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A proposal for the better utilization of the Saudi Coast Guard in providing the immediate emergency response to oil spills

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A PROPOSAL FOR THE BETTER UTILIZATION OF THE SAUDI COAST GUARD IN PROVIDING THE IMMEDIATE EMERGENCY RESPONSE TO OIL SPILLS

BY

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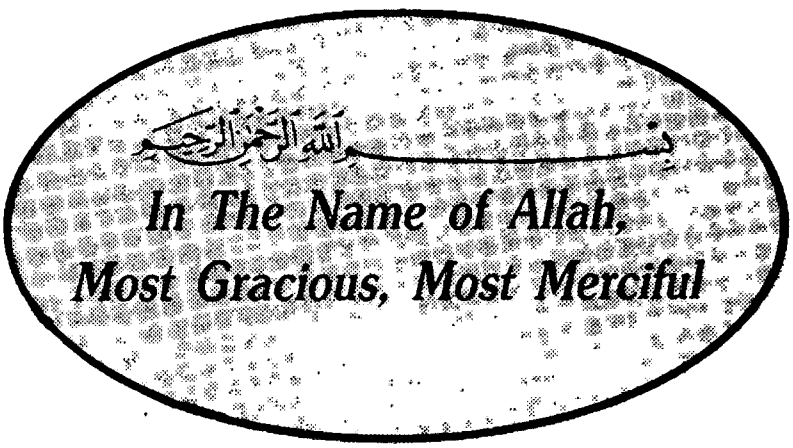
بسم الله الرحمن الرحيم
In The Name of Allah,
Most Gracious, Most Merciful

DECLARATION

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

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

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DEDICATION

TO MY COUNTRY

THE KINGDOM OF SAUDI ARABIA

AND

TO MY FAMILY

ABSTRACT

The dissertation is an introductory study to the ways in which the Saudi Coast Guard can be best organized for sharing the responsibilities for responding to oil spills in the territorial waters of the Kingdom of Saudi Arabia, with the Meteorological and Environment Protection Agency of the Ministry of Defence.

A brief look is taken at the uses and the state of the marine and coastal environment. Marine areas are described in some detail. An idea of the intensity of oil production and transportation is given. The need for creating background information directed to the future environment control department is stressed throughout the dissertation. This begins with the description of the main international legal instruments, conventions and treaties. A discussion of Law 157 of 20/11/1411 H is also offered.

Policies, strategies, classification of oil spills, environmental control and control procedures are explored with a view to define the way in which the organization can be best structured. An Environmental Control Management Steering Group, the Environmental Protection Task Force of the Saudi Coast Guard is proposed. Responsibilities and functions of the new department are listed. One chapter is dedicated to the details of the proposed organization of the Environment Protection Task Force. The roles of the different elements of the organizational structure, in emergency situations and non-emergency situations are described. A description of the structure and objectives of the Task Force is given. The response to marine oil spill is considered in detail. Emphasis is placed on oil spills from tankers.

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LIST OF ABBREVIATIONS

AOC .....Arabian Oil Company

EPTF .....Environment Protection Task Force

EEZ .....Economic

GAOCMAO.....Gulf Area Oil Companies Mutual Aid Organization

IMO .....International Maritime Organization

LL 66 .....The International Convention on Load Lines 1966

MARPOL .....The International Convention for the Prevention of Pollution from Ships 1973/78

MEMAC .....Marine Emergency Mutual Aid Consortium

MEPA.....Meteorological and Environment Protection Agency

MSG .....Management Steering Group

OPRC 90 .....The International Convention on Oil Pollution Preparedness, Response and Co-operation 1990

OPEC .....Organization of Petroleum Exporting Countries

OSC .....On -Site Co-ordination

SOLAS 74 .....The International Convention for the Safety of Life at Sea 1974

SCG .....Saudi Coast Guard

UNCLOS .....The United Nations Convention on the Law of the Sea, 1982

INTRODUCTION

God has blessed the Kingdom of Saudi Arabia with an enormous fortune, in the form of oil and many other riches of the land. Today, the country is one of the biggest exporters of petroleum and refined products in the world. One can say that the impressive development of the country in the past 25 years is due to oil revenues. As in any other human activity, there is a price to pay. The present generations should exercise care to preserve what has been achieved, as well as through sustainable development, ensure that the future generations will also enjoy what God has given us.

The main objective of this dissertation is to add a bit to what has been done to protect the Saudi Arabian coastline from pollution from shipping in general and oil tankers in particular. I must recognise that, while much is already being done, there is a pressing need for Saudi Arabia to take fresh initiatives at the national level and also at the international level, joining the efforts of IMO for "Safer Ships and Cleaner Oceans".

In my opinion, the most important of the measures taken by the government of Saudi Arabia in regards to the co-ordination of the national efforts for combating oil spills in general is the creation and funding of the Meteorological and Environment Protection Agency of the Ministry of Defence and Aviation.

The dissertation is divided in six chapters. Chapter 1 is dedicated to highlight some of the most important activities that the government of Saudi Arabia is undertaking to preserve and protect the coastal and marine environment from the advances of development. Today, it is an implicit general acceptance that sustainable development is attainable through the implementation of adequate and strict measures.

Maritime transport is essentially international in character. The Kingdom of Saudi Arabia is as much threatened by passing traffic as by ships destined for Saudi ports. The threat is all the greater because Saudi Arabia is situated in the oil belt of

the middle east and it is the major oil and refined products exporting country of the region and the major OPEC contributing country. Any measure taken in the past or hereby recommended therefore needs, in the main, to be adopted in co-operation with Saudi Arabia's regional neighbours. The primary role of the Saudi Arabian government should be to take the lead, as it has already done in the region, but there are some measures which can be taken unilaterally.

The dissertation recognises that the primary responsibility for the safety and operation of ships lies with the states whose flags they fly and with the classification societies which they employ. Although the tonnage of Saudi Arabia's registered merchant ships is now 1.35 % of the world total, the Kingdom of Saudi Arabia is one of the major port and coastal states in term of the tonnage of shipping calling at and passing its ports, due to the traffic to and from the Suez Canal and oil export operations of other Gulf states and the refineries in the Red Sea. As such Saudi Arabia should be prepared to protect its coasts from accidental as well as from intentional releases of oil, mainly from the heavy traffic of oil tankers along both coasts.

Chapter 2 builds the background of oil pollution. Its sources, the type of discharges from ships, the consequences of such pollution for the marine environment and for the health and economic activities of the coastal areas affected by the discharge.

Chapter 3 describes the international legal regime that, through IMO, tries its best to attack the problem. This chapter demonstrates that the instruments do exist. Safety of ships is regulated, mainly with the SOLAS 1974 Convention. MARPOL regulations for preventing pollution from ships, mainly oil, have almost 22 years in existence. Unfortunately, accidents still happen. With the growing size of ships, accidents, when they occur, are more spectacular, but the silent and continuous releases of oily waters and oil from smaller ships and pleasure vessels are as damaging as those large releases and they should also be subjected to tight controls.

Chapter 3 also includes an analysis of the national legislation. The main legal instrument, enacted in 1991AD (1411H), is Decree No. 157 of 29/11/1411H. The overall co-ordination lies within the Meteorological and Environment Protection Agency. The decree also assigns roles and function to other government departments, among them to the Saudi Coast Guard.

Chapter 4 presents the stages that a general contingency plan requires, as the only way to respond in an orderly and efficient manner to oil spills. Emphasis is on the organization of the unit responsible for a rapid response to oil spills and contingency planning in the Saudi Coast Guard. Another important aspect refers to how the plan would fit in the national scheme, and what would be the required co-ordination with other agencies. The need to classify the size and significance of the spill is considered important, the strategy and policies dictated by the steering group of officers is essential in this formulation.

Chapter 5 is dedicated to the design of the unit in charge of abatement of oil discharges at sea. Here I have called it Environment Protection Task Force, because the name involves the preservation of what today exists through the efforts that this generation must do to leave to future generations a healthy and beautiful coastal and marine environment. The basic organizational structure and the function in non-emergency and in emergency situations of the Management Steering Group and the Environment Protection Task Force as well as a Liaison group are considered in detail.

Chapter 6 provides a summary and conclusions. I have summarized the essential points of the body of the dissertation. This chapter contains some recommendations that I hope can help in the design of the new unit and the new responsibilities for the Saudi Coast Guard.

CHAPTER 1

PRESERVATION OF THE SAUDI MARINE ENVIRONMENT

The present chapter gives a general view of the activities that the agencies of the government of the Kingdom of Saudi Arabia are carrying out in relation to the protection of the marine environment. God has blessed the country with an enormous fortune, in the form of petroleum, the nature and many other riches of the land. Past generations of Saudis have built the beautiful country it is now. The present generations should exercise care to preserve what have been achieved as well as, through sustainable development ensure that the future generations will also enjoy what God has given us.

The Kingdom of Saudi Arabia is one of the major oil exporting countries in the world. Its economy is based in the oil industry and agriculture. Both activities, in other countries, would constitute incompatible developments. Thanks to the managerial practices these are the activities that sustain the country and have helped in the building of a modern society.

One of the ways to help in the preservation of the Saudi marine environment is through the establishment of a strong organization to regulate as well as take measures when oil is spilled in the Saudi waters. The present dissertation is about the ways that the Saudi Coast Guard should be prepared to share the responsibility of combating oil spills at sea with the Meteorological and Environmental Protection Agency of the Ministry of Defence and Aviation. The Saudi Coast Guard should transform itself into the eyes and the arms that first react to oil spills at sea.

Before embarking on the topic, it is important to have a good knowledge of the areas that the Saudi Coast Guard would serve and a detailed knowledge of those areas that

require special attention, because of their importance to the environment in general, or because they are subjected to unusual pressures from recent developments.

1.1. The Country and its Resources

People have settled along the coasts of the Arabian Peninsula for millennia. The first maritime civilization, Dilmun, prospered 4,000-5,000 years ago, and encompassed what is now the island of Bahrain and the eastern coast of the Kingdom of Saudi Arabia (Price A:R:G:, 1993). Through all these years, the Red Sea in the West and the Arabian Gulf in the East have served as transportation links for people and goods. Both coasts have also provided food, natural resources, and additional economic values to the people living along the coast and to the country in general. (Ali El-Hakim, 1979)

