some basic products, such as caustic soda, for the process.

At the end of the process, a certain quantity of products is dumped in the so-called "dams" not so far from the biggest Guinean coastal river, Konkoure.

According to the estimates given by the specialists of the plant, the percentages of the dry products dumped are the following:

- Alumina 23%
- Iron 45.5%
- Silica 6.5%
- Titane 5.5%
- Lime 1.5%
- Caustic Soda 3%

Since the beginning of the plant several dams have been built, but the total destruction of the river's environment from the level of the plant till its mouth, is a most bewildering spectacle.

Nowadays, the river Konkoure in its South part cannot be used because of this pollution and it is important to mention that there is no life in the area. If we can consider the oil spill in port as minor, the case of pollution from land-based industry must be taken into consideration by the Guinean autho-
rities in charge of maritime affairs.

From a legal point of view, what are the measures taken by the national authorities of the two countries for combating the pollution of their territorial waters?

In other words, what are the existing schemes established here and there for preventing pollution of their coastal line?

Before giving an answer to that question, it is interesting to remember that, as mentioned earlier, while Guinea has already an embryo of a maritime infrastructure, Guinea-Bissau will start in the near future to establish her Maritime Administration.

The lack of an appropriate authority has not permitted us to make an assessment of the problem although the country has been a member of I.M.O. from the 6th December 1977. In addition to that, one should keep in mind that the country is not party to any of I.M.O.'s International Conventions.

Guinea became a member of I.M.O. by the 3rd of December 1975 and at I.M.O.'s request has the advantage of assistance from the I.M.O. as far as the establishment of a Maritime Administration and the control of pollution matters are concerned.

This assistance has allowed the country to be party to the following of I.M.O.'s International Conventions as of the 1st April 1985 relate to the safety of ships and prevention of marine pollution from ships:

- The International Convention for the Safety of Life At Sea, 1960 (SOLAS 60),
- The International Convention for the Safety of Life At Sea, 1974 (SOLAS 74) by 19 th April 1981,
80.

- The International Convention for the Prevention of Collision at sea, 1972 (COLERG 72), by 19th January 1981,
- The International Convention on Load Line, 1966 (LL 66), by 19th April 1981,
- The International Convention for the Prevention of Pollution of the Sea by Oil, 1954 (OILPOL 54), by 21st April 1981,
- The Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region, 1981 (Abidjan Convention), and

3.2 Existing Schemes for Abatement/Prevention of Pollution.

Although a party to the I.M.O.'s International Conventions mentioned earlier, in Guinea there is in reality no scheme for preventing or combating the pollution from ships as such.

For a better understanding of the situation we will examine the following points:
- Legislation; - Manpower; - Administration.

But right away, we will mention that because of the lack of an appropriate administration in this field and consequently its corollary the total shortage of skilled personnel, we will describe as briefly as possible what has been done as far as the legislative aspect (primary and subsidiary) is concerned.

This point, as we know, is the crucial one for any Maritime Administration by which a country may enforce its legitimate rights in all maritime fields. In Guinea, as far as marine pollution is concerned, there are no strict national regulations against the environmental damage resulting from the discharge of water contaminated by oil.
Some Presidential Decrees and Ministerial Orders have been issued but not in relation with pollution matters as such because they are not in accordance with the international standards. Some of these Decrees are as follows:
- The Decree n° 321 of 24th of August 1964,
- The Decree n° 336 of 30th July 1980, and
- The Decree n° 251 of the 21st of May 1981 related respectively to the General Regulations of Fishing and Pollution of the Fishing Zones; the Definition of the Territorial Waters and the Creation of the National Centre of Marine Environment and Coastal Zones Protection.

It should not be necessary to reproduce these Decrees in order to discuss them. Some previous remarks had been already formulated by Mr Fouchier, an I.M.O. Adviser, and I shall not be going over them again. I would simply add that these Decrees must be completely reviewed by taking into consideration some present realities which are a highest priority such as, for instance, the delimitation by the International Court of Justice of the maritime boundaries between the two neighbouring countries Guinea and Guinea-Bissau in the North-West part of the country. The line delimiting the maritime territories of the two states has been as follows:

"The line delimiting the maritime areas pertaining respectively to the Republic of Guinea-Bissau and the Republic of Guinea".

a) begins at the intersection of the Cajet Thalweg and the meridian longitude 15° 06’30" West;
b) connects, by means of loxodromes, the following points:
A 10° 50'00" 15° 09'00"
B 10° 40'00" 15° 20’30"
C 10° 40'00" 15° 34'15"

c) follows a loxodrome on a bearing of 236° from Point C above to the outer limit of the maritime territories which are recognized under General International Law as appertaining to each State.

The accompanying Figure 5 gives an idea of that new delimitation of the maritime boundaries.

In the same line of thought, one must redefine the tasks more precisely than those formulated in the Decree no 259/PRG/81 creating the National Centre of Protection of the Marine

Indeed a look at the provisions of the Decree shows that it will be very difficult or impossible for the Maritime Administration to reach the targets of this Decree whose provisions are the following:

Article II determines the limits of responsibility of the Centre which consist in:

i) 2(b) setting up some Contingency Plans in case of accidental pollution (accidents at sea and in port including those arising during the exploration and exploitation activities at sea),

ii) 2(d) applying measures of abatement of pollution from tankers and to survey/inspect tankers,

iii) 2(e) establishing some close relations with other regional and sub-regional specialized agencies in order to abate marine pollution.
FIGURE No5: MARITIME DELIMIATION BETWEEN GUINEA AND GUINEA-BISSAU.
(Source: ICI Press Communque, The Hague, Netherlands 14/2/1985)
These roles as defined in the Decree raise a lot of objections and the most important can be the following:

1 - Was the creation of such a Centre untimely?
2 - What should be the principal role of this Centre?

In my opinion, it would be desirable before taking a decision of creating such a Centre to make a good assessment of the role and need of such an institution in a country which is facing some previous difficulties as far as maritime infrastructure is concerned. This assessment would then include all aspects such as qualified personnel and basic equipment.

How can such a Centre be operational if the Directorate on which it depends is not itself operational?

How can such a Centre fulfill the following obligations such as:
- to establish a National Contingency Plan,
- to proceed to survey/inspections of foreign tankers, or
- to identify the aquatic zones and so forth.

Survey and inspection of all ships are already the responsibility of the National Centre of Safety of ships.

To conclude, if this Centre, which has been created as a beforehand to the Abidjan Convention, must hold its own, it would be necessary to define its role as a co-ordination Centre in charge of collecting datas from the National Research Centers such as for instance the Oceanographic Centre of Ratoma, and this within a general framework of marine pollution combating which will be defined in the next pages.

In addition to these existing texts constituting the subsidiary legislation, Guinea has a Merchant Shipping Act (Merchant Marine Code) elaborated by 1977 and comprising twenty (20) parts.
It should be a little argument to say that this maritime legislation is out-of-date, and as in the previous case, it is not necessary to repeat the main concluding remarks on this subject already formulated by the I.M.O.'s Advisers from 1979 to 1983 (see attached document in the Annex to this thesis).

As far as marine pollution is concerned, this Code despite its volume does not provide any stringent measures for preventing and combating this phenomenon.

In front of this critical situation, in case of serious pollution of their coasts, how can the two countries claim compensation from the spiller if they can not refer to their own legislation, both primary and subsidiary?

The answer to that judicious question resides in the establishment of an efficient machinery and in the next chapter we will try to define what can be done in these countries, where everything has to be set up from scratch in the field of marine pollution abatement.
CHAPTER FOUR: RECOMMENDATIONS AND SUGGESTIONS.

In this Chapter our aim is to make some proposals we think useful for facing the problem related to marine pollution in Guinea and Guinea-Bissau. Our approach of the problem will be to consider it as one of the varied aspects connected with the sea and from which it cannot separately be solved.

In the past, considered as a means of communication and exchange and a reservoir of foods, the sea has now also become a reservoir of energy and mineral resources, etc, a bone of contention between nations. It is one of the last spaces of freedom.

This maritime space is divided into:
- High sea,
- Exclusive Economic Zones (EEZ) where the coastal state is to exercise sovereign rights on the resources but not on the space itself,
- Territorial Waters where the coastal state exercises its sovereignty under reserve of innocent passage.

The action of the state at sea then comprises some national and international aspects and for both Guinea and Guinea-Bissau it respectively covers 50,000 and 45,000 sq.km.

At the national level, these actions include the following (except for the defence ones).
- National sovereignty and public persons,
- Safeguard of goods and persons,
- Protection of the marine milieu.

The above three (3) biggest headings correspond to the
respective tasks:
- Maritime research and rescue,
- Surveillance and police of navigation,
- Police of fishing,
- Economic and financial police,
- Prevention, police and organisation of the struggle against pollution,
- Systematic surveillance of the economic zones for the information purpose.

You will agree with us on the following:

i) that the fulfilment of these tasks by the coastal state requires an effort of co-ordination as well on the government level as on the regional one,

ii) That in most developing countries, there are some conflicts of competence between different governmental authorities having some interests at sea i.e. the Ministry in charge of fishing activities and the Ministry in charge of merchant marine.