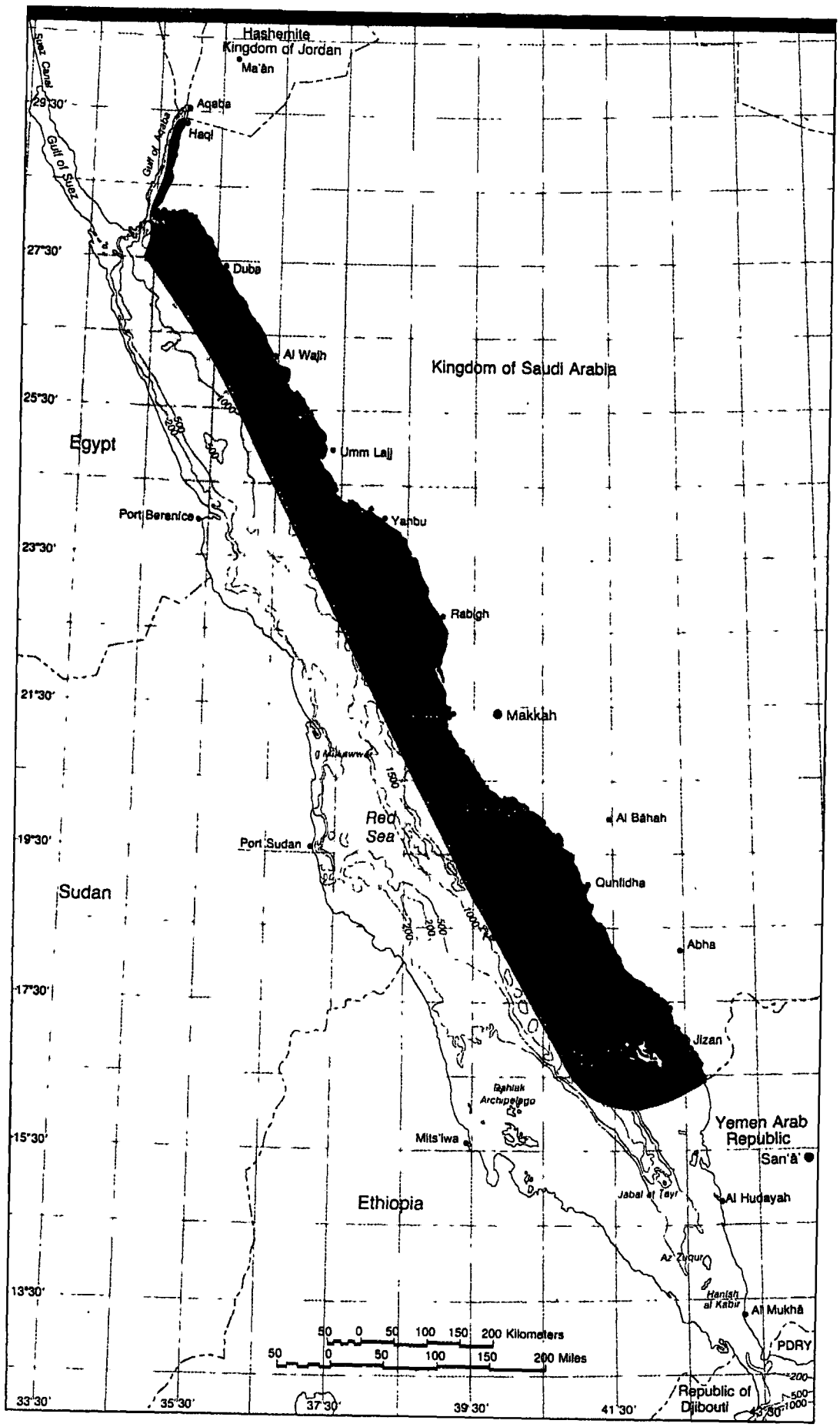
In modern times, both the Red Sea and the Arabian Gulf have specialized as principal shipping routes for oil. Today they constitute vital maritime arteries for the flow of oil to the economies of the West as well as for the Far East.

From what was said above it is easy to understand that the Red Sea and the Arabian Gulf have played a critical role in the past and present development of Saudi Arabia, as well as for neighbouring countries. These two bodies of water, are unusual areas of contrasts and similarities.

1.1.1 The Red Sea

The Red Sea is one of the deepest regional seas in the world. It extends over 13^{o} of latitude, and is the only link between the Indian Ocean and the Mediterranean Sea by virtue of the existence of the Suez Canal. (Fig. 1.1)

Fig. 1.1 Saudi Arabia Red Sea Territorial Water



Source: Red Sea and Arabian Gulf: MEPA Report No 7, 1989

The continental shelf ranges from less than one km in the Gulf of Aqaba to more than 100 km further south around the Farasan Bank. This partly explains the increasing prevalence of sensitive habitats in the Southern part of the Red Sea.

Because of the wide variation in climate and other geographical features throughout the 13^{o} latitude the range of habitats and species is appreciable. (MEPA, 1985)

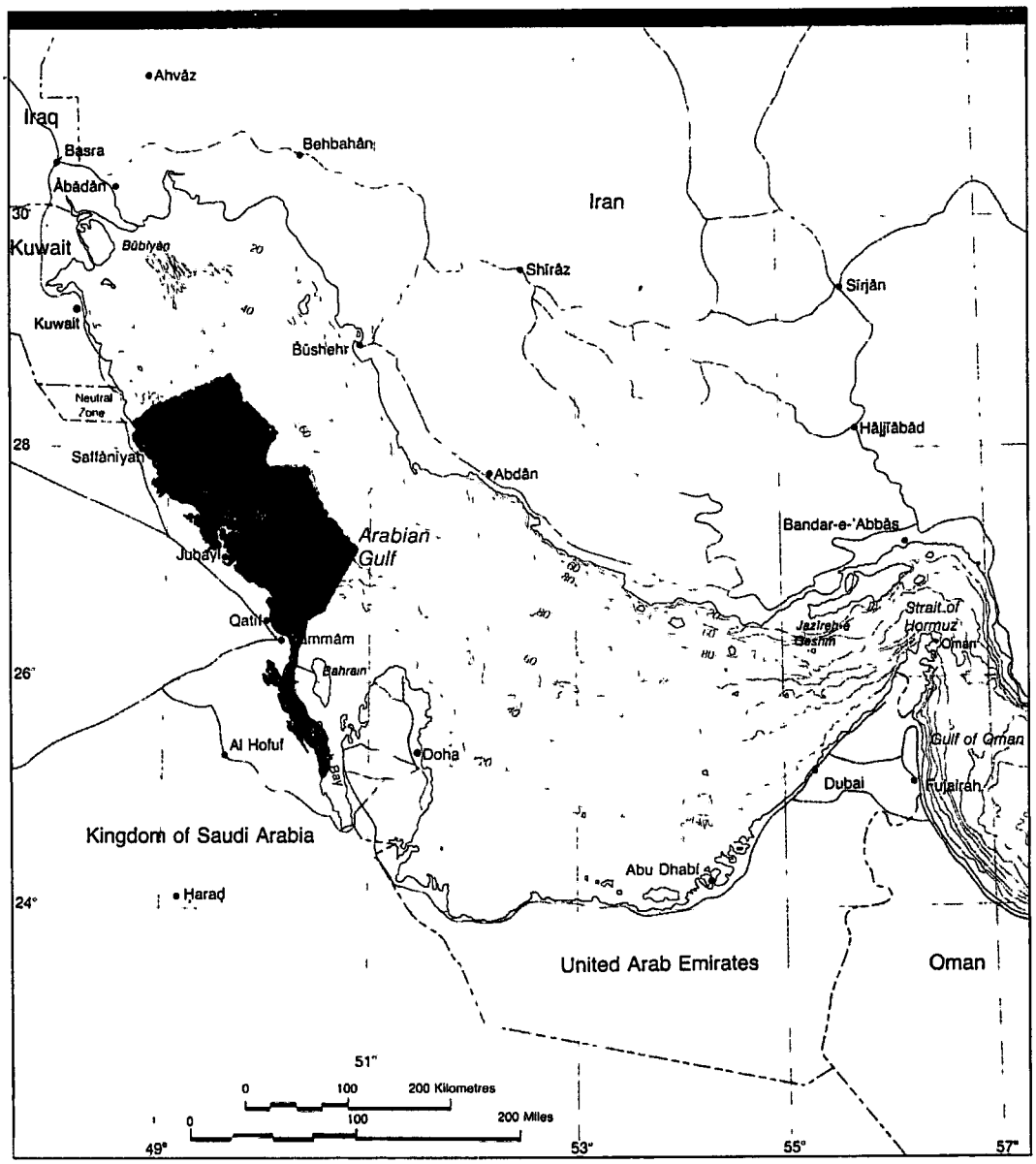
1.1.2 The Arabian Gulf

The Arabian Gulf, is a shallow, almost land-locked sea situated between the Arabian Peninsula and Iran. It extends over 6^{o} of latitude. The area of the Gulf is approximately 70,000 square nautical miles. It has 97 percent of its periphery occupied by land. The Gulf is joint to the Gulf of Oman, the northernmost arm of the Indian Ocean, by the Strait of Hormuz. The length of the Gulf from Shatt al-Arab to the Strait of Hormuz is approximately 430 NM; its maximum width is about 160 NM. The narrowest part of the Gulf is in the Strait of Hormuz, which is the only outlet, 20.75 NM wide. (Fig. 1.2)

It is a relatively shallow basin with an average depth of less than 40 meters and a maximum depth of about 100 meters. The deeper waters run along the Iranian coast and off the Musandam Peninsula. Scattered throughout the gulf, particularly along the Arabian shore, are numerous islands.

It is bordered by seven littoral states - Saudi Arabia, Kuwait, Qatar, the United Arab Emirates, Oman, Iran, Iraq and the Island State of Bahrain. Coastline measurements within the Gulf vary from 635 NM for Iran and 296 NM for Saudi Arabia to 10 NM for Iraq. The Gulf is important for its natural resources and its geographical position. Historically, the gulf was noted for its pearls. Currently, it is valued for its vast oil resources, upon which the industrial nations of the West depend for energy, as it was sharply marked during the Gulf War of 1991. Less significant, nonetheless vital, is the gulf's fishing potential.

Fig. 1.2 Saudi Arabia Gulf Territorial Water



Source: Red Sea and Arabian Gulf: MEPA Report No 7, 1989

Merged with interest in the Gulf's resources is the political-strategic interest in its geographic position. The 1991 Gulf War made it clear that the Gulf is the subject of strategic concern. (McDonalds, G., 1980)

1.2 The Country and its Development

One aspect of development which is crucial in the preservation of the marine and coastal environment has to do with the way developmental projects are carried out. Some uses of the sea have made states confront each other, as the latest case of Canada and Spain over the fishing of the Atlantic halibut can testify. Whether the international interest coincides with the interest of the host nation is a matter of much discussion and the topic is outside the scope of the present dissertation. Nevertheless a few words about this relationship are necessary.

The interest of the international community in Saudi Arabia is due to the following factors:

1. Uses of the ocean spaces for
   a. Transport
   b. Offshore-oil structures
2. Exploitation of marine resources
   a. Mineral resources

The national interest is concentrated on:

1. Trade and transportation
2. Offshore resources
3. Coastal state security
4. Preservation of the environment
5. Maintenance of minimum public order
6. Fresh water from desalination plants for human consumption
7. Generation of alternative sources of energy

8. Recreation
9. Land reclamation
10. Waste disposal
11. Marine research
12. Exploitation of living and mineral resources
13. Generation of national wealth

Table 1.1 World Oil Production and Oil Reserves and Production of Saudi Arabia (1986-1991)

Year	World (1) Production	Saudi (2) Crude Oil	Saudi (3) Refined	Saudi (4) Reserves	Tankers No. (5)
1986	55,864	1,752,133	2643	169.58	
1987	56,070	1,502,304	3000	169.97	
1988	58,009	1,845,649	3627	254.96	
1989	59,661	1,848,540	3658	260.05	
1990	60,531	2,340,500	4634	260.342	
1991	59,964	2,963,000	6000	260.926	2,801
1992					2,885