To avoid such conflicts, it would be desirable to set up an Interministerial Unit which would comprise all Ministries having some interests at sea such as those in charge of

- Transport (Merchant Marine) - Home Office
- Agriculture (Fishing) - Defence, and
- Communications & Information - Finances (Customs)
- Scientific Research

This unit can be considered as a working group and will be in charge of deliberations on the Government's policy in the field of the sea and of determining the Government's actions mainly in the field of the use of maritime space, the protection
of the marine environment, the exploitation of marine resources and of the soil and sub-soil of the sea.

The general attributions of the unit, which be defined by a Presidential Decree, are the following:
a) To co-ordinate the different Administrations involved at both local and national levels,
b) To ensure that the arrangements for using the resources available for dealing with oil pollution at sea are as effective as they can be,
c) To develop a national plan, including measures to deal with other potential marine pollutants, such as chemicals and other dangerous goods,
d) To relate these plans to those of neighbouring countries so as to provide as much mutual support as possible through the Ministry of Foreign Affairs,
e) To take charge of operation at sea in the event of a marine pollution emergency.

On that account, the competence to make policy on marine pollution matters should in future be shared among various Ministries. In other terms, this unit will be such a response which comprises in this particular context all those actions taken when a pollution incident does occur including notification of all concerned, clean-up, scientific assessments, coordination among Departments composing the unit.

For instance, in this unit the Navy missions, as it has been seen in other countries, exist on three (3) levels:

i) Prevention

ii) Preparation of anti-pollution action
iii) Leading anti-pollution action.

To fulfil its obligations, the Navy will exercise a policing role that it alone could carry out efficiently because it would be a waste of time to decree laws and regulations if they are not at all respected.

The role of co-ordination will be assumed by the Department in charge of Transport through its Directorate of Maritime Affairs. For that purpose, it will assume the responsibility of leading and co-ordinating the actions of the different Ministerial Departments and the local authorities in the working out and implementation of measures for the preparation of anti-pollution operations.

It must also verify that this preparation, in the form of local plans for intervention, is carried out along the lines of the Government's directives.

This Department is also responsible for preparing Contingency Plans; the framework of these plans is to be developed by the governmental unit, but their details will take into account local conditions.

As we can note, the Department of Transport will have more technic powers, than any other department has. In this field, it is responsible for matters related to safety at sea, whether for vessels themselves or shipping in general.

Finally, we can say that the preceding scheme once established will permit, without any doubt, to remove as far as possible the risk of pollution of the sea and to act with the maximum effectiveness if a pollution accident does occur because it
encompasses the major steps needed for such an action namely, the prevention, surveillance, response and enforcement aspects.

I will lay stress on the importance of setting up such Unit in small coastal states like Guinea and Guinea-Bissau which are suffering from a lack of financial resources, because all things considered, this will make it possible to save material and human resources and to avoid a waste of time in taking decisions.

Moreover, the Unit will consider the feasibility of creating a National Service for Coastal Surveillance which will be composed either of Navy only or of civilians, or of a mixed unit.

Figure 6 gives the structure of the whole machinery.

From this Figure, one can mention the following:

i) The Governmental Unit is not only an advisory body to the Ministry of Maritime Affairs which is the co-ordinating unit but it is also in charge of the whole maritime policy of the country. As such it should have the overall responsibility for matters related to prevention and combating pollution.

ii) In this Organizational structure, the role of the Regional Inspectorate will be to co-ordinate all actions related to maritime activities which would happen in the limits of its jurisdiction; while the Local Directorate will be in charge of co-ordinating activities of the Maritime Districts which are under its control.

iii) The "National Service for Coastal Surveillance" will be a body within the Directorate of Maritime Affairs and will also be in charge of pollution prevention, while the Division of Safety of Navigation of the Directorate will be in charge of
Fig. 6: Organizational Structure of Oil Spill Response.
safety matters.

The efficiency of such a machinery at the national level requires preparation work which will depend on several factors, but which we can summarize into three (3) factors as follows:

i) Establishment of an effective Maritime Authority/Administration capable of

- implementing and enforcing the international conventions related to marine pollution through the national maritime legislation (subsidiary & primary),
- empowering Classification Societies and planning the training of nationals in this specific field.

ii) Establishment of a National Contingency Plan,

iii) Regional/International Co-operation.

1 - Establishment of an effective Maritime Authority:

As a matter of highest priority, it is necessary to create a small "cell" in Guinea-Bissau which will perform the duties and functions of Maritime Authority despite the acute shortage of duly qualified personnel.

At the request of the country a study can be undertaken through the I.M.O.'s assistance on the establishment of principles required by the local government for the development of a Maritime Authority. Once this new infrastructure is set up, it will start to draft the subsidiary legislation, prior to any effective enforcement of maritime safety standards.

While the maritime situation in Guinea remains at present as expressed in the different mission reports of I.M.O.'s Advisers, it has been found that there is a complete lack of awareness on the part of the Government officials concerned of
the imperative need to establish an efficient Maritime Authority (or to reinforce the existing scheme) which will have a general knowledge of maritime activities.

Indeed the Directorate of Merchant Marine in its present situation cannot solve any problem as far as enforcement of the subsidiary legislation is concerned although the country be party to the I.M.O.'s International Conventions related to marine pollution mentioned earlier.

The most important thing is to know what is the need of the country and to try step by step to solve the problems by good planning.

For instance, there is no doubt that before coming back, graduated in Maritime Safety Administration both Nautical and Engineering from the World Maritime University, the country will not be doing survey and inspection of ships as prescribed by the international standards. To put this fact right, it must empower some Classification Societies under the strict control of the Directorate of Merchant Marine (or Maritime Authority). During this period, some nationals could be trained whether in the Societies' representative offices in the country or outside.

In the same line of thought, through these Classification Societies certain training programs for nationals can be organised especially in foreign Centres of combating Marine Pollution and some representatives can be sent to Seminaries such as "INFOPOL" in France.

It has earlier been said that the only way for any effective application of principal rules (those formulated by I.M.O.) on Marine Pollution is by legislation, both subsidiary and
primary. In consideration of that, it would be a first and important priority that Guinea reviews, updates and promulgates her marine legislation. Before starting this important work on the legislation side, it should be desirable for both Guinea and Guinea-Bissau to ratify the following international conventions:


- The Protocol concerning Co-operation in Combating Pollution in cases of Emergency, Abidjan, 1981. (GUINEA-BISSAU)


- The International Convention relating to Intervention on the High Seas in cases of Oil Pollution Casualties, 1969. (GUINEA & GUINEA-BISSAU)

- The International Convention for Oil Pollution Damage, 1969 (CLC 69). (GUINEA & GUINEA-BISSAU)


In addition to the preceding Conventions, it would be desirable that Guinea-Bissau ratifies those related to the safety aspects as indicated in Table 5 (p.60).

There are also many important Rules and Regulations (subsidiary legislation), specially relevant to
- Maritime safety,
- Recognition of Classification Societies,
- Prohibition of discharges,
- Punishment of violations,

The Rules on unlawful discharges will mention that slops are not accepted in Guinean and Guinean-Bissau ports.

- Territorial limit and Economic Zone,
- Fisheries limit and Pollution limit,
- Limit of Liability,
- Intervention on the High Seas in cases of emergency, and so forth.

These Rules and Regulations would need to be drafted and promulgated as soon as the up-to-date Maritime Legislation has been enacted. They have the force of Law, and failure to comply with them can lead to civil penalties (monetary in nature) or to criminal penalties, depending upon the nature of the infractions.

By doing this work, it would be desirable to contact some experts from the Ministry in charge of Justice in order to uniformize the penalties.

Moreover, as far as the primary legislation is concerned, the reader will find in the Annex to this paper, a draft proposal which will be submitted to the authorities of the two countries. This proposal will strictly be limited to the maritime safety and pollution prevention matters.

To give more efficiency to the Code, it would be desirable to consider the aspect related to the multiple amendments of the I.M.O.'s International Conventions. It can then be drafted into
two (2) parts which will correspond to the following aspects:

1) Safety of navigation and protection of Marine environment including Safety of ships, Navigational aids, Certification of seafarers, etc.,

2) Commercial aspects of shipping including maritime insurance, affreightment, etc.

After the definition of the core of the enforcement rules providing for penalties and methods for the punishment of contraventions of the principal rules, the second necessary step will concern Regulations related to the abatement of Marine Pollution comprising the cleaning of spillages caused by either intentional or accidental discharges which are of great significance so far as Contingency Planning is concerned.

2 - Contingency Plan:

As it has been mentioned earlier, all coastal States, whether they export oil, engage in off-shore oil production or are only at risk from oil cargoes in transit will have to face the problem of oil spills threatening their coastline and related interests.

In many cases, from an environmental point of view, the only fully acceptable way to deal with an oil spill is to physically remove the oil from the water. Only when this is not feasible should measures such as dispersants be considered, and even then only applied with the greatest caution and under strict scientific control in order to avoid other pollution.