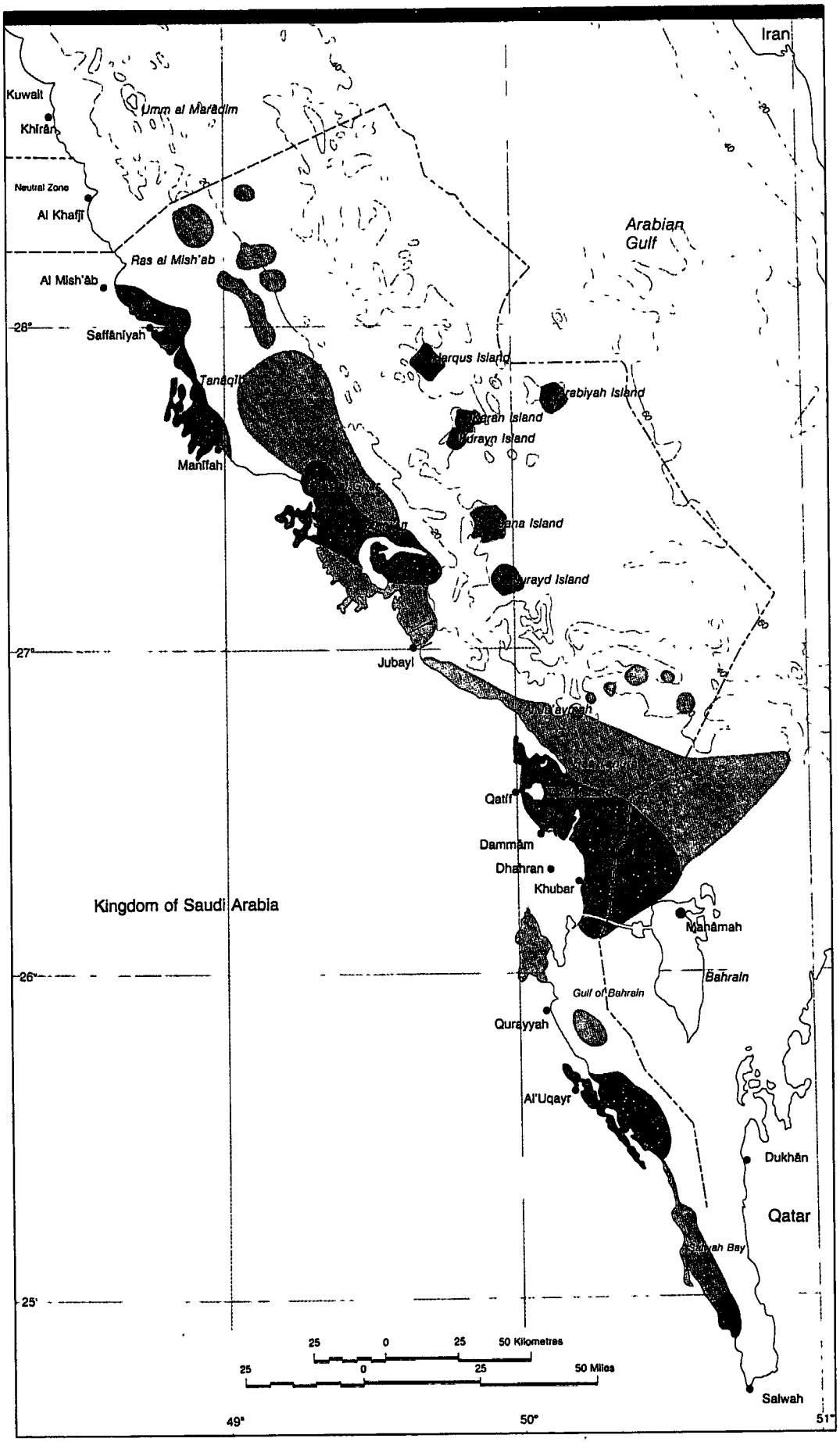
Source: Ministry of Finance and National Economy (1992) Statistical Yearbook.

Notes: 1) In thousands of US barrels per day
2) Production in US barrels per day
3) In US barrels per day
4) In Billions of US barrels
5) No. of Tankers loaded at ports in the Gulf

Fig. 1.3 shows the major coastal uses along the Saudi Gulf coast. The presence of most of the oil fields in the Gulf has been a significant factor in attracting development to the region. About 40% of the Saudi Gulf coast is already developed in urban, industrial, and port centres, the identified activities of this area can be summarised as:

1. Activities of transportation and exploitation of marine resources.
2. Activities of security of coastal areas and
3. Activities of control of the problem of pollution.

Fig. 1.3 Saudi Arabia Gulf Coastal and Marine Uses



Source: Red Sea and Arabian Gulf: MEPA Report No 7, 1989

By contrast, in the Saudi Red Sea a smaller proportion of the coastline is being utilised, but in some areas (such as Jeddah) the impact of development on the marine environment has been significant.

Today, both water bodies play an even greater role in the Kingdom's development, largely due to the following:

1. The importance of the petroleum industry, (field development, production complexes, refining and transport.)
2. The strategic location between western and eastern economies facilitating the transport of oil.
3. The development of urban, commercial, and industrial bases directly or indirectly related to the oil industry.
4. Both coasts play a fundamental role in fresh water from desalination plants to virtually the entire Kingdom.
5. Fisheries represent another renewable resource of direct economic benefit to the nation.
6. The coastal environment is of very great recreational value. In contrast to non-renewable resources the value of fisheries and recreational areas are replenished if sustainable use is encouraged.

1.3 Coastal and Marine Uses. Development Pressures

The Arabian Gulf is a major oil and commercial shipping area. Large industrial ports along the Kingdom of Saudi Arabia Gulf coast are located at Tanaqib, Saffaniya, Jubayl, Ju'aymah, Ras Tanura, and Dammam.

Industrial development in these areas includes refineries, petrochemical plants, power plants, desalination plants, waste water treatment plants, and other primary and secondary industries. (MEPA, 1989)

A number of industrial centres are also found along the Saudi Red Sea coast, but on a more modest scale than along the Saudi Gulf coast. Industrial development is concentrated at Jeddah, Yanbu, Rabigh, and Jizan. Several oil refineries and petroleum facilities have been constructed, such as the large oil terminal at Yanbu where the Trans-Arabian Pipeline (TAPLINE) ends. As on the Saudi Gulf coast, desalination plants, waste water treatment plants, and power plants are also located intermittently along the coast.

The fishing industries in the Saudi Arabia Red Sea and on the Saudi Arabia Gulf account for some coastal land uses, however, these uses generally do not create significant disturbances to the environment. Numerous small fishing villages are scattered along both coasts and the industrial fishing ports and processing facilities are primarily clustered near the urban areas. As this industry is further developed, additional processing facilities and ports may be needed along the coast.

1.4 Environmental Effects of Coastal and Marine Use

1.4.1 Sea Water Pollution

There are numerous sources of coastal water pollution, particularly along the Saudi Arabia Gulf coast. (Fig. 1.4) The heavy tanker traffic results in chronic discharges of oil and other chemicals. The high risk of oil spills from tanker accidents threatens the viability of the fisheries, the source of fresh water and other natural resources and could destroy recreational values.

1.4.2 Landfilling

This is one of the most disruptive activities for coastal and marine resources.. (Fig. 1.4) Extensive tracts of productive biotype (types of marine life) have been destroyed irreversibly as a result of landfilling. (MEPA, 1989, pp.10)

Major landfill projects in the Gulf include: the port at Dammam, industrial and residential landfill projects at Madinat-Al Jubayl-Al Sinaiyah, and residential landfill

developments along the Tarut Bay-Al Khubar-Dammam coastline. On the Kingdom of Saudi Arabia Red Sea coast: Jeddah, Yanbu, and Jizan.

1.4.3. Dredging (channels, causeways, ports, and various other industrial facilities.) (Fig. 1.4) Dredging causes destruction of the resources in the affected area and often has indirect impacts from increased sedimentation. It has a long-term damaging effect on the environment, through the destruction of valuable plant and animal communities.

1.4.4 Fishing Practices

In general, fish stocks in the Red Sea and Gulf have been overexploited. However, intense fishing activities are still going on in some areas of the Gulf. Shrimp stocks have been seriously affected by the great oil spills during the 1991 Gulf War. Other fishing practices, such as trawling are harmful to habitats and associated resources. Anchoring on coral reefs causes damage to the corals which in turn affects fish habitats.

1.4.5 Recreation and Tourism Activities

Environmental pressures from recreational activities are not severe along the Gulf coast of the Saudi Arabia. However, because of their limited size and the intense use for recreation, some of the coral islands and reefs are threatened. This is particularly important because of the limited extent of this habitat type in the Gulf.

Certain recreational activities are a problem along parts of the Saudi Arabian Red Sea coast, particularly near Jeddah and Yanbu. Around Jeddah, the reefs have been damaged by extensive food and souvenir collecting and spearfishing. (MEPA, 1989)

The significant environmental problems caused by various construction projects along the Saudi Arabian Red Sea coast are concentrated at Jeddah and Yanbu. Coastal and marine resources around, Rabigh, Sharm Obhur, and Jizan are also being degraded by development activities.

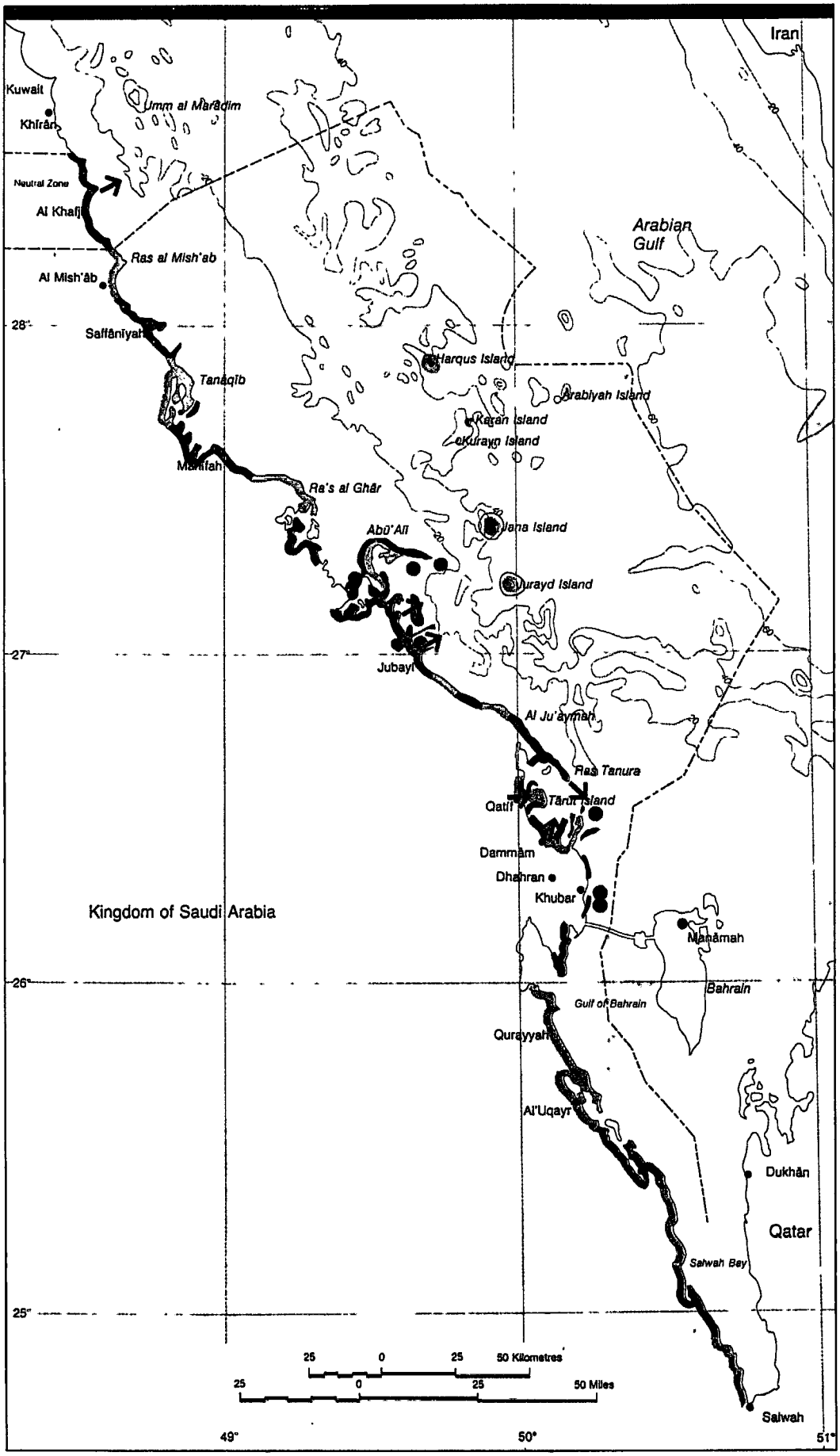
On the Saudi Gulf coast the major environmental effects of coastal and marine use are concentrated in and around, Jubayl and Tarut Bay. However, extensive oiling of the coastline can be observed in numerous places along the coast.