In developing a capability for dealing with oil spills at any time at sea, the first and most important step is to define
a precise plan which will endow the national organization with
the power and responsibility for co-ordinating whatever re-
sources, large or small, at both national and local levels.

Moreover, within the national organization in charge of
the co-ordination work (such as the Ministry of Transport for
the Governmental Unit), three (3) possible options can be taken
into consideration.

i) To put the Direction of operation under some kind of
Director who must be invested with special emergency powers
and would be able to order the following actions:
- Deployment of men and resources,
- Handling of the clean-up operations and
- Methods of disposal of the oily waste.

ii) To establish a small co-ordination section within the O-
ceanographic Research Centre for the purpose of co-ordinating
the views and activities of the various bodies involved, with
the idea that any difference should be resolved by discussion
within this small unit which will become the core of Marine
Pollution Research with a monitoring programme.

iii) To leave the matters entirely in the hands of the local
authorities, but for the Government to make available equipment
which they could not reasonably be expected to afford and to
provide resources and men upon request, in order terms the
"logistical support" approach.

According to the country's capability, one of these options
can be chosen or a combination of the three.

Like in the other maritime activities, the I.M.O. through
its Secretariat and in collaboration with the U.N.E.P. provides
assistance in the setting-up of National or Regional Contingency Plans. It is within the context of such assistance that Mr. Fouchier has already proposed to Guinea some guidelines needed for the elaboration of the Guinean Contingency Plan. Similar work can be done for Guinea-Bissau through the I.M.O.'s assistance.

These proposed guidelines have to be completed and some of the proposed structures need to be readapted to the country's present situation. Once this preparatory work has been done, the proposal plan will be submitted to the Governmental Unit established for approval before starting the writing work by the Directorate of Merchant Marine under the supervision of an appointed national commission having a general view of all aspects involved.

During the review work of the proposed guidelines, one should keep in mind that to be complete, a Contingency Plan must cover the following functions:

a) Systems for surveillance, prediction and follow-up are needed in order to detect and monitor oil spills as they occur and to provide real-time information and prediction on movement and behaviour of oil spills.

The oil spreads in three phases (Evaporation-formation of oil slick-formation of tar lumps sinking (due to natural biochemical degradation). These phases must be taken into consideration when it will be a question of starting to combat an oil spill.

b) Good communication and strict command and co-ordination are of vital importance for the co-ordination and deployment of
all oil combating resources, as well as for handling operational information and documentation indispensable for planning and later debriefing. Here, an essential element is scientific support to enable assessment of the impact on the environment and to advise on abatement measures.

c) **Equipment, ships and arrangements for physical removal of the oil** formed into integrated mechanical oil combating systems should be regarded as the main solution to the abatement problem. However, other methods should not be excluded, i.e. the use of solvents and dispersants as complementary or alternative methods in special cases.

The physical removal of oil spills generally requires the following two (2) components:

i) Equipment for confining the oil spill or parts of it, such as booms for use offshore or in sheltered waters;

ii) Equipment for recovering the oil from the water, i.e. skimmers, conveying belts and hydraulic grippers.

d) **Base and maintenance facilities** which cover permanent oil combating bases and temporary bases set up for emergency operations, and in addition the means for transporting resources to and from the site as well as repair maintenance and supply functions.

e) **Final disposal** ashore can cause serious problems, especially in the case of large quantities of badly contaminated oil. Both technical and organizational problems are involved, which must be thoroughly studied and prepared for in order to avoid the risk of seriously disrupting the whole clean-up operation.

By elaborating the following documents such as the Merchant Shipping Act and the National Contingency Plan, one should also
take into account various manuals and guidelines already produced by the Marine Environment Protection Committee (MEPC) of I.M.O., including those specially related to the implementation and enforcement of the MARPOL 73/78 Convention. The reader will find in the Annex a list of these documents.

The first factor which is of the greatest significance in the process of the abatement of pollution in cases of emergencies is the co-operation among Governments whether at the Regional or Inter-regional levels.

3 - Regional Co-operation:

After resolving both the legal and administrative steps as stated earlier in the preceding chapters, one of the best solutions will be for both Guinea and Guinea-Bissau to set up through their respective competent authorities some co-operative arrangements in order to impose their national rules and regulations in identical form despite of the difference between their legislative procedures.

In a first step, a bilateral agreement can be established between the two countries through their Governmental Units and later on a bilateral Commission could be in charge to solve all problems related to marine pollution in the territorial limits of the two countries, according to the provisions of the Abidjan Convention and its Protocol (Art. V). We think that by such arrangements, we could set up Sub-regional Contingency Plans including Guinea, Guinea-Bissau, Cape Verde, Liberia, Sierra-Leone, Gambia, Senegal and Mauritania. These plans will reflect the policies and procedures set out in the National Contingency Plan but go much more deeply into specifics.
101.

Each plan is tailored to the characteristics of its area taking into account patterns of transportation, concentration of industry, available governmental and local facilities, and configurative intricacies of ports and waterways, if any.

The Sub-Regional Plans will contain a wealth of detailed information including inventories of critical water use areas, drinking water intakes, potential pollution sources environmentally sensitive areas, scientific communities, and clean-up contractors and their equipment.

As far as the establishment of a Control Centre of Pollution is concerned, it would be desirable that the Oceanographic Research Center of Conakry, the biggest in the West African Region, took care of this aspect as a part of marine research.

For that purpose, through the international co-operation between countries involved, and other regional organizations, all functioning principles should be defined comprising the training aspects of personnel and equipment of this Centre. Indeed, the cost of equipment can not easily be obtained by some small and poor countries facing their problems of development. Only by international negotiations can such a Centre be equipped with at least some basic elements for combating minor oil spills in some specific areas of the Sub-Region and in some ports if necessary.

To give an idea of the absolute need of co-operation in this field, the reader will find in the Annex a table showing the methods (preventive and curative) for combating oil pollution experienced by the "CEDRE", French Research and Experimentation Centre of Accidental Pollution.
By way of a concluding remark, as matters stand today and as far as abatement of marine pollution is concerned, we agree with the formula which states that "International co-operation is essential while global co-operation is required".

CONCLUSION.

As described all through this thesis, Marine Pollution is a threat both to marine life and human beings when it enters into a food cycle.

I will be happy if Guinea and Guinea-Bissau pay great attention to this phenomenon.

The organizational structure proposed to the authorities of the two countries is not a final one, it is or will be a complement to the one already elaborated and I think once established, many problems related to control of Marine Pollution in particular and other matters connected with the sea in general will be solved.

I will appreciate it if the competent authorities understand the necessity of co-operation in this particular field. They must bear in mind that for any accident or major oil spill which occurs in the territorial waters of one of the countries, the other will be affected sooner or later by the effects.

Having no sufficient financial resources and skilled personnel the only thing to do is to foster good co-operation, and it would be desirable for the countries to standardize their procedures and practices within an International or Regional Organization.

Today, there is no doubt that the implementation of I.M.O.
Conventions reduces accidents and major oil spills at sea. In the same line of thinking one can say without any hesitation that the battle against marine pollution involves many different processes which can be summarized as follows:

- The I.M.O. is the comprehensive body dealing with international treaties acceptable to the world community;
- National action must be taken to bring those treaties into force;
- The Conventions must be efficiently enforced and the personnel must be trained to operate according to the provisions of these Conventions;
- International Co-operation is essential and global co-operation for combating the threat of pollution is required.

It is my hope that this Thesis written by a beginner may be a contribution towards the protection of the marine environment of Guinea and Guinea-Bissau.
CONVENTION FOR CO-OPERATION IN THE PROTECTION AND DEVELOPMENT OF THE MARINE AND COASTAL ENVIRONMENT OF THE WEST AND CENTRAL AFRICAN REGION.

The Contracting Parties,

Conscious of the economic, social and health value of the marine environment and coastal areas of the West and Central African Region,

Fully aware of their responsibility to preserve their natural heritage for the benefit and enjoyment of present and future generations,

Recognizing the threat to the marine and coastal environment, its ecological equilibrium, resources and legitimate uses posed by pollution and by the absence of an integration of an environmental dimension into the development process,

Realizing fully the need for co-operation among the Contracting Parties in order to ensure sustainable, environmentally-sound development through a co-ordinated and comprehensive approach,

Realizing also the need for a carefully planned research, monitoring and assessment programme in view of the scarcity of scientific information on marine pollution in the West and Central African Region,

Noting that existing conventions concerning marine pollution do not cover, in spite of the progress achieved, all aspects and sources of marine pollution and do not entirely meet the special requirements of the West and Central African Region,

Have agreed as follows:

Article 1: GEOGRAPHICAL COVERAGE

This Convention shall cover the marine environment, coastal zones and related inland waters falling within the jurisdiction of the States of the West and Central African Region, from Mauritania to Namibia inclusive, which have become Con-
tracting Parties to this Convention under conditions set forth in articles 27 & 28 (1) (hereinafter referred to as the Convention area).

Article 2: DEFINITIONS

For the purposes of this Convention:

1. "Pollution" means the introduction by man, directly or indirectly, of substances or energy into the marine environment coastal zones, and related inland waters resulting in such deleterious effects 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.

2. "Organization" means the body designated as the Secretariat of the Convention and its related protocols according to article 16 of the Convention.

Article 3: GENERAL PROVISIONS

1. The Contracting Parties may enter into bilateral or multilateral agreements, including regional or subregional agreements, for the protection of the marine and coastal environment of the West and Central African Region, provided that such agreements are consistent with this Convention and conform to international law. Copies of such agreements shall be deposited with the Organization and, through the Organization, communicated to all Contracting Parties.

2. Nothing in this Convention or related protocols shall be deemed to affect obligations assumed by a Contracting Party under agreements previously concluded.

3. Nothing in this Convention shall prejudice the codification and development of the law of the sea by the United Nations Conference on the Law of the Sea convened pursuant to resolution 2750 C (XXV) of the General Assembly of the United Nations not the present or future claims and legal views of any Contracting Party concerning the nature and extent of its maritime jurisdiction.

Article 4: GENERAL OBLIGATIONS
1. The Contracting Parties shall, individually or jointly as 
the case may be, take all appropriate measures in accordance 
with the provisions of this Convention and its protocols in 
force to which they are parties to prevent, reduce, combat 
and control pollution of the Convention area and to ensure 
sound environmental management of natural resources, using for 
this purpose the best practicable means at their disposal, and 
in accordance with their capabilities.

2. In addition to the Protocol concerning co-operation in com­
bating pollution in cases of emergency opened for signature on 
the same date as this Convention, the Contracting Parties shall 
co-operate in the formulation and adoption of other protocols 
prescribing agreed measures, procedures, and standards to pre­
vent, reduce, combat and control pollution from all sources or 
promoting environmental management in conformity with the ob­
jectives of this Convention.

3. The Contracting Parties shall establish national law and re­
gulations for the effective discharge of the obligations pres­
cribing in this Convention, and shall endeavour to harmonize 
their national policies in this regard.

4. The Contracting Parties shall co-operate with the competent 
international regional and subregional organizations to esta­
bleish and adopt recommended practices, procedures and measures 
to prevent, reduce, combat and control pollution from all sour­
ces in conformity with the objectives of this Convention and 
related protocols, and to assist each other in fulfilling their 
obligations under this Convention and its related Protocols.

5. In taking measures to prevent, reduce, combat and control 
pollution of the Convention area or to promote environmental 
management, the Contracting Parties shall act so as not to 
transfer, directly or indirectly, damage or hazards from one 
area to another or transform one type of pollution into another.

Article 5 : POLLUTION FROM SHIPS

The Contracting Parties shall take all appropriate measures in 
conformity with international law to prevent, reduce, combat 
and control pollution in the Convention area caused by normal
or accidental discharges from ships, and shall ensure the effective application in the Convention area of the internationally recognized rules and standards relating to the control of this type of pollution.

**Article 6 : POLLUTION CAUSED BY DUMPING FROM SHIPS AND AIRCRAFT**

The Contracting Parties shall take all appropriate measures to prevent, reduce, combat and control pollution in the Convention area caused by dumping from ships and aircraft, and shall ensure the effective application in the Convention area of the internationally recognized rules and standards relating to the control of this type of pollution.

**Article 7 : POLLUTION FROM LAND-BASED SOURCES**

The Contracting Parties shall take all appropriate measures to prevent, reduce, combat and control pollution of the Convention area caused by discharges from rivers, estuaries, coastal establishment and outfalls, coastal dumping or emanating from any other sources on their territories.

**Article 8 : POLLUTION FROM ACTIVITIES RELATING TO EXPLORATION & EXPLOITATION OF THE SEA-BED**

The Contracting Parties shall take all appropriate measures to prevent, reduce, combat and control pollution resulting from or in connexion with activities relating to the exploration and exploitation of the sea-bed and its subsoil subject to their jurisdiction and from artificial islands, installations and structures under their jurisdiction.

**Article 9 : POLLUTION FROM OR THROUGH THE ATMOSPHERE**

The Contracting Parties shall take all appropriate measures to prevent, reduce, combat and control pollution in the Convention area resulting from or transported through the atmosphere.

**Article 10 : COASTAL EROSION**

The Contracting Parties shall take all appropriate measures to prevent, reduce, combat and control coastal erosion in the Convention area resulting from man's activities, such as land reclamation and coastal engineering.
Article 11: SPECIALLY PROTECTED AREAS

The Contracting Parties shall, individually or jointly as the case may be, take all appropriate measures to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other marine life. To this end, the Contracting Parties shall endeavour to establish protected areas, such as parks and reserves, and to prohibit or control any activity likely to have adverse effects on the species, ecosystems or biological processes in such areas.

Article 12: CO-OPERATION IN COMBATING POLLUTION IN CASES OF EMERGENCY

1. The Contracting Parties shall co-operate in taking all necessary measures to deal with pollution emergencies in the Convention area, whatever the cause of such emergencies, and to reduce or eliminate damage resulting therefrom.

2. Any Contracting Party which becomes aware of a pollution emergency in the Convention area should, without delay, notify the Organization and, either through this Organization or directly, any other Contracting Party likely to be affected by such emergency.

Article 13: ENVIRONMENTAL IMPACT ASSESSMENT

1. As part of their environmental management policies, the Contracting Parties shall develop technical and other guidelines to assist the planning of their development projects in such a way as to minimize their harmful impact on the Convention area.

2. Each Contracting Party shall endeavour to include an assessment of the potential environmental effects in any planning activity entailing projects within its territory, particularly in the coastal areas, that may cause substantial pollution of, or significant and harmful changes to, the Convention area.

3. The Contracting Parties shall, in consultation with the Organization, develop procedures for the dissemination of information concerning the assessment of the activities referred to in paragraph 2 of this article.
Article 14: SCIENTIFIC & TECHNOLOGICAL CO-OPERATION

1. The Contracting Parties shall co-operate, with the assistance of competent international and regional organizations, in the field of scientific research, monitoring and assessment of pollution in the Convention area, and shall exchange data and other scientific information for the purpose of this Convention and its related protocols.

2. In addition, the Contracting Parties shall develop and co-ordinate national research and monitoring programmes concerning all types of pollution in the Convention area and shall establish, in co-operation with competent international and regional network of national research centres and institutions to ensure compatible results. The Contracting Parties shall endeavour to participate in international arrangements for pollution research and monitoring in areas beyond their national jurisdiction.

3. The Contracting Parties shall co-operate, directly or through competent international or regional organizations, in the development of programmes for technical and other assistance in fields related to marine pollution and sound environmental managements of the Convention area.

Article 15: LIABILITY & COMPENSATION

The Contracting Parties shall co-operate in the formulation and adoption of appropriate rules and procedures for the determination of liability and the payment of adequate and prompt compensation for damage resulting from pollution of the Convention area.

Article 16: INSTITUTIONAL ARRANGEMENTS.

1. The Contracting Parties designate the United Nations Environment Programme as the Secretariat of the Convention to carry out the following functions:
   i) To prepare and convene the meetings of Contracting Parties and conferences provided for in articles 17 & 18;
   ii) To transmit to the Contracting Parties notifications, reports and other information received in accordance with articles 3, 12, and 22;
iii) To perform the functions assigned to it by the protocols to this Convention;  
iv) To consider enquiries by, and information from, the Contracting Parties and to consult with them on questions relating to this Convention and its related protocols and annexes thereto;  
v) To co-ordinate the implementation of co-operative activities agreed upon by the meetings of Contracting Parties and conferences provided for in article 17;  
vii) To enter into such administrative arrangements as may be required for the effective discharge of the secretariat functions.

2. Each Contracting Party shall designate an appropriate national authority as responsible for the co-ordination of national efforts for implementing this Convention and its related protocols. The appropriate national authority shall serve as the channel of communication between the Contracting Party and the Organization.

Article 17: MEETINGS OF THE CONTRACTING PARTIES

1. The Contracting Parties shall hold ordinary meetings once every two years and extraordinary meetings at any other time deemed necessary, upon the request of the Organization or at the request of any Contracting Party, supported by at least three other Contracting Parties.

2. It shall be the function of the meetings of the Contracting Parties to keep under review the implementation of this Convention and its related protocols and, in particular:

i) To consider reports submitted by the Contracting Parties under article 22;  
ii) To adopt, review and amend as required annexes to this Convention and to its related protocols, in accordance with the provisions of article 20;  
iii) To make recommendations regarding the adoption of any additional protocols or amendments to this Convention or its related protocols in accordance with the provisions of articles 18 & 19;  
iv) To establish working groups as required to consider any
matters concerning this Convention and its related protocols and annexes;

v) To review the state of pollution in the Convention area;

vi) To consider and to adopt decisions concerning co-operative activities to be undertaken within the framework of this Convention and its related protocols, including their financial and institutional implications;

vii) To consider and undertake any additional action that may be required for the achievement of the purposes of this Convention and its related protocols.