1.5. Conflicts Between Coastal and Marine Uses and Resources

By comparing the information on the location of coastal and marine uses and human activities with the location of key natural resources, it is possible to identify the main areas of resource/use conflict (Fig. 1.5). (MEPA, 1989). A preliminary analysis of the Saudi Arabian Gulf Coast where development pressures are greatest was done by MEPA. This report indicates the following:

1. Ras Mish'ab to Manifah (including several offshore areas). Industrial developments such as petroleum facilities or power plants plus recreational activities are conflicting with resources such as shrimp and fish, pearling banks, seagrasses, and coral reefs. (IUCN, 1987)
2. Abu'Ali area (including Jubayl). Dredging, landfilling, industrial effluents, port development, and fishing activities are conflicting with intertidal flats, mangroves, birds, pearling banks, corals, and fishery resources.
3. Tarut Bay complex (extending from north of Ras Tanura to Al Khubar) Landfilling, dredging, effluents from refineries and other sources, trawling, and general development are conflicting with resources such as mangroves, date palms, seagrasses, corals, fish and shrimp fisheries, pearling banks, and birds.
4. Dawhat Zalum (Half Moon Bay). The main source of conflict is the construction of leisure homes and the corniche road. This causes some impingement on shore and seagrass habitats and blocks public access.
5. Offshore Coral Islands (except Karan & Kurayn). Fishing, turtle and bird egg collecting, driftwood, diving, and other recreational pursuits are sometimes resulting in major conflicts with these secluded island habitats and associated wildlife (such as nesting turtles and birds). (Croosland et al, 1987)

Fig. 1.4 Envir0nmental Effects of Coastal and Marine Uses Arabian Gulf



Source: Red Sea and Arabian Gulf: MEPA Report No 7, 1989

With less development occurring along the Saudi Arabian Red Sea coast, available information is less complete. Based on preliminary information, Yanbu, Jeddah, Rabigh, and Jizan are areas undergoing major conflict in the Saudi Arabian Red Sea.

1.6 The Government Approach

There is a general agreement in the country that measures have to be taken to preserve what is left. The country has to create the necessary infrastructure to face the difficult challenge of leaving a healthy environment to future generations. The author hopes that this dissertation will contribute to the national discussion.

The Kingdom of Saudi Arabia values development as a means of enhancing the prosperity, dignity, and the well-being of its people. Development within the Kingdom is guided by National Development Plans. This is especially important in the coastal zones where all development takes place. The Government sees the need to preserve traditional coastal activities that conserve and enhance the marine environment.

For that the Government created the Meteorology and Environmental Protection Administration (MEPA) under the Ministry of Defence (MoD) in 1984. MEPA is now responsible for the environment-related aspects of development. The present NDP emphasizes environmental management projects. The work of MEPA in the past few years, has been the gathering of basic information for planning purposes.

1. Survey of the Red Sea marine life, and habitats.
2. Survey of the Gulf's marine life, and habitats.
3. Special consideration has been given to special areas such as: coral reefs seagrasses, seaweed, mangroves, fish nurseries, etc.
4. Since 1988/89 the designation of marine reserves.

This studies provided essential information for management and planning of coastal and marine protectorates, fisheries, and coastal development projects.

One of the principal conclusions, common to all the studies, has been the need to co-ordinate efforts at all levels: government, private and the general public.

1.7. The Need for Co-ordination

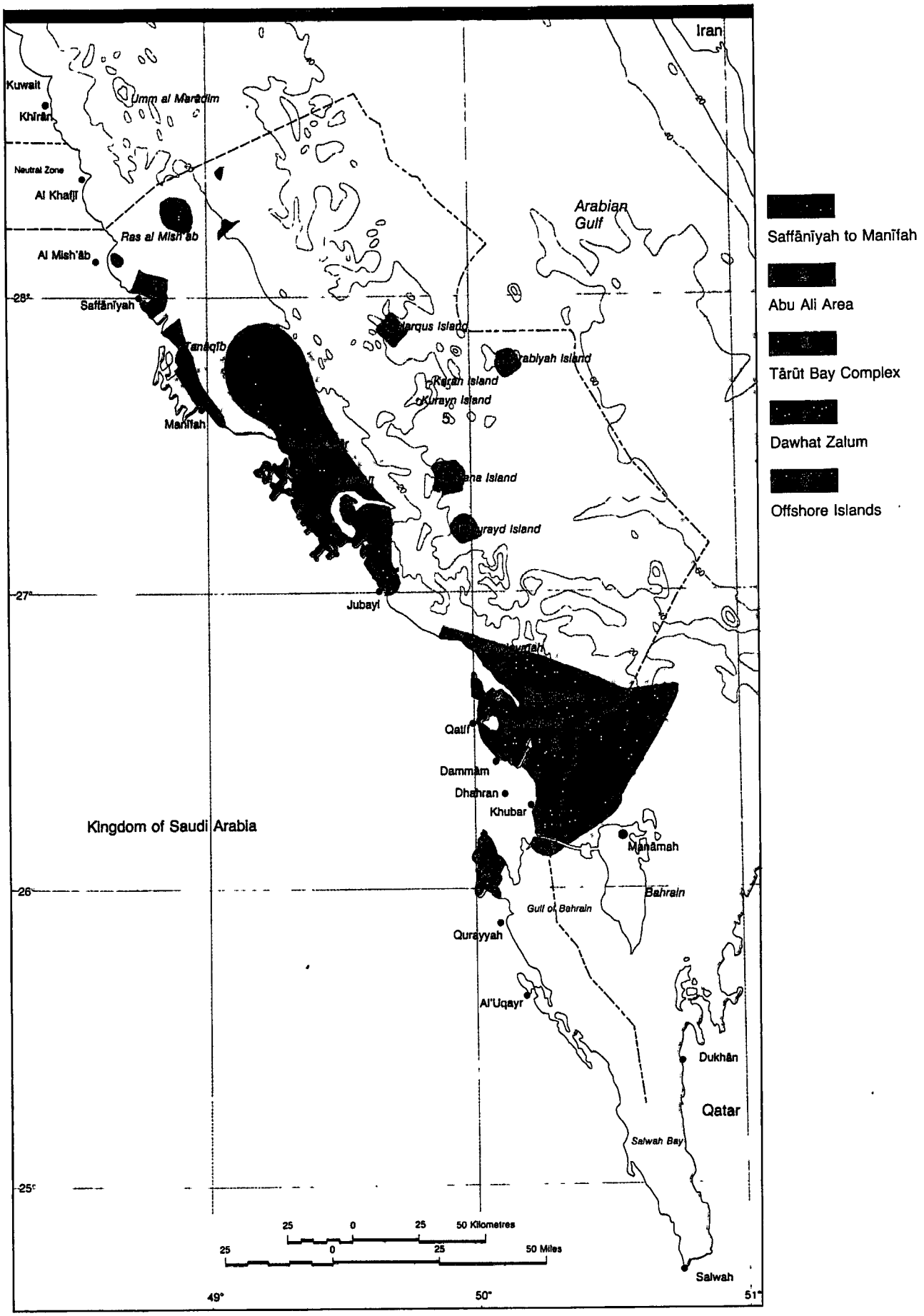
The complexities involved in the management and conservation of coastal and marine resources will require the involvement of a number of government agencies and departments in order to create a structure for the co-ordination and encouragement of environmental protection and conservation. Nowhere will such action be more important than in the field of marine habitat conservation, coastal zone management and prevention of sensitive areas.

Through international agreements and national laws, Saudi Arabia has identified many of its overall goals for the preservation of the coastal and marine environment. The efforts are directed to:

1. Ensure that coastal and marine resources continue to support present and future coastal land uses and human activities on a sustainable basis.
2. Protect commercially valuable, rare, threatened, or endangered species such as fish,

   shrimp, dugong, and sea turtles, as well as their associated habitats.
3. Rehabilitate and replenish coastal and marine environments that have been degraded.
4. Protect environmentally sensitive areas by continuing development of a system of coastal and marine protectorates. In addition, to ensuring the continued diversity of plant and animal species, protected areas will also provide important scientific and educational opportunities.

Fig. 1.5 Conflicts Between Key Resources and Uses Arabian Gulf area



Source: Red Sea and Arabian Gulf: MEPA Report No 7, 1989

5. Create coastal recreational areas that provide improved recreational opportunities and better access for local people and visitors.
6. Involve all levels of government to ensure that a co-ordinated and comprehensive approach to management and development is achieved.
7. Increase awareness and understanding of people in the Kingdom about the importance of managing and protecting the coastal and marine environment.
8. Sustain and enhance present and future human activities that have a beneficial effect on the coastal and marine environment.

1.8 The Role of the Saudi Coast Guard

It is in this call for co-ordination that the Saudi Coast Guard (SCG) ought to find its framework of action for protecting the environment through helping in the efforts to detect and combat oil pollution at sea and in the coastal zones.

It is in the author's opinion that the work of the SCG would be greatly enhanced if due consideration is given to MEPA's studies and planning efforts. This for a simple reason: the Coast Guard area of responsibility is, at the same time, MEPA's planning-
area.

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CHAPTER 2

SOURCES AND THE EFFECTS OF MARINE OIL POLLUTION

The measures which the Saudi Coast Guard can take to protect the country's coastline from pollution from oil tankers require the examination of the following aspects:

1. The sources of marine pollution in general.
2. The sources of oil pollution.
3. The effects of oil pollution
4. The consequences of oil pollution.

Since the present dissertation is concerned with the Kingdom of Saudi Arabia, which is one of the major exporters of crude and refined oil in the world, the author recognises here that many measures have already been taken to minimize the impact of such pollution, especially in port areas and at oil installations, but the latter does not mean that the waters of the Gulf of Arabia and the Red Sea are free from oil pollution. Much remains to be done, especially for early detection and combat of oil pollution at sea.

2.1 Sources of Pollution at Sea

Marine pollution can take many forms. Most of the marine pollution involves the escape from ships of substances which should not be in the sea or on the shores. Apart from oil, they may be hazardous or noxious substances, such as chemicals, explosives, garbage, or micro organisms.

Most of the pollutants entering the sea come from land. These can be traced back to centres of population and to industrial and agricultural operations. Table 2.1 shows the proportions for the different sources. (UNEP, 1990)

Table 2.1 Contribution of Different Sources of Pollution

Waterborne land-source pollution	44 %
Airborne land-source pollution	33 %
Marine transportation	12 %
Marine dumping	10 %
Off shore oil production	1 %

Source: UN Report (1990) UNEP Regional Seas Reports and Studies No. 115.

The contribution from shipping activities (12%) is a relatively small proportion of the total, though it can cause significant environmental effects when it occurs in coastal waters or enclosed sea areas. The Gulf area is nearly an enclosed sea and the Red Sea coast is highly vulnerable to oil spills from the heavy traffic to and from the Suez Canal and the Saudi petrochemical plants. This is the reason for the Saudi Coast Guard to prepare and establish an alerting system to combat a possible oil dishcarge.

2.2 Oil Pollution Sources

The most common pollutant from ships is oil. The word "oil" refers to

1. Petroleum (crude oil)
2. Bunker fuels
3. Gasoline, petrol benzene and lubricants

2.2.1 Crude oil is a natural substance. Its main characteristics are:

1. It can serve as food for bacteria, which break it down eventually to its basic components, mainly hydrogen and carbon.
2. Crude oil is toxic when fresh.
3. After weathering in the sea only the most refractory components remain.

4. They form floating tar balls which are widely dispersed by wind and tide.

2.2.2 Tanker Operations

A 1993 (GESAMP, 1993) Report compared the amount of pollution entering the oceans by source for 1981 and 1989. The study estimated that 3.2 million tonnes of oil reached the sea in 1981. (Table 2.2). Of the total amount about 46 per cent was derived from marine transportation, including tanker operations, other shipping activities and accidental spills from ships. When these estimates were calculated for 1989, these indicated that the total amount of pollution from marine transportation was reduced substantially.

Table 2.2 Proportion of Pollutants Entering the Sea According to its Sources. A Comparison between 1981 and 1989.

Sources	Million Tonnes 1981	1989
Tanker operations	0.700	0.159
Dry docking	0.030	0.004
Marine terminals (including bunkering operations)	0.022	0.030
Bilge and fuel oil discharges	0.300	0.253
Tanker accidents	0.400	0.114
Non-tanker accidents	0.020	0.007
Scrapping of ships	---	0.003
TOTAL	1.472	0.570

Source: GESAMP (1993)

Oil spills from tanker operations appeared dramatically reduced. This is probably due in part to the increasing use of segregated ballast tankers. Over 150,000 tonnes is still a very large quantity of oil to be released in a year. Such oil is released in harbours, at sea and along the main traffic lanes, and it is believed that this situation will continue, unless new measures are put into place by states. The situation makes the waters of the Kingdom of Saudi Arabia very vulnerable to such spills. This in turn needs to be carefully considered and the establishment of an organization for combating oil pollution is a necessity.