**Article 18 : ADOPTION OF ADDITIONAL PROTOCOLS**

1. The Contracting Parties, at a conference of plenipotentiaries, may adopt additional protocols to this Convention pursuant to paragraph 2 of article 4.

2. A conference of plenipotentiaries shall be convened for the purpose of adopting additional protocols by the Organization at the request of not less than two-third of the Contracting Parties.

3. Pending the entry into force of this Convention, the Organization may, after consulting with the signatories to this Convention, convene a conference of plenipotentiaries for the purpose of adopting additional protocols.

**Article 19 : AMENDMENT OF THE CONVENTION OR PROTOCOLS**

1. Any Contracting Party to this Convention may propose amendments to the Convention or to any of the protocols. The texts of any such draft amendments shall be communicated to the Contracting Parties by the Organization six months before their submission to an ordinary meeting of the Contracting Parties for examination.

2. Any amendment shall be adopted by a two-thirds majority of the Contracting Parties and shall enter into force twelve months after its approval.

**Article 20 : ANNEXES AND AMENDMENTS TO ANNEXES**

1. Annexes to this Convention or to any of its protocol shall form an integral part of the Convention or such protocol.
2. Except as may be otherwise provided in any protocol, the procedure in article 19 shall apply to the adoption and entry into force of any amendments to annexes to this Convention or to any protocol.

3. The adoption and entry into force of a new annex to this Convention or to any protocol shall be subject to the same procedure as the adoption and entry into force of an amendment to an annex in accordance with the provisions of paragraph 2 of this article, provided that, if any amendment to the Convention or the protocol concerned is involved, the new annex shall not enter into force until such time as the amendment to the Convention or the protocol concerned enters into force.

**Article 21 : RULES OF PROCEDURE & FINANCIAL RULES**

1. The Contracting Parties shall adopt rules of procedures for their meetings and conferences envisaged in articles 17 & 18 above.

2. The Contracting Parties shall adopt financial rules, prepared in consultation with the Organization, to determine, in particular, their financial participation.

**Article 22 : REPORTS**

The Contracting Parties shall transmit to the Organization reports on the measures adopted in the implementation of this Convention and of Protocols to which they are Parties, in such form and at such intervals as the meetings of Contracting Parties may determine.

**Article 23 : COMPLIANCE CONTROL**

The Contracting Parties undertake to co-operate in the development of procedures enabling them to control the application of this Convention and its related protocols.

**Article 24 : SETTLEMENT OF DISPUTES**

1. In case of a dispute between Contracting Parties as to the interpretation or application of this Convention or its related protocols, they shall seek a settlement of the dispute through negotiation or any other peaceful means of their own choice.
113.

2. If the Parties concerned cannot settle their dispute through the means mentioned in the preceding paragraph, the dispute shall be submitted to arbitration under conditions to be adopted by the Contracting Parties in an annex to this Convention.

Article 25 : RELATIONSHIP BETWEEN THE CONVENTION & ITS RELATED PROTOCOLS

1. No State may become a Contracting Party to this Convention unless it becomes at the same time a Contracting Party to at least one protocol. No State may become a Contracting Party to a protocol unless it is, or become at the same time, a Contracting Party to this Convention.

2. Any protocol to this Convention shall be binding only on the Contracting Parties to the protocol in question.

3. Decisions concerning any protocol pursuant to articles 17, 19 & 20 of this Convention shall be taken only by the Parties to the protocol concerned.

Article 26 : SIGNATURE

This Convention and the Protocol on Co-operation in Combating Pollution in Cases of Emergency shall be in Abidjan from 23 March to 22 June 1981 for signature by any coastal or island State, from Mauritania to Namibia inclusive.

Article 27 : RATIFICATION, ACCEPTANCE AND APPROVAL

This Convention and any protocol thereto shall be subject to ratification, acceptance, or approval. Instruments of ratification, acceptance or approval shall be deposited with the Government of the Ivory Coast, which will assume the functions of Depository.

Article 28 : ACCESSION

1. As from 23 June 1981, the present Convention and the Protocol concerning Co-operation in Combating Pollution in Cases of Emergency shall be open for accession by the States referred to article 26.

2. After the entry into force of this Convention and any protocol thereto, any African State not referred to in article 26 may accede to them.
3. This Convention and any protocol thereto shall also remain open after the entry into force for accession by any other State, subject to the prior approval of three quarters of the States referred to in article 26 which have become Contracting Parties.

4. Instruments of accession shall be deposited with the Depositary.

**Article 29 : ENTRY INTO FORCE**

1. This Convention and the first of its protocols shall enter into force on the same date, in accordance with the following paragraph two.

2. The Convention, and any of its protocols shall enter into force on the sixtieth day following the date of deposit of at least six instruments of ratification, acceptance or approval of, or accession to, such Convention and protocol by the Parties referred to in article 26.

3. Thereafter, this Convention and any protocol thereto shall enter into force with respect to any State referred to in article 26 on the sixtieth day following the date of deposit of the instruments of ratification, acceptance, approval or accession.

**Article 30 : WITHDRAWAL**

1. At any time after five years from the date of entry into force of this Convention, any Contracting Party may withdraw from this Convention by giving written notification of withdrawal.

2. Except as may be otherwise provided in any protocol to this Convention, any Contracting Party may, at any time after five years from the date of entry into force of such protocol, withdraw from such protocol by giving written notification of withdrawal.

3. Withdrawal shall take effect days after the date on which notification of withdrawal is received by the Depositary.

4. Any Contracting Party which withdraws from this Convention shall be considered as also having withdrawn from any protocol to which it was a Party.

5. Any Contracting Party which, upon its withdrawal from a pro-
tocol, is no longer a Party to any protocol to this Convention, shall be considered as also having withdrawn from this Convention.

**Article 31: RESPONSIBILITIES OF THE DEPOSITARY**

1. The Depositary shall inform the Contracting Parties, any other Party referred to in article 26, and the Organization:

   i) Of the signature of this Convention and any protocol thereto, and of the deposit of instruments of ratification, acceptance, approval or accession in accordance with articles 26, 27 & 28;

   ii) Of the date on which the Convention and any protocol will come into force in accordance with the provisions of article 29;

   iii) Of notifications of withdrawal made in accordance with article 30;

   iv) Of the amendments adopted with respect to the Convention and to any protocol, their acceptance by the Contracting Parties and the date of entry into force of these amendments in accordance with the provisions of article 19;

   v) Of the adoption of new annexes and of the amendment of any annex in accordance with article 20.

2. The original of this Convention and of any protocol thereto shall be deposited with the Depositary, the Government of the Ivory Coast, which shall send certified copies thereof to the Contracting Parties, to the Organization of African Unity, to the Organization, and to the Secretary-General of the United Nations for registration and publication in accordance with Article 102 of the United Nations Charter.

IN WITNESS WHEREOF the undersigned, being duly authorized by their respective Governments, have signed this Convention.

DONE at ABIDJAN on this twenty-third day of March one thousand nine hundred and eight-one in a single copy in the English, French and Spanish languages, the three texts being equally authentic.
PROTOCOL CONCERNING CO-OPERATION IN COMBATING POLLUTION IN CASES OF EMERGENCY.

Article 1

For the purposes of this Protocol:

1. "Appropriate National Authority" means the authority designated by the Government of a Contracting Party in accordance with article 16(2) of the Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region, and responsible for:
   a) Combating and otherwise operationally responding to marine emergencies;
   b) Receiving and co-ordinating reports of particular marine emergencies;
   c) Co-ordinating activities relating to marine emergencies in general within its own Government and with other Contracting Parties.

2. "Marine Emergency" means any incident, occurrence or situation, however caused, resulting in substantial pollution or imminent threat of substantial pollution to the marine and coastal environment by oil or other harmful substances and includes, in particular, collisions, strandings and other incidents involving ships, including tankers, petroleum production blowouts and the presence of oil or other harmful substances arising from the failure of industrial installations.

3. "Marine Emergency Contingency Plan" means a plan, prepared on a national, bilateral or multilateral basis, to deal with pollution and other adverse effects on the marine and coastal environment, or the threat thereof, resulting from accidents or other unforeseen events.

4. "Marine Emergency Response" means any activity intended to prevent, reduce, combat and control pollution by oil or other harmful substances or threat of such pollution resulting from marine emergencies and includes the clean-up of oil slicks and recovery or salvage of packages, freight containers, portable tanks, or road and rail wagons.
5. "Related Interests" means the interests of a Contracting Party directly or indirectly affected or threatened by a marine emergency, such as:
   a) Maritime, coastal, port or estuarine activities, including fisheries activities;
   b) Historic and tourist attractions of the area concerned;
   c) The health and well-being of the inhabitants of the area concerned, including the conservation of living marine resources and wildlife and the protection of marine and coastal parks and reserves.


7. "Organization" means the organization referred to in article 16 of the Convention as responsible for the secretariat functions of the Convention.