A comparatively small proportion of the total comes from single accidents. However, large spills of oil in small or enclosed areas can inflict serious damage to amenities, and marine flora and fauna. Therefore most public attention is focused on such accidents.

While large incidents involving many thousands of tonnes of oil are the most dramatic, damaging amounts of pollutants can come from small vessels of all types. The Red Sea and the Gulf of Arabia in particular have a heavy maritime traffic of small boats, which make the risk of pollution greater. This situation calls for the design and establishment of a contingency plan to combat possible oil discharges.

2.2.3 Marine Terminal Operations

The transfer of oil always involves the risk of spillage. These include operations during loading at off-shore installations, discharging or loading at terminals on-shore, or simply in routine bunkering operations. These are often treated immediately with dispersants, if appropriate, or left to disperse naturally. As the offshore oil industry develops, the risk for such oil spills at sea increases. A system for reporting and eventually combating oil discharges at sea is necessary.

Oil cargoes are not the only threat from accidents. All types of vessels carry oil as fuel. Bunkers from a wreck can do great environmental damage requiring immediate response capabilities.

2.2.4 Bilge and Fuel Oil Discharges

In 1990 it was estimated that the largest single source of oil entering the sea through shipping activities was from fuel oil sludge and machinery-space bilges (GESAMP, 1993). This was largely attributed to the world-wide lack of adequate reception facilities.

Since July 1993 all new ships and all ships fitted with new equipment must limit the oil content of any discharge to less than 15 ppm (parts per million) oil in water. New ships of 10,000 grt and above must also be fitted with automatic discharge cut-off devices. Existing ships not fitted with such devices must fit and use 15 ppm equipment by 1998. Until then discharges at the old standard of less than 100 ppm will be permitted, provided the ships have approved oily-water separating equipment. These regulations need to be enforced through a well organized system of monitoring.

2.3 Nature of Oil Spills

The nature of oil spills is reduced to three ways: .

1. As a result of the deliberate action of ships' crews.
2. As a result of accidents.
3. As a result of operational practices
   a. Legal discharges
   b. Illegal discharges

Most spills from tankers occur in ports and at oil terminals during routine operations such as loading, discharging and bunkering.

Table 2.3 Comparison of Incidence of World Oil Spills from Tankers, Resulting from Routine Operations, Collisions and Grounding 1974-1990

	<7		7-700		>700			
	Ton	**%**	**Ton**	**%**	**Ton**	**%**	**Total**	**%**
Loading/ discharging	3003	91	260	8	15	1	3278	100
Bunkering	556	96	23	4	---	---	579	100
Collision	119	34	159	46	69	20	347	100
Grounding	192	44	155	36	86	20	433	100
Total	3870	83	597	13	170	4	4637	100

Source: Oil Companies International Marine Forum, (1991)

The majority of these spills during a period of 16 years involved quantities of less than seven tonnes (83%). Accidents such as collisions and grounding give rise to 7.5% and 9.3% respectively of all spills from tankers. A fifth of these (170/780) involve quantities in excess of 700 tonnes. Unfortunately no corresponding data was available for Saudi Arabia.

Some discharges of polluting material, including oily products, are permitted under conditions prescribed by international regulations, such as MARPOL.

With tighter regulations and the high standard of ships design maintenance and operation, aiming at reducing pollution to acceptable levels, the problem of illegal discharges has become more obvious. As table 2.3 shows, it is estimated that in the context of shipping more oil enters the sea from discharges, both legal and illegal, than from accidents.

Control of pollution of the sea by deliberate discharges from ships of waste oils is covered by Annexes I of the International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978, MARPOL 73/78.

2.4 Discharges From Oil Tankers

Estimates shown in Table 2.3, indicate that the largest single source of oil entering the sea from transportation activities was operational discharges from tankers. These discharges were usually associated with the cleaning of cargo residues when a ship is ballasting and cleaning its tanks for the return leg of the voyage from a port of discharge. A very substantial reduction in these discharges is evident, though the absolute amounts of oil entering the sea in this way remain large. All this points to the establishment within the Saudi Coast Guard of a specialized unit for the abatement of oil at sea.

Depending on the age and design, tankers use a variety of tanks for ballast operations. The distribution of ballast is important for safety as in the following points:

(a) On ballast voyages (at sea), the ship's draught and trim achieve a proper balance between the need for fuel economy and the need to limit hull stresses and avoid damage in bad weather;

(b) When entering and leaving port, or when in congested waters, it should be ensured that the ship is stable and sits deeply enough in the water to be safely manoeuvred, and

(c) In port, to reduce the side elevation of the ship which may be exposed to high winds, with the consequent risk of damage to moorings or loading equipment.

The procedure for older tankers without segregated ballast tanks is that during unloading the ship takes harbour water as ballast. This continues until the ship is in a safe condition for unmooring and going to sea. Depending on the voyage, more ballast could be taken on once the ship has left port by pumping in directly from the sea.

During the voyage oily ballast water will normally be discharged into the sea through a separating system with any oily residues kept in slop tanks. Ballast will be discharged nearer the loading port to achieve the right trim for berthing and to keep down the amount handled in port. The remainder is discharged during loading with reception facilities being provided for any oily residues. As the international experience shows, these types of discharges can be greatly reduced with the installation of reception facilities.

2.5 Control Over Discharges of Oily Ballast Water

Over the last decade there have been major changes in tanker design and operation. Newer tankers with segregated ballast spaces have only a very limited need to put ballast in their cargo tanks. But, older crude oil tankers operating with crude oil washing (COW) systems (and older product tankers) do clean, decant and change their ballast. Inevitably some oil remains in the discharge.

Under MARPOL rules, permitted discharges of oil and oily mixtures from oil tankers can be made only from a vessel which is outside a Special Area, proceeding en route, and more than 50 nautical miles from land. In July 1993 the previous permitted instantaneous discharge rate was halved to no more than 30 litres of oil per nautical mile travelled by the ship. Tankers are also required to operate an oil discharge monitoring and control system and a slop tank. Acceptable results require good operation, proper maintenance of equipment and adequate surveillance.

For older tankers on long voyages, changing ballast water should be a routine operation. Due to the risk of oil pollution, certain ballasting operations in tankers must be noted in the Oil Record Book, such as the ballasting of cargo tanks and dedicated clean ballast tanks, the discharge of ballast except from segregated tanks, and the discharge of water from slop tanks.

2.7 The Effects of Pollution

The effect of pollution in the sea can be felt most frequently on:

1. Fisheries
2. Amenities
3. Marine plants and animals
4. Public health

The effects of oil released into the sea from ships depend on

a. The composition
b. Concentration of oil
    1. Highest at the site of an accident,
    2. Distance and time disperse and dilute the concentration.
c. The toxicity
d. The quantity of the oil
    1. A large spill lasting a long time has maximum impact.
    2. A relatively small spill can inflict lasting damage if it reaches sensitive areas.
e. The environmental conditions
    1. In enclosed waters, dispersion is least.
    2. Bad weather contributes to a rapid dispersion (offshore winds).
    3. Bad weather is adverse to treatment operations.
    4. A spill close to the coast can have maximum impact, especially with on-shore winds.
f. The nature of the coastline
    1. Rocky shores, are usually exposed to waves, and the movement of the seas has a cleansing action.
    2. Sandy beaches are subjected to moderate wave action. Waves might bury the pollutant deep into the sand.
    3. Coastal wetlands. Oil and other pollutants can become trapped in or buried in sediments.

2.8 The Consequences of Oil Pollution

The Consequences of oil pollution at sea are felt with varying degrees of intensity by different people and even organizations and institutions around the world. The feeling that the oceans can take whatever substances and quantities of the product of

human activities, because of its immensity, is still one the major obstacles for achieving sound policies in most countries. (National Academy Press, 1985).

Those directly affected by oil pollution can be classified as:

1. Seabirds
2. Fish and fisheries
3. Other wildlife
4. Economic damage to coastal communities
5. Public health

Indirectly affected are:

6. The taxpayers, or at least other public development programs, because of the costs not covered by compensation schemes.
7. The shipping industry

1. Fish and Fisheries

- Wild fish are able to detect and avoid oil which contaminates the water column and are thus seldom directly affected by pollution.
- Fishing operations such as the shooting and hauling of nets and creels could be impeded, since gear operated through a slick would be contaminated.
- Most commercial species of invertebrates are not very mobile, especially those living on the seabed, and shellfish beds are at risk from oil sinking onto the bottom.
- Contamination of farmed fish. The fish are confined in cages and cannot avoid the oil. The public perception that fish may have been taken from an affected area can make them unsaleable.

2. Wildlife

Other marine life, plant and animals, plankton, are likely to be affected. The major damage occurs when oil comes ashore and coats the beaches, smothering living organisms and causing toxic effects when fresh.

3. Seabirds

Seabirds are the species most generally vulnerable, particularly to floating oil. Birds which land on or dive through slicks become coated with oil, which clogs the fine structure of the feathers responsible for maintaining water repellance and heat insulation. This causes birds to lose their natural buoyancy and their thermal protection. In the struggle to stay afloat and keep warm they quickly become exhausted. In addition, they attempt to clean their plumage by preening and so ingest toxic oil. Saudi Arabia is a desert country and as such not much life is seen, only birds. It is so that the Holy Koran mention birds several times in its texts. We must take care of them as a species that share the environment with us. (Carlton, J.T. and Geller J.B. 1993)

4. Economic Damage to Coastal Communities

Damage to fish and fisheries can have a substantial effect on local communities dependent on the sea for food, transportation and recreation. In addition to the direct losses, loss of an area's tourist attraction may have a damaging effect.

Oil spills and other pollution can also result in considerable harm to local communities when beaches and beauty spots are contaminated. Amenities are reduced and tourism is discouraged, perhaps with considerable financial loss to the area. Beaches which are oiled or covered with oiled dead seabirds lose their attraction. Hallegraeff, G.M. (1991).

5. Public Health

Public health is usually at risk in some circumstances. If oil is washed onto beaches and blown onto the land, it affects local people by the presence of toxic oily substances.

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CHAPTER 3

INTERNATIONAL LAW AND AGREEMENTS AND NATIONAL LAW

The Saudi Coast Guard, an agency of the Ministry of the Interior of the Saudi Government, shares the responsibilities with the Meteorological and Environment Protection Agency for the control, supervision and monitoring of oil spill incidents in coastal areas and at sea. The legal instrument is the Decree No. 157 of 20/11/1411 H, (1992).

The responsibilities of the Coast Guard are more often beyond the physical coasts. Coast Guard men once at sea are frequently exposed to and must make interpretations of national and international laws. The chapter groups the most important international conventions and laws related to oil spills.

3.1 The International Framework

The possibility of conflicts over interference with international shipping in such areas as: (Ali El-Hakim, 1979)

-- Pollution control zones
-- Fishery conservation zones,
-- Fishing limits,
-- Limitations of access for commercial vessels,
-- Delimitation of offshore areas,
-- The allocation of offshore resources is always present in the international arena.

It seems appropriate to start considering the efforts that the international community

has exerted to deal with one of these problems, the one concerning oil pollution at sea.

Today's international law recognises the existence of conflict areas and seeks to uphold the rights of all to use the sea for the carriage of goods and passengers, as well as for other uses.

Its is recognised that the Kingdom of Saudi Arabia must work within the framework of international law in seeking to reduce the chances of oil pollution incidents at sea. It is also accepted that international law, treaties and conventions do move forward. UNCLOS 1982, for example, was itself a very major step forward and, it is accepted in the areas with which this dissertation is concerned as being an accurate statement of current international law.

Compromises between the often conflicting interests of different countries are unavoidable. While full international agreement through IMO to the measures they have undertaken would be better progress by groups of countries is a very great deal better than no progress at all. A good example constitutes the North Sea States and to some extent the European Union. These groups of countries are in some respects moving forward in advance of IM0.