**Article 2**

The area to which this Protocol applies (hereinafter referred to as the "Protocol Area") shall be the same as the Convention area as defined in article 1 of the Convention.

**Article 3**

This Protocol shall apply to actual or potential marine emergencies which constitute a substantial pollution danger to the Protocol area and related interests of the Contracting Parties.

**Article 4**

The Contracting Parties undertake to co-operate in all matters relating to the taking of necessary and effective measures to protect their respective coastlines and related interests from the threat and effects of pollution resulting from marine emergencies.

**Article 5**

Each Contracting Party shall provide the other Contracting Parties and the Organization with information concerning:
   a) Its appropriate national authority;
b) Its laws, regulations and other instruments relating generally to matters referred to in this Protocol, including those concerning the organization and operation of the appropriate national authority, to the extent that this organization and operation relates to matters referred to in this Protocol;
c) Its national marine emergency contingency plans.

**Article 6**
The Contracting Parties shall exchange, either through the Organization or directly, information on research and development programmes, including results concerning ways in which pollution by oil and other harmful substances may or dealt with, and on experiences in combating such pollution.

**Article 7**
1. Each Contracting Party undertakes to require masters of ships flying its flag and pilots of aircraft registered in its territory, and persons in charge of offshore structures operating under its jurisdiction to report by the most rapid and adequate channels in the circumstances, and in accordance with the annex to this Protocol, to any Contracting Party;

a) All accidents causing or likely to cause pollution of the sea by oil or other harmful substances;
b) The presence, characteristics and extent of spillages, of oil or other harmful substances observed at sea which are likely to present a serious and imminent threat to the marine environment or to the coast or related interests of one or more of the Contracting Parties.

2. Any Contracting Party receiving a report pursuant to paragraph 1 above shall promptly inform the Organization and, either through the Organization or directly, the appropriate national authority of any Contracting Party likely to be affected by the marine emergency.

**Article 8**
1. Any Contracting Party requiring assistance for dealing with a marine emergency, including the recovery or salvage of packages, freight containers, portable tanks, or road or rail wagons
may call for assistance from any other Contracting Party. The call for assistance shall be made initially to other Contracting Parties whose coastlines and related interests might be affected by the marine emergency involved. The Contracting Parties to whom a request is made pursuant to this paragraph undertake to use their best endeavours to render the assistance requested.

1. The assistance referred to in paragraph 1 of this article may include:
   a) The provision and reinforcement of personnel, material, and equipment;
   b) The provision and reinforcement of surveillance and monitoring capacity;
   c) The provision of pollution disposal sites; or
   d) The facilitation of the transfer of personnel, equipment and material into, out of, and through the territories of the Contracting Parties.

3. Any Contracting Party requesting assistance pursuant to paragraph 1 of this article shall report the results following the request to the other Contracting Parties and to the Organization.

4. The Contracting Parties undertake to consider as soon as possible and in accordance with the means available to them the allocation of tasks for responding to marine emergencies within the Protocol area.

5. Each Contracting Party undertakes to inform the other Contracting Parties and the Organization of measures taken in dealing with marine emergencies in cases where those other Contracting Parties are not called upon to provide assistance.

Article 9

1. The Contracting Parties shall endeavour to maintain and promote, either individually or through bilateral or multilateral co-operation, marine emergency contingency plans and means for combating pollution by oil and other harmful substances. These means shall include, in particular, equipment, ships, aircraft and manpower prepared for operations in cases of emergency.
2. The Contracting Parties shall co-operate in developing standing instructions and procedures to be followed by their appropriate national authorities who have responsibility for receiving and transmitting reports of pollution by oil and other harmful substances made pursuant to article 7 of this Protocol. Such co-operation shall be designated to ensure speedy and routine reception, transmission and dissemination of these reports.

**Article 10**

1. Each Contracting Party shall act in accordance with the following principles in the conduct of marine emergency responses carried out under its authority:

   a) Make an assessment of the nature and extent of the marine emergency and transmit the results of the assessment to any other Contracting Party concerned;
   
   b) Determine the necessary and appropriate action to be taken with respect to the marine emergency in consultation, where appropriate, with other Contracting Parties;
   
   c) Make the necessary reports and requests for assistance under articles 7 & 8 of this Protocol; and
   
   d) Take appropriate and practical measures to prevent, reduce, combat and control the effects of pollution, including surveillance and monitoring of the marine emergency.

2. In carrying out marine emergency responses under this Protocol the Contracting Parties shall:

   a) Act in conformity with the principles of international law and all international conventions having applicability to marine emergency responses; and

   b) Inform the Organization of those marine emergency responses.

**Article 11**

1. Ordinary meetings of the Contracting Parties to this Protocol shall be held in conjunction with ordinary meetings of the Contracting Parties to this Protocol may also hold extraordinary meetings, as provided in article 17 of the Convention.

2. It shall be the function of the meetings of the Contracting
Parties to this Protocol, in particular:

a) To keep under review the implementation of this Protocol, and to consider the efficacy of the measures adopted and the need for any other measures, in particular in the form of annexes;
b) To review and amend as required any annex to this Protocol;
c) To discharge such other functions as may be appropriate for implementation of this Protocol.

Article 12

1. The provisions of the Convention relating to any protocol shall apply with respect to this Protocol.

2. The rules of procedure and financial rules adopted pursuant to article 21 of the Convention shall apply with respect to this Protocol, unless the Contracting Parties to this Protocol agree otherwise.

IN WITNESS WHEREOF the undersigned, being duly authorized by their respective Governments, have signed this Protocol.

DONE at ABIDJAN on this twenty-third day of March one thousand nine hundred and eighty-one in a single copy in the English, French and Spanish languages, the three texts being equally authentic.

ANNEX

Guidelines for the Report to be made pursuant to article 7 of the Protocol

1. Each report shall, as far as possible, contain:

a) The identification of the source of pollution (e.g. identity of the ship), where appropriate;
b) The geographical position, time and date of the occurrence of the incident or of the observation;
c) The marine meteorological conditions prevailing in the area;
d) Where the pollution originates from a ship, relevant details respecting the conditions of the ship.

2. Each report shall also contain, whenever possible:

a) A clear indication or description of the harmful substances
involved, including the correct technical names of such substances (trace names should not be used in place of the correct technical names);
b) A statement or estimate of the quantities, concentrations and likely conditions of harmful substances discharges or likely to be discharged into the sea;
c) Where relevant, a description of the packaging and identifying marks; and
d) The name of the consignor, consignee or producer.

3. Each report shall clearly indicate, whenever possible, whether the harmful substance discharged or likely to be discharged is oil or a noxious liquid, solid or gaseous substance and whether such substance was or is carried in bulk or contained package form, freight containers, portable tanks, or submarine pipelines.

4. Each report shall be supplemented, as necessary, by any relevant information requested by a recipient of the report or deemed appropriate by the person sending the report.

5. Any of the persons referred to an article 7 of this Protocol shall:
a) Supplement, as far as possible, the initial report, and as necessary, with information concerning further development; and
b) Comply as fully as possible with requests from affected Parties for additional information.

ANNEX 1-2.

MANUALS & DOCUMENTARY MATERIALS.

As a practical guide for personnel in maritime administrations, port authorities and seafarers in the implementation of pollution conventions and pollution emergency response, the Marine Environment Protection Committee (MEPC) has produced various manuals and guidelines, including the following:

- Manual on Oil Pollution:
  Section I - Prevention (Revised 1983)
  Section II - Contingency planning (1980)
  Section III - Salvage (1983)
  Section IV - Practical information on means of dealing with oil spillages (Revised 1980)
- IMO/UNEP Guidelines on Oil Spill Dispersant Application and Environmental Considerations (1982)

- Guidelines on the Provision of Adequate Reception Facilities in Ports:
  - Part I - Oily wastes (1976)
  - Part II - Residues and mixtures containing noxious liquid substances (1980)
  - Part III - Sewage (1978)
  - Part IV - Garbage (1978)

- Guidelines for International Oil Spill Contingency Plans (1983)

- Manual for Spillages other than Oil (under preparation)

Various types of audio-visual aids, such as films, video tapes and slides, have been collected or produced by the Secretariat, for use at seminars, workshops and training courses. Some of the materials have been disseminated to training institutes in developing countries for their use. Many of the films and video tapes are contributions from Member States and oil shipping industries.

ANNEX 1-3.

LIST OF CODES & GUIDELINES FOR THE IMPLEMENTATION OF MARPOL 73/78.