Many nations, particularly oil exporting nations such as the Kingdom of Saudi Arabia, are dependent upon the sea for the maintenance of their standards of living and even their continued existence in a form which their present inhabitants would recognise. The safety and cleanness of the seas around it and beyond are vital to its national interests. Among these interests are:

a. Offshore oil and gas;
b. National defence - the movement of warships;
c. Fishing and the winning of living resources from the sea;
d. Trade - the carriage of goods by ships;
e. Protecting the environment and flora and fauna;

f. Communication cables and pipelines;
g. Marine scientific research;
h. Exploitation of certain minerals from the seabed.

It is within economic, social, political and human interests that the efforts to preserve the marine environment becomes important. While the international community moves forward with new regulations, individual countries try to cope with their responsibilities toward their citizens. Sometimes these interests are coincidental. At times they are not.

3.2 International Law and National Law

The concept of international law is familiar to those whose work is transnational in character. It is different from national law. In the Kingdom of Saudi Arabia, as in any other country, the law is to be found in codes, statutes, and ordinary law. These sources of law can in general be amended, repealed or added to at any time by the national legislative body. The ordinary law, as declared by the courts is in a continual process of evolution as an instrument for adjusting the rights and obligations of all citizens insofar as such rights and obligations are not regulated by statute.

Two features are paramount, neither of which is to be found in international law:
a. The first is that the terms of the national law are, in theory at least, capable of precise ascertainment at any particular time,
b. The second is that the rights and obligations arising under national law are enforced by the courts and the judicial power of the State. (McDonald, C., 1980).

International law consists of agreements between two or more nations, taking the form of treaties or international conventions and "customary international law". Seen as a whole they constitutes a code of conduct more or less generally accepted

as constituting an appropriate degree of compromise between nations based upon more or less enlightened self-interest.

Customary international law is in a continual state of evolution, but its terms at any particular time may in some respects be difficult to ascertain. Treaties and conventions place obligations upon their signatories and, like ordinary contracts, can be honoured in the breach or in the observance. Disputes between states as to whether there has been a breach of international law, whether based upon customary law, treaties or Conventions, can be and often are resolved by the International Court of Justice at The Hague or by arbitration. Submission to such a jurisdiction cannot be directly enforced, nor can compliance with a judgement or award, although if a state submits to the jurisdiction it will usually voluntarily honour the decision.

Despite what might appear to be its inherent weaknesses, international law does establish a duty on all states to cooperate in establishing international rules and standards to, among other problems, prevent, reduce and control pollution of the marine environment. An important part of that duty, for example, is an obligation to promote the adoption of routing systems designed to minimise the threat of accidents which might cause pollution of the marine environment.

The need to achieve international consensus on changes in the rules constrains what is possible in the development of the regulatory framework for merchant shipping. It is accepted that any consideration and eventually any recommendation must be consistent with the Kingdom's rights and obligations under international law. That does not preclude any unilateral action not in conflict with international law, which the sovereign status of the Kingdom clearly allows. It is merely that unilateral action will often be unwise or futile, either because it will prevent the achievement of consensus or because a consensus is necessary in order to make it effective. It also needs to be borne in mind that unilateral action by any country may encourage unilateral action by other countries on perhaps less good grounds. This might

severely damage the legitimate interests of many states including the Kingdom of Saudi Arabia.

3.3 The Legal Framework of the Law of the Sea

The purpose of the Law of the Sea anywhere is to serve the interests of the international community in the uses of the seas and the enjoyment of maritime resources. The interest of the international community are composed of both inclusive and exclusive interests that pertain to a nonshare usage. Since the international community consists of states, the inclusive interest are those of the states that realize the advantage of sharing authority over certain areas, activities, and resources with other states. On the other hand, a state may see that it is in its interest to maintain an exclusive control over certain areas, activities and resources, rather than share control with other states. The Law of the Sea has developed as states within the community balance their interest with those of other states, thereby establishing exclusive control for certain areas, activities, and resources and recognising an inclusive interest for others. The changes in the Law of the Sea over time reflects the changes in community interests and expectations concerning the mix of inclusive and exclusive interests. (El- Sayed, H. 1987).

3.3.1 Modern Divisions of the Seas

3.3.1.1 The Territorial Sea

International law tries to regulate all the potentially conflicting uses of the sea, and to deal with its ever increasing uses in terms of both number and scale. Each nation's territorial sea extends in principle for a set distance to seaward of the low water mark. This distance is usually 12 miles. However, there are inconveniences in the territorial sea having a highly irregular seaward boundary reflecting the profile of the low water line where there are indentations, headlands and islands. Accordingly international law has evolved to meet this difficulty. In some circumstances it is permissible to use a straighter baseline than the low water mark. Thus, for example,

it is sometimes permissible to draw a straight baseline between two headlands. From this it follows that there will be parts of the sea on the landward side of parts of the baselines. These waters are known as "internal waters". (Lord Donaldson, 1994).

3.3.1.2. Contiguous Zones, EEZ, Continental Shelf and High Seas

Contiguous zones extending to a maximum of 24 miles from the baseline.
Exclusive Economic Zones (EEZs) extending up to a maximum of 200 NM from the baseline.

Further, there is the continental shelf, which can be more extensive than the EEZ. It is relevant to the winning of seabed minerals, but not to the subject matter of this dissertation.

The High Seas, where all nations enjoy equal rights and freedoms. In earlier times this term was clearly defined as the world's seas lying outside the various territorial seas.

The advent of Continental Shelves and EEZs has complicated the concept in that in those areas the traditional freedoms are in some respects curtailed, but most of the world's sea still forms the High Seas in the traditional sense. (Lord Donaldson, 1994).

Where the distance between two or more coastal states is not wide enough to accommodate the maximum extent of these areas as so defined, jurisdictional boundaries can be agreed, as is the case of the Kingdom of Saudi Arabia.

The powers and duties of states under international law are different in relation to the various zones. Thus, there are duties which apply in an EEZ which do not apply in a territorial sea and duties which apply in a territorial sea which do not apply in internal waters. Conversely, there are powers which are exercisable in internal

waters which are not exercisable in a territorial sea and powers which are exercisable in a territorial sea, but not in an EEZ. These differences are well taken by the Saudi Coast Guard, when officers are briefed for long, medium and short range sea surveillance duties.

3.3.2. The United Nations Convention on the Law of the Sea, 1982 (UNCLOS 1982)

The Kingdom of Saudi Arabia is a party to the Convention on the Law of the Sea of 1958 which first codified much of the traditional law of the sea.

Although the 1958 Convention remains in force, it has been overtaken in some respects by UNCLOS 1982, which was negotiated through the United Nations, and which codified, confirmed and clarified the earlier agreements and also made some modifications and introduced new concepts.

UNCLOS 1982 required ratification by 60 states. It came into force on 16 November 1994, twelve months after ratification by the 60th state.

Many governments, including the Kingdom of Saudi Arabia, have enacted domestic legislation to give effect to some of the powers and duties envisaged by the Convention, such as the 12 mile territorial sea. Because the text was the result of very detailed negotiations which went on for nearly a decade, and mostly represents a consensus view of all nations after all interests had been considered, the International Court of Justice has taken UNCLOS 1982 into account when considering relevant cases.

Whatever its actual or perceived shortcomings, UNCLOS 1982 has had a marked and beneficial effect in harmonising the practice of states, reducing the number of disputes between them and encouraging them to submit to the IMO proposals for traffic schemes and other measures designed to improve safety at sea. It is obviously

in the best interests of all states to follow the generally acceptable parts of UNCLOS 1982.

The most probable future for those parts of the Law of the Sea which concern this dissertation is gradual evolution, involving the implementation by national legislation of the various options and possibilities contained in UNCLOS 1982. This evolutionary process can be accelerated by initiatives taken by individual nations or groups of nations, including the Kingdom of Saudi Arabia, where further measures can be demonstrated to be for the common benefit of the international community.

3.3.2.1. Innocent passage

The vitally important right of innocent passage within the territorial sea was confirmed by Article 17 of UNCLOS 1982, which declares that, subject to the terms of the Convention, ships of all states enjoy the right of innocent passage through the territorial sea. This right also exists in relation to those parts of the internal waters of a state which had been considered to be part of the territorial sea or the high seas before the drawing of straight baselines. Outside territorial waters it is subsumed in the freedom of navigation enjoyed by all ships on the high seas and, subject to certain restrictions, within EEZs.

Internal waters can include areas of sea which have been used by international shipping for centuries. Both the 1958 and 1982 Conventions make it clear that a right of innocent passage exists in such cases.

Innocent passage is defined in Articles 18 and 19 of the Law of the Sea. "Innocent" excludes warlike activities, acts that breach the fiscal or immigration law of the coastal state, acts of wilful and serious pollution, and activities of fishing, research and surveying. "Passage" covers journeys through the territorial sea which may or may not involve entering the internal sea or a port.

Under Article 21(1) coastal states can legislate to impose restrictions for certain limited purposes. Furthermore, coastal states can attach conditions (which must be

reasonable and non-discriminatory) to entry to internal waters or to a port (Article 25 (2)).

Foreign ships exercising the right of innocent passage are required to comply with all such laws and regulations and all generally accepted international regulations relating to the prevention of collisions at sea (Article 2 1 (4)).

3.3.2.2. Transit passage

Articles 37- 44 of UNCLOS 1982 set out the right of ships to pass through straits which are used for international navigation between one part of the high seas or an EEZ and another part of the high seas or an EEZ. This is known as the right of "transit passage". In some respects it differs from the right of "innocent passage". It should be noted that in accordance with Article 38 the right of transit passage does not apply "if the strait is formed by an island of a State bordering its mainland" and "there exists seaward of the island a route through the High Seas or through an Exclusive Economic Zone of similar convenience with regard to navigational and hydrographic characteristics".

3.3.2.3. Ships not on passage

Article 18(2) is an important part of the definition:

"Passage shall be continuous and expeditious. However, passage includes stopping and anchoring, but only in so far as the same are incidental to ordinary navigation or are rendered necessary by force majeure or distress or for the purpose of rendering assistance to persons, ships or aircraft in danger or distress."

Accordingly the right of innocent passage does not entitle ships to "park" in territorial waters for purely commercial reasons for instance, as a floating store or factory. It must follow that the coastal state can instruct the masters of such vessels to move if they do anchor for long periods without a valid reason related to passage.

There is no doubt as to the Kingdom of Saudi Arabia government's power in international law to instruct the masters of vessels to move or to impose conditions which must be met if they are to remain. There do not however appear to be any

satisfactory powers in domestic law under which they can be ordered to move on, except in the special case where the ship has had an accident and serious pollution is threatening.

3.3.2.4. The Rights of States within Internal Waters and the Territorial Sea

Coastal states have an unrestricted right to control shipping in internal waters, except where the right of innocent passage exists in accordance with international law.

In the case of territorial waters coastal states can, subject to general rules of international law, use national legislation to impose rules on ships exercising the right of innocent passage. For our purposes the main justifications of such rules are: (UNCLOS 82)

"*(a) the safety of navigation and the regulation of maritime traffic;*
the conservation of the living resources of the sea; and
(c) the preservation of the environment of the Coastal State and the prevention, reduction and control of pollution thereof."

These powers are more restricted in international straits, where international agreement is needed for traffic management schemes and pollution control rules. Any rules relating to such straits must not hamper transit passage. (UNCLOS 82)

There is no power to levy charges for passage through the territorial sea or international straits. (UNCLOS 82)

States can also issue advice to shipping. Advice takes two forms: that endorsed by IMO and published in the regularly updated Ships' Routing, and advice issued locally in publications or Notices to Mariners. Ships' Routing contains details, with chartlets, of all measures - Traffic Separation Schemes, Deep Water Routes, Areas To Be Avoided, other routing measures and associated rules and recommendations on navigation - endorsed by IMO.