<table>
<thead>
<tr>
<th>Articles</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Procedures for the Control of Ships &amp; Discharges under Annex I of MARPOL 73/78</td>
<td>MEPC 18/18 (for submission to the Ass.)</td>
</tr>
<tr>
<td>- Interim Guidelines for Reporting incidents involving Harmful Substances</td>
<td>Resol. A.447(XI)</td>
</tr>
</tbody>
</table>

Annex I

- Guidelines for surveys under Annex I of MARPOL 73/78 | Resol. MEPC 11(18) |


- Revised forms of the IOPP Certificate & Oil Record Book | MEPC/Circ.99 |

- Recommendation on International Performance Specifications for Oily-Water Separating Equipment & Oil Content Meters  
  Resol. A.393(X)

- Recommendation concerning the Installation of Oily-Water Separating Equipment under MARPOL 73/78  
  Res.A.444(XI)

- Guidelines & Specifications for Oil Discharge Monitoring and Control Systems for Oil Tankers  
  Res.A.496(XII)

- Specifications for Oil/Water Interface Detectors  
  Res.MEPC.10(18)

- Revised Specifications for the design, Operation & Control of Crude Oil Washing Systems  
  Res.MEPC.5(XIII)

  Res.A.446(XI)

- Revised Specifications for Oil Tankers with Dedicated Clean Ballast Tanks (including standard format for CBT Operation Manual)  
  Res.A.497(XII)

- Specifications for the Design, Installation & Operation of a Part-flow System for Control of Overboard Discharges  
  Res.A.495 (XII)

Annex II

- Guidelines on the Provision of Adequate Reception Facilities in Ports - Part II (residues & mixtures containing noxious liquid substances)  
  IMO Publ.1980

- Standards for Procedures & Arrangements called for by Annex II of MARPOL 73/78 (for submission to the Assembly)  
  MEPC 18/18, Annex 3

- Code for the Construction & Equipment for Ships Carrying Dangerous Goods in Bulk (BCH Code)  
  Res.A.212(VII)

  Res.MSC.4(48) (To be revised by MEPC)
ANNEX_1-3/2.

2- OUTLINE OF MEASURES TO BE TAKEN FOR THE IMPLEMENTATION OF MARPOL 73/78.

1 - Governments & industry:
   1.1 To understand the technical & administrative implications of the provisions of MARPOL 73/78.

2 - Industry (shipbuilders, shipowners & manufacturers):
   2.1 To develop and manufacture equipment complying with the MARPOL requirements and related guidelines and specifications developed by IMO.
   2.2 To arrange for construction or conversion of ships and installation of equipment to comply with the MARPOL requirements.
   2.3 To develop procedures for the operation of ships to meet the MARPOL requirements.
   2.4 To train personnel on board.

3 - Governments:
   3.1 To take necessary legislative procedures to ratify and implement MARPOL 73/78.
   3.2 To establish systems of surveys and certification of ships, including authorization of classification societies.
   3.3 To establish administrative structure and arrangements, such as the maintenance of records for ships flying their flags, supervision of classification societies' work.
   3.4 To develop systems and procedures for the enforcement of MARPOL 73/78, including:
      1 inspection of ships in ports and terminals;
      2 detection of unlawful discharges and establishment of penalties to be imposed;
      3 investigations of casualties involving spillages;
      4 preparation and submission to IMO of reports and other information as called for by MARPOL 73/78.
ANNEX II.

PROPOSED DRAFT OF A PART OF THE MERCHANT SHIPPING ACT.

BOOK ONE : SAFETY OF NAVIGATION & PROTECTION OF MARINE ENVIRONMENT.

PART II : SAFETY & POLLUTION PREVENTION

CHAPTER I : General
1.1 Definitions
1.2 Rights of Surveyors
1.3 Records of inspections/surveys

CHAPTER II : Safety Regulations
2.1 Powers to make various Safety Regulations

CHAPTER III : Pollution Prevention Regulations
3.1 Powers to make various Regulations relating to Pollution prevention, control and abatement

CHAPTER IV : Inspection/Survey for Safety
4.1 Surveys of Passenger ships
4.2 Cargo Ship Safety Construction survey
4.3 Cargo Ship Safety Equipment survey
4.5 Cargo Ship Radio survey
4.6 IOPP Certificate : Cargo Ships
4.7 Application of provisions
4.8 Surveyor's duty re: reports

CHAPTER V : Issue of Certificates
5.1 Certificates to passenger ship or cargo ship
5.2 Local Safety Certificate - Power to make regulations
5.3 Posting of Certificates
5.4 Certificates by other Governments
5.5 Certificates to non-convention ships

CHAPTER VI : Proceeding to sea
6.1 Production of Certificates
6.2 Convention ship & Certificates
6.3 Non-convention ship

CHAPTER VII : General Safety - Precautions & Responsibilities
7.1 Qualifications of crew
7.2 Reporting hazards to navigation
7.3 Distress signals - Powers to make regulations
7.4 Obligations to assist in distress (Salvage operations)
7.5 Reporting of accidents

CHAPTER VIII: Prevention of Collisions
8.1 Powers to make regulations for preventing Collisions at sea

CHAPTER IX: Loadlines & Loading
9.1 Definitions
9.2 Powers to make regulations
9.3 Loadline Certificates
9.4 Certificate of foreign ships
9.5 Inspection of foreign ships
9.6 Powers to make Deck Cargo Regulations
9.7 Offence against regulations

CHAPTER X: Dangerous Goods
10.1 Definitions
10.2 Disposing of dangerous goods
10.3 Forfeiture of dangerous goods
10.4 Powers to make regulations
10.5 Application of provisions

CHAPTER XI: Unseaworthy ships
11.1 Sending unseaworthy ship to sea an offence
11.2 Obligation of owner to crew with respect to seaworthiness
11.3 Detention of unseaworthy ships
11.4 Liability matters

PART: WRECKS - SALVAGE & SHIPPING CASUALTY INVESTIGATIONS.

N.B/ This proposed draft is subject to alterations.
**ANNEX III.**

**MÉTHODES DE LUTTE CONTRE LA POLLUTION PAR HYDROCARBURES**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>MODE D'ACTION</th>
<th>MOYENS NECESSAIRES</th>
<th>OBSERVATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSISTANCE EN MER</td>
<td>Remorquage</td>
<td>Bâtiments de remorquage dotés de moyens de lutte incendie ou voies d'eau</td>
<td>Mise en place sur bâtiment en difficulté par hélitreuillage ou remorquage.</td>
</tr>
<tr>
<td></td>
<td>Lutte contre l'inflammation</td>
<td>Bâtiments des marins-pompiers</td>
<td>Mise en service d'un plan d'exception en cas de pollution.</td>
</tr>
<tr>
<td></td>
<td>Lutte contre les voies d'eau</td>
<td>Matériel terrestre de lutte contre voies d'eau, pouvant être embarqué.</td>
<td>Nécessité éventuelle d'un bâtiement relais de pompage si les fonds sont trop faibles.</td>
</tr>
<tr>
<td>ALELUÈGEMENT de l'd'HYDROCARBURES</td>
<td>Pompage des hydrocarbures.</td>
<td>Moyens de pompage autonome, capables de travailler en atmosphère explosive.</td>
<td>Risque d'explosion</td>
</tr>
<tr>
<td></td>
<td>Combustion (contrôlée ou non) d'hydrocarbures visant à réduire le volume potentiel de polluant.</td>
<td>Découpage d'ouvertures dans chaque citéne pour admission d'air de combustion.</td>
<td>Obtention d'un résidu lourd difficile à éliminer.</td>
</tr>
<tr>
<td>MISE À FEU d'HYDROCARBURES</td>
<td>Amorçage de la combustion.</td>
<td>Barrages de haute mer pour ceinturer bâtiment accidenté.</td>
<td>Éfficacité douteuse par gros temps (creux 2 mètres), courant voisin d'un noyau.</td>
</tr>
<tr>
<td></td>
<td>- protéger une zone.</td>
<td>Bâtiments de transport des barrages.</td>
<td></td>
</tr>
<tr>
<td>TYPE</td>
<td>MODE D'ACTION</td>
<td>MOYENS ENVISAGEABLES</td>
<td>OBSERVATIONS</td>
</tr>
<tr>
<td>------</td>
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</tr>
<tr>
<td>RAMASSAGE D'HYDROCARBURES EN MER</td>
<td>Récupération mécanique par matériel spécialisé associé ou non à un barrage de concentration de polluant.</td>
<td>DESTROIL</td>
<td>Utilisation en haute mer (creux inférieur à 2 mètres) Sa mise en œuvre nécessite : - un bâtiment, support de la centrale et assurant la mise à l'eau de la pompe (type BSR, pétrolier) - une capacité réceptacle pour le polluant.</td>
</tr>
<tr>
<td></td>
<td>- Pompe à vis immergée entraînée par une centrale hydraulique.</td>
<td>CYCLONET - Utilisable pour hydrocarbures de viscosité inférieure à 2000 Cst à 10°C</td>
<td>Utilisation en oude ou par mer calme (creux inférieur à 2 mètres) Sa mise en œuvre n'est possible qu'à partir d'un bâtiment doté d'une infrastructure support spécifique (BSR, pétrolier, gabare) et associé à une citerne de récupération pour BSR et gabare.</td>
</tr>
<tr>
<td></td>
<td>- Utilisable avec des produits très visqueux.</td>
<td>VORTEX</td>
<td>Utilisation exclusive en eau calme. Sa mise en œuvre requiert : - une source d'énergie extérieure - un remorquage sur zone - une capacité réceptacle de polluant.</td>
</tr>
<tr>
<td></td>
<td>- Capacité limite à 12 m³</td>
<td>EGMOULA - EGMOPOUL</td>
<td>Utilisation en zone portuaire exclusivement.</td>
</tr>
<tr>
<td>TYPE</td>
<td>MODE D'ACTION</td>
<td>MOYENS ENVISAGEABLES</td>
<td>OBSERVATIONS</td>
</tr>
<tr>
<td>------</td>
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<td>--------------</td>
</tr>
<tr>
<td>RAMASSAGE D'HYDROCARBURES EN MER</td>
<td>Concentration et stockage du polluant récupéré</td>
<td>Mise en place de capacités relais pour déchargement des cisternes de récupération ou du pétrolier puis de moyens de transports vers le lieu de stockage définitif.</td>
<td>Echelon station de dégazage ou gros pétrolier.</td>
</tr>
<tr>
<td>PRODUITS DISPERSANTS</td>
<td>Fractionnement du polluant destiné à en faciliter l'assimilation par l'eau de mer.</td>
<td>Produits de 2ème génération utilisés purs ou moyen de groupes d'épandage associés à des lances ou des rampes montées sur bâtiments.</td>
<td>Seule technique utilisable sur les nappes d'hydrocarbures par météo défavorable, sa mise en œuvre est limitée à certaines zones géographiques et liés à la nature du polluant.</td>
</tr>
<tr>
<td>PRODUITS CURATIFS</td>
<td>Élimination du polluant de la surface de l'eau en le coulant.</td>
<td>Produits de 3ème génération (concentrés) utilisés dilués : au moyen de groupes d'épandage sur bâtiments non munis d'un collecteur d'incendie ; au moyen de dosseurs mélangeurs sur bâtiments munis d'un collecteur d'incendie.</td>
<td>Mise en œuvre : voir titre III - page 4.14 (CORR. 2) et page 4.15 (CORR. 2)</td>
</tr>
<tr>
<td>PRODUITS PRECIPITANTS</td>
<td></td>
<td>Utilisation le plus loin possible du littoral (ou des zones biologiquement sensibles), en dernier recours, et après consultation de l'ISTEP.</td>
<td>Mise en œuvre : voir titre III page 4.16 (CORR. 2)</td>
</tr>
<tr>
<td>PRODUITS ABSORBANTS</td>
<td>Produits absorbant le pétrole et demeurent en surface où ils doivent être récupérés mécaniquement</td>
<td>Poudrette de caoutchouc, dispersée sur le polluant à la main ou au canon ANETTI</td>
<td>Procédé à mettre au point</td>
</tr>
</tbody>
</table>
### Missions

<table>
<thead>
<tr>
<th>Mission Details</th>
<th>Dates</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capt. A.R.N. Macauley, Regional Maritime Adviser for Africa.</td>
<td>17-26 January 1976</td>
<td>General advice within competence of IMO.</td>
</tr>
<tr>
<td>Mr. J. Mallejac, Inter-Regional Adviser in Maritime Safety Administration.</td>
<td>12-25 June 1979</td>
<td>Consultations with the Government regarding Maritime Safety Administration</td>
</tr>
<tr>
<td>Mr. J. Mallejac</td>
<td>22 April-1 May 1980</td>
<td>Follow up mission.</td>
</tr>
<tr>
<td>Mr. S. Azouz</td>
<td>24-30 May 1982</td>
<td>Assistance in identifying maritime projects to be submitted to the United Nations Transport and Communications Decade (Phase II - 1984-88)</td>
</tr>
<tr>
<td>Mr. X. Ghelber, Regional Maritime Adviser on Maritime Legislation.</td>
<td>23 January-6 February 1983</td>
<td>Consultations with the Government regarding Maritime Legislation</td>
</tr>
</tbody>
</table>

### Fellowships

**Project GUI/NOR/80/01**

Training of Guineans in the Regional Academy of Maritime Science and Technology, Abidjan, Ivory Coast.

The above project, financed by the Norwegian Government, provides for the training of 14 Guinean merchant navy officers at the Académie régionale des Sciences et Techniques de la Mer, Abidjan, over a five-year period, 1981 to 1986. The courses are for three years.

In October 1983, which originally was intended to be the last date for intake under the project, only three of the six students who were to commence their course were admitted by the Academy. For this reason, three additional students entered training in October 1984 and these students will complete their studies in 1987.
### O's Conventions: Status on 1 March 1985

<table>
<thead>
<tr>
<th>Convention</th>
<th>Status: Number of Contracting States</th>
<th>Year of initial entry into force</th>
<th>Number of ratifications etc. required for entry into force</th>
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<tbody>
<tr>
<td>Treaty of Life at Sea 1974</td>
<td>82</td>
<td>1980</td>
<td>—</td>
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<tr>
<td>SOLAS Protocol 1978</td>
<td>—</td>
<td>1981</td>
<td>50</td>
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<tr>
<td>Regulations for Preventing Illusions at Sea 1972</td>
<td>—</td>
<td>1977</td>
<td>88</td>
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<tr>
<td>Convention of Pollution of the Sea by Oil 1954, as amended in 1962 and 1969</td>
<td>—</td>
<td>1958</td>
<td>71</td>
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<tr>
<td>Convention of Pollution from Ships 1973 as modified by the Protocol of 1978</td>
<td>—</td>
<td>1983</td>
<td>35</td>
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<tr>
<td>Regulation of International Maritime Traffic 1965</td>
<td>—</td>
<td>1967</td>
<td>54</td>
</tr>
<tr>
<td>Stad Lines 1966</td>
<td>—</td>
<td>1968</td>
<td>102</td>
</tr>
<tr>
<td>Tonnage Measurement of Ships 1969</td>
<td>—</td>
<td>1982</td>
<td>65</td>
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<tr>
<td>Civil Liability for Oil Pollution Damage 1969</td>
<td>—</td>
<td>1975</td>
<td>56</td>
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<tr>
<td>Civil Liability in the Field of Maritime Carriage of Nuclear Material 1971</td>
<td>—</td>
<td>1975</td>
<td>11</td>
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<tr>
<td>Establishment of an International Fund for Compensation for Oil Pollution Damage 1971 (Fund) Protocol 1976 (Fund) Protocol 1984</td>
<td>—</td>
<td>1978</td>
<td>30</td>
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<tr>
<td>(Space requirement) Protocol 1973</td>
<td>—</td>
<td>1977</td>
<td>11</td>
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<tr>
<td>Safe Containers 1972</td>
<td>—</td>
<td>1977</td>
<td>39</td>
</tr>
<tr>
<td>International Maritime Satellite Organization (INMARSAT) 1976 + Operating Agreement</td>
<td>—</td>
<td>1979</td>
<td>43</td>
</tr>
<tr>
<td>Safety of Fishing Vessels 1977</td>
<td>—</td>
<td>1981</td>
<td>12</td>
</tr>
<tr>
<td>Standards of Training, Certification and Watchkeeping for Seafarers 1978</td>
<td>—</td>
<td>1984</td>
<td>37</td>
</tr>
<tr>
<td>Maritime Search and Rescue 1979</td>
<td>—</td>
<td>1985 (22 June)</td>
<td>16</td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY

I. THE WORLD MARITIME UNIVERSITY PUBLICATIONS.


2. G. STUBBERUD,
   - Classification Societies and their functions.
   - A review of International Conferences on the prevention of Marine Pollution by Dumping.
   - Present IMD work related to the protection of the marine environment, W.M.U., 1985.


   - The role of I.M.O. in assisting developing countries (International Symposium on Regional Co-operation on Oil Spill prevention and combating, Copenhagen, Denmark 17-21 Sept, 84).

II. BOOKS.


134.


17. JOHANSSON, S., LARSSON V., BOEHM, P., "The Tsesis oil spill Impact on the pelagic ecosystem".


20. OCIMF/ICS, "Guidelines for Tank Washing with Crude Oil", 76.


III. I.M.O. PUBLICATIONS.

26. IMO News number 1 : 1984

27. IMO News number 1 : 1985


30. IMO/UNEP, Projet de plan d'intervention en cas de situation critique pour l'environnement marin et côtier. - République de Guinée (Janv.1983).


32. IMO/UNEP, Regional Oil Combating Centre for the Mediterranean Sea (ROCC).

IV. OTHER MATERIALS.

33. Acops yearbook, 1984, "Advisory Committee on Pollution of the sea".

34. Assuranceforeningen SKULD, Oslo 1983, "Marine Pollution".

35. British Shipping Laws, "International Maritime Law Conventions" Vol.III.
38. Encyclopaedia Britinica No14 p.749.
39. INTERTANKO, April 1984, "The middle East Refinery Expansion & the product tanker market".
41. Lloyd's Register of Shipping Bulletin form 6252 (03/85), "Statutory Surveys".
44. "The protection of the Coast of Wales from pollution ships & terminal sources" (Nautical Institute Wales Branches).
45. The time of the Oceans pp. 168-173.