3.3.2.5. The rights of States within the EEZ

Part XII of UNCLOS 1982 deals with the protection and preservation of the marine environment. Its detailed rules allow for limited action to protect the environment in the entire EEZ, the territorial sea and internal waters. Article 211 (6) (a), entitles

> *Coastal States to impose special and additional mandatory measures for the prevention of pollution from vessels in an area where there is a particularly strong case for this in relation to its oceanographical and ecological conditions and the particular character of its traffic.*

This small but potentially significant article should be of great interest for the Saudi Coast Guard. The exercise of this power is subject to IMO determining that the preconditions to its exercise are met.

3.3.3 Other Conventions

The importance of the UNCLOS 1958 and 1982 Conventions is that they codified the generally accepted rights and duties of nations. However there are other major international conventions to some of which the Kingdom of Saudi Arabia is a party and which are very relevant to this dissertation.

3.3.3.1. The Convention on the International Regulations for Preventing Collisions at Sea 1972

This lays down requirements for collision avoidance and amongst other things prescribes the conduct of vessels in Traffic Separation Schemes which have been adopted by IMO. This Convention is particularly important in the Gulf area, where a series of waterchannels have been dredged over time due to the Gulf's shallow waters.

3.3.3.2 The International Convention for the Prevention of Pollution from Ships 1973 (MARPOL)

MARPOL, as amended by the 1978 Protocol, contains five separate Annexes: Annex I deals with pollution by oil; Annex II with pollution by noxious liquids in bulk; Annex III with dangerous substances in package form; Annex IV with sewage; and

Annex V with garbage. Annexes I and II are compulsory for all contracting parties. Annexes III and V are optional in the sense that States which are parties to the Convention may opt out of either or both of these Annexes in respect of their own waters or ships flying their flags. Ships flying the flags of States which have opted out may nevertheless be subject to the rules in Annexes III and V when in the waters of States which have accepted them. Annex IV is also optional but insufficient parties have so far ratified it for it to enter into force internationally.

Only those Flag States (the majority) which are parties to MARPOL 73/78 are obliged to take steps to implement its rules in respect of ships on their registers. Ships of states not party to it may be subject to the rules when in the waters of states which are parties to the convention, to the extent that this may be necessary to ensure that no more favourable treatment is given to such ships.

3.3.3.3. The International Convention for the Safety of Life at Sea 1974 (SOLAS)

SOLAS, together with the Protocol of 1978 and subsequent amendments, sets out detailed agreements on the construction and equipment of vessels, particularly of oil tankers and other bulk carriers.

3.3.3.4. The International Convention on Load Lines 1966 and its Protocol of 1988

The LL Convention sets limits on the draught to which ships may be safely loaded according to specified circumstances. The basis of the Convention is that by assigning freeboards a measure of safety is applied to the ship. Factors taken into account in determining the freeboard include the structural strength, stability and compartmentation of the ship, and the means to ensure the prevention of entry of water through exposed parts of the hull, such as hatches. The visible manifestation of this convention is the mark on the sides of merchant vessels.

3.3.3.5 The International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC Convention) 1990

The aim of OPRC 1990 is to preserve the human environment in general and the marine environment in particular recognizing the serious threat posed to the marine environment by oil pollution. The main subjects to the OPRC 1990 are:

a. Oil pollution emergency plans in ships, off-shore platforms and sea ports and terminals.
b. Oil pollution reporting procedures.
c. Actions on receiving an oil pollution report.
d. This Convention provides a framework for international co-operation for combating major oil pollution incidents.
   d.1. Research and development,
   d.2. Technical co-operation,
   d.3 Bilateral and multilateral co-operation

The contracting parties to these conventions are bound to ensure the application of these rules to ships flying their flags. However, some of the rules are in sufficiently general terms as to leave Flag States, and classification societies considerable scope for varying interpretation. Other important conventions and agreements are listed in the following paragraphs . (IMO, OPRC, 1991)

3.3.3.6. The International Convention on civil Liability for Oil Pollution Damage, 1969.

3.3.3.7. The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971.

These two conventions make provision for compensating those who suffer loss as a result of pollution caused by laden tankers carrying persistent oil in bulk.

-- The first imposes a liability on the shipowner, up to relatively high monetary limits, to pay compensation regardless of whether the pollution was caused by his fault.

-- The second establishes an international compensation fund. These are supplemented by two international schemes devised by the trade. Substantial revisions to these conventions were adopted in November 1992. Full implementation will require enough ratification to bring the protocols into force.

3.3.3.8. The International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969

3.3.3.9. The Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances Other than Oil, 1973.

The Kingdom of Saudi Arabia is a party to the Intervention Convention and its 1973 Protocol. They give to the state extensive intervention powers in relation to all ships within the Kingdom's territorial waters.

3.4 National Legislation

3.4.1 The Incorporation of Conventions into Kingdom of Saudi Arabia Law

International law and agreements regulate relations between states. National laws regulate the rights and duties of natural and juridical persons subject to those laws. The two come together in two ways.

-- First, some international agreements require states which are parties to give effect to them in their national laws.
-- Second, international law and agreements constrain the sovereign right of states to legislate to the extent that no state should make legislative provisions which are inconsistent with its international obligations.

International conventions and agreements bind the Kingdom of Saudi Arabia only after it has accepted them by signature and, if the convention or agreement so provides, by ratifying them.

Ratification can also take place only when the Kingdom of Saudi Arabia law is consistent with the requirements of the instrument: this may require legislation,

either primary (i.e., Orders by the King) or secondary, or subordinate (i.e., statutory instruments, decrees, based on Royal Ordinance) between signature and ratification.

3.4.2 The Rights of Port and Coastal States

The rights of individual states and their national laws are invoked both in giving effect to international obligations and when taking unilateral action which does not conflict with those obligations.

3.4.2.1 The Merchant Shipping Bill is designed to:

a. Enable the implementation of the International Convention on Oil Preparedness, Response and Co-operation OPRC, 1990;
b. Facilitate the making of subordinate legislation when implementing international agreements relating to marine pollution;
c. Provide for the implementation of the International Convention on Civil Liability for Oil Pollution Damage 1969 and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage 1971.

3.4.2.2 Port State Jurisdiction

The power of a Port State to confer rights or impose duties on those using its ports. This is specifically envisaged in UNCLOS 1982 Article 25:

"25 (1) The coastal State may take the necessary steps in its territorial sea to prevent passage which is not innocent.

"25 (2) In the case of ships proceeding to internal waters or a call at a port facility outside internal waters, the coastal State also has the right to take the necessary steps to prevent any breach of the conditions to which admission of those ships to internal waters or such a call is subject.

"25 (3) The coastal State may, without discrimination in form or in fact among foreign ships, suspend temporarily in specified areas of its territorial sea the innocent passage of foreign ships if such suspension is essential for the protection of its security, including weapons exercises. Such suspension shall take effect only after having been duly published.

"218 (1) When a vessel is voluntarily within a port or at an offshore terminal of a

State, that State may undertake investigations and, where the evidence so warrants, institute proceedings in respect of any discharge from that vessel outside the internal waters, territorial sea or exclusive economic zone of that State in violation of applicable international rules and standards established through the competent international organization or general diplomatic conference.

"218 (2) No proceedings pursuant to paragraph 1 shall be instituted in respect of a discharge violation in the internal waters, territorial sea or exclusive economic zone of another State unless requested by that State, the flag State, or a State damaged or threatened by the discharge violation, or unless the violation has caused or is likely to cause pollution in the internal waters, territorial sea or exclusive economic zone of the State instituting the proceedings.

"218 (3) When a vessel is voluntarily within a port or at an offshore terminal of a State, that State shall, as far as practicable, comply with requests from any State for investigation of a discharge violation referred to in paragraph 1 , believed to have occurred in, caused, or threatened damage to the internal waters, territorial sea or exclusive economic zone of the requesting State. It shall likewise, as far as practicable, comply with requests from the flag State for investigation of such a violation, irrespective of where the violation occurred.

"218 (4) The records of the investigation carried out by a port State pursuant to this article shall be transmitted upon request to the flag State or to the coastal State. Any proceedings instituted by the port State on the basis of such an investigation may, subject to section 7, be suspended at the request of the coastal State when the violation has occurred within its internal waters, territorial sea or exclusive economic zone. The evidence and records of the case, together with any bond or other financial security posted with the authorities of the port State, shall in that event be transmitted to the coastal State. Such transmittal shall preclude the continuation of proceedings in the port State."

The only limitations upon the power of exercising port state jurisdiction are that:

(a) it must not be exercised unreasonably;

(b) it must not discriminate against a foreign vessel; and

(c) its exercise must not be inconsistent with international obligations accepted by the state exercising the power.

In the context the Kingdom of Saudi Arabia the most immediate and important use of port state Jurisdiction is as an instrument for use in the stricter enforcement of existing internationally agreed standards and new standards as agreed upon.

3.4.2.3 Coastal State Jurisdiction

Coastal States have jurisdiction over internal waters, territorial waters and the EEZ, but this is limited by the rights of innocent and transit passage. Coastal state jurisdiction is recognised in UNCLOS 1982 Article 21, Article 211(3), which covers both port state jurisdiction and Coastal State Jurisdiction, reads:

"211 (3) States which establish particular requirements for the prevention, reduction and control of pollution of the marine environment as a condition for the entry of foreign vessels into their ports or internal waters or for a call at their offshore terminals shall give due publicity to such requirements and shall communicate them to IMO (the competent international organization). Whenever such requirements are established in identical form by two or more coastal States in an endeavour to harmonize policy, the communication shall indicate which States are participating in such co-operative arrangements. Every State shall require the master of a vessel flying its flag or of its registry, when navigating within the territorial sea of a State participating in such co-operative arrangements, to furnish, upon the request of that State, information as to whether it is proceeding to a State of the same region participating in such co-operative arrangements and, if so, to indicate whether it complies with the port entry requirements of that State."

This article is without prejudice to the continued exercise by a vessel of its right of innocent passage or the application of article 25, paragraph 2.

3.4.2.4 Port and Coastal State Jurisdiction and Kingdom of Saudi Arabia law

Although in terms of international law there is no doubt as to the existence and extent of the Kingdom of Saudi Arabia's right to invoke its port (and coastal) state jurisdiction, it is a right which is best implemented by primary legislation, i.e., Royal Ordinances.

3.4.2.5 The Prevention of Oil Pollution. Council of Ministries Decree 157

As for the prevention of oil pollution the Council of Ministers Decree No. 157 of 20/11/1411H (1992 AD) adopted a plan designed to minimize the effects of oil spills or oil related incidents at sea, port areas and off-shore industries. (Decree, 1992, Arabic translation)

Article One

This article defines oil pollution, the plan for the prevention of oil pollution, and the authority, agency of the state, responsible for its administration and implementation.

Article Two

This articles defines the general policy and objectives of the plan. The general policy of the Kingdom of Saudi Arabia in respect to production, use and transportation of oil is to take all necessary measures to minimize the dangers to the environment and to human health resulting from emergencies cause by oil spills.

Part B designs the objectives of the plan.

1. To create an immediate response system to protect the marine environment and the coasts of the Kingdom from pollution.
2. To fulfil the international and regional conventions and agreements signed by the Kingdom.

Article Three

This article assigns the responsibility for national co-ordination of the plan in the Minister of Defence. The Meteorological and Environment Protection Agency (MEPA) is the administrative entity.

MEPA should carry out the following functions:

- To put into effect a special policy for the protection of the marine

environment and exercise pollution control in the territory of the Kingdom.

- To work to control pollution according to protocols related to regional co-operation or any other related international commitments.
- To carry out surveying and supervision of any necessary studies to prevent oil spill and environmental studies to determine pollution traces.
- To administer the plan

The immediate response operations in the Red Sea and the Arabian Gulf areas, as well as control at local level, are entrusted to a commission that includes:

1. The Ministry of Defence and Aviation
   MEPA is the principal national co-ordinator.
2. The Ministry of the Interior
   - Coast Guard, and
   - The Civil Defence).
3. The Ministry of Petroleum and Mineral resources.
4. The Ministry of Municipalities and Provinces.
5. The General Directorate of Ports.

Article Four

This article designs and establishes responsibilities for regional and sub-regional plans.

Article Five

This article places the responsibility for the success of the plan in MEPA's hands. The co-ordination of the plan corresponds to one entity, in this case MEPA, but this agency can delegate to participating agencies according to special agreements.

MEPA holds the surveying, monitoring and supervision of the general plan as well as the regional and sub-regional plans.

MEPA controls the economic resources available in the plan's budget. In cases of emergency MEPA is authorized to ask the Ministry of Petroleum, Ports Authority, Civil Defence and Coast Guard to carry out the surveying operations, monitoring and supervision in the territorial waters of the Kingdom. These activities include:

- Aerial Surveying.
- Naval Monitoring.
- Coastal Monitoring.
- Reports from commercial and military ships and airplanes.
- Any other practical devices available.

Article Six

This article establishes the way in which the response is implemented. According to the dimensions of the spill and the location of it, a series of stages are described:

1. First Stage/ The Notification:
2. Second Stage: The Arrangement:
   a. The extent of need to control and clean up operations.
   b. Values of different alternatives concerning cleaning and control operations.
   c. Taking necessary measurements to start control operations.
3. Third Stage: Safety Precautions and Control.
   Trying to stop the pollution from its source.
   Control checkpoints and preventing the extent of pollution.
   The use of the dissolving materials which is assigned by the station.
4. Fourth Stage : Clean-Up program.
   Taking in consideration the importance of confining and collecting the the oil. Use of heavy equipment, booms, vacuums, etc.

The regional operation committee is to supervise and follow up.

5. Fifth Stage : Documentation.

Article Seven

1-Necessary activities are to be financed by MEPA's budget and the budgets of other units participating in the response operations as planned.

2-To face the emergency cases that need equipment that is not otherwise available, MEPA is allowed to make agreements and contracts with any other national or international companies or organizations.

Article Eight

The National Committee for Pollution Control. The committee consists of the following:

1. The Ministry of Defence and Aviation (MEPA (presides); Royal Naval Force).
2. The Ministry of Interior (Coast Guard) & (Civil Defence) & (Royal Committees of Al-Jubile and Yanbu).
3. The Ministry of Petroleum and Mineral Resources.
4. The Ministry of Municipality and Town Affairs.
5. The Ministry of Finance and National Economy.
6. The Ministry of Industry and Electricity.
7. The Port Authorities.
8. Refinery Plants.

The Supplement. The decree is supplemented with specialized documentation. For example:

Pollution Classification

1- Limited pollution accident:

It is an accident which takes place in an area which belongs to a unit, as maintained in article five, this unit can control it with out need of help. In this case the sub-regional plan is applicable.

2- Main pollution accident:

It is an accident which takes place in an area which belongs to a unit, as maintained in article five where this unit cannot control it without need of help from other units. In these cases the regional co-ordinator is asked for help.

The main objective of this dissertation to establish the foundations for better equipping a rapid response team to confront pollution incidents at sea by the Coast

Guard is fully justified, in view of the author, by a small but significant paragraph of Article Five of Decree No. 157. Here the delegation for control of the plan in different areas is specified. According to this paragraph, every Agency, which has control over coastal or marine facilities is responsible for operations and control in the areas assigned to it. The agency, in this case the Coast Guard, should also provide the necessary resources, equipment and manpower to control the incident.

Outside the areas assigned to a particular agency, MEPA is responsible for the control and the Saudi Coast Guard should provide the necessary help to MEPA according to their capabilities.

Clean up is treated in a similar way as far as the distribution of responsibilities is concerned. Here again the Coast Guard has a significant role as a provider of equipment and manpower as well as technical assistance.
The rest of the dissertation will develop the concepts of readiness, preparedness, techniques and equipment for the combat of oil spills.

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CHAPTER 4

CONTINGENCY PLAN

4.1 Generalities

The best way to combat oil spills at sea is with personnel trained in appropriate procedures and methods, with adequate equipment and a good operational plan. This plan should address most of the possible alternatives, according to the significance of the incident. This chapter introduces the formulation of this plan. This chapter constitutes just an introduction and does not intend to be the drafting of an emergency plan. In the opinion of the author the Coast Guard should be prepared to respond to these kinds of incidents and this plan is of benefit to them.

As defined by the Oil Spill Service Centre (OSSC) a contingency is an event which may happen, the timing of which is obscure or unknown. (The Oil Spill Service Centre, 1990). This definition of contingency seems appropriate to the purpose of introducing a Contingency Plan (the Plan hereafter) which is intended to develop a high level of preparedness in the Saudi Coast Guard to enable it to cope with an oil spill by placing an organised response, which can give the confidence and greatly minimises the potential of a major pollution incident. The idea is to be able to ensure a fast, effective and adequate response to oil spills in the territorial waters of the Kingdom of Saudi Arabia.

The present chapter presents the necessary stages that a plan of this nature would require. Emphasis is on the organization of the unit(s) responsible for a rapid response to oil spills and contingency planning in the Saudi Coast Guard. Another important aspect refers to how the plan would fit in the national scheme, and what would be the required co-ordination with other agencies.

The benefit of a contingency plan is that it allows an appropriate response to a complex problem to be developed in a calm, non-emergency situation and free from pressures. It will ensure better, balanced decisions in a real emergency.

The Plan cannot consider all circumstances, or predict all of the risks and damages associated with oil spills. The gathering of information and an operational plan are essential factors. The responsibility of Coast Guard planners will be to ensure that this information is available in each circumstance.

This Plan should be viewed as a part of the Coast Guard's overall policy for oil spill response and as an action guideline for procedures concerning oil spills and not as a detailed or a general emergency plan.

It is obvious that a plan like this is part of a long process which requires time and effort. Many organizations and people have to be involved, both within the Coast Guard and also externally. Once the Plan is completed it becomes an integral part of the response process where the response activities in the field will likely be seen to be successful if performed in conjunction with the Plan.

4.2 Coast Guard Strategy for Marine Environmental Protection

The strategy for the Saudi Coast Guard should be the result of a serious analysis. Its aim will be to produce policy guidelines for the prevention and mitigation of marine oil pollution.

The Coast Guard's strategy should be:

1. To promote an environmental conservation awareness by implementing strict rules and regulations to control oil releases and spill from ships and industrial facilities ;
2. To employ mechanical control methods in preference to the use of chemicals

to combat of oil spills.

3. To employ mechanical oil recovery methods and avoid the use of dispersants if circumstances permit.

4.3 Policy

The Saudi Coast Guard policy in response to oil spill operations, should be:

1. To contain and confine any spillage in its location and prevent oil from spreading over a large area, and thus prevent damage to the coastline with its sensitive amenity beaches, industrial locations and the marine flora and fauna of the waters of the Kingdom of Saudi Arabia.

4.4 Operational Plan

An operational plan is meant to answer certain questions: What to do; Who will do it; and How will it be done? It also establishes agreed procedures. From the start it should be clear that the responsibility for the initial response will be in the Coast Guard. It should be understood that the general responsibility lies on the Meteorological and Environmental Protection Agency (MEPA) of the Ministry of Defence and Aviation, according to Council of Ministries' Decree No. 157 of 20/11/1411H.

The responsibility for the Coast Guard's oil spill plan should be placed in a Management Steering Group comprised of senior officers and representatives of other governmental agencies. This is the administrative mechanism where a policy is transformed into concrete instructions.

The specific responsibility for preparedness and field operations is placed in groups of operational officers, here called the Environmental Protection Task Force

(EPTF). The location of such units will correspond to the territorial organization of the Saudi Coast Guard, i.e., area, district, units.

4.5 Scope of the Plan

The scope of the Plan addresses the following:

1. The area covered by the Plan with respect to geographical boundaries.
2. What has to be protected in terms of resources at risk in sensitive, as well as protected areas.
3. Co-ordination with other plans and agencies.

Due to its importance this chapter describes in some detail the following aspects:

1. Reporting requirements,
2. Communications,
3. Geographical areas covered by the Plan in case of oil spills from the following sources:
    a. Oil tankers and ship operations
    b. Ship accidents
    c. Illegal discharges
    d. Unknown sources

within the territorial waters of Saudi Arabia.

4.5.1 Area Covered by the Plan

4.5.1.1 The Arabian Gulf

There is little quantitative information regarding oil spillage, sizes, duration and their long term significance in the Arabian Gulf reaching back to the beginning of oil exploitation and transportation in this region. The Arabian Gulf is a relatively shallow water sea with a stressed ecology which has only recently been studied in depth, after the largest oil spill in history during the Gulf War of 1991. (Hugh D. W. and Kr. Gangsaas G., 1993). Because of this and the stressed environment the very

greatest care should be taken to avoid damage by oil pollution. It is clear that the greatest care should be exercised to stop or minimise the discharge of oil to the sea from any source, and when it occurs it is important to act appropriately and promptly. This is the reason for developing a capability for rapid response to oil spills from a unit within the Saudi Coast Guard.

Oil spillage and discharges of all sorts from ship operations, accidents from ships and other vessels, big and small, and other unknown releases will in many cases reach the shallow waters and littoral zone with a consequential loss to marine life and a great risk for beaches and other amenities. In addition, although fishing is not undertaken in the Gulf to any great extent, there is locally a small but long established family, artisan fishing industry that would be severely affected in case of an incident. Further, there would be disturbance and economic loss due to the impact of oil on amenity beaches and desalination plant intakes, the source of water for human and industrial consumption.

4.5.1.2 The Red Sea

The Red Sea is one of the deepest seas in the world. It is the natural environment for many species only found in the Red Sea. Fringing reefs and offshore barrier coral reefs stretch virtually along the entire coast. Mangrove vegetation is an integral element of the coral reef ecosystem. Mangroves flourish where they are protected by coral reefs (Royal Commission for Jubail and Yanbu, 1993). In turn, mangroves provide spawning and nursery areas for many species of reef fishes. Because of their ecological importance, three zones containing mangroves have been declared conservation areas and are now protected by law.

Apart from its biological diversity, there are important human settlements and industrial facilities along the coasts. Water intake for desalination plants where potable water ensures the life of cities, towns and the petrochemical industry of the zone are also important. There is a proliferation of small islands which give refuge to native and migratory birds, as well as the source of nutrients for sea life.

The protection of these areas is the responsibility of the Royal Commission for Jubail and Yanbu. This dissertation intends to collaborate in the Commission's efforts for achieving an orderly development with a sound environmental policy. The development of the Red Sea coastal areas should correspond to a true progress. This could only be achieved through the efforts to maintain these areas free from pollution of all sorts, especially from the damaging effects of major oil spills.

4.6 Classification of Oil Spills

For the purpose of the Plan, the classification of oil spills given by GAOCMAO seems appropriate:

4.6.1 Minor Oil Leakage and Spills

This means a discharge of less than 25 barrels of oil. These are quantities that can be handled by normal operational personnel and equipment.

4.6.2 Medium Oil Spills

This means a discharge of 25 barrels to 100 barrels of oil, which require additional backup assistance of personnel and equipment.

4.6.3 Major Oil Spills

l) This means a discharge of **more than 100 barrels of oil.** In case of most major oil leaks and spills the oil release is so large that immediate action must be taken to contain and remove the oil to protect the environment, adjacent beaches, harbour facilities and offshore operation facilities.

2) **Disaster size oil releases.**

These involve oil releases of catastrophic proportions of oil which is beyond the capability of any facility or country acting alone to contain, recover, or disperse. (GAOCMAO, 1991).

4.6.4 Oil Spills Originating Outside the Country

If an oil release from a non-Saudi source occurs, which threatens any industrial facilities, biological sensitive areas or beaches, steps must be taken, regardless of the

outside source, to protect the country's coasts and offshore installations as well as to protect beaches, water intakes for desalination plants, etc., if feasible.

The decision to engage in the clean-up of oil spills originating from outside sources requires Coast Guard Headquarters approval before action is taken. The cost of clean-up of oil spills from outside sources must be accumulated in a special separate account. (Arabian Oil Company, 1990) A claim for recovery of such costs must be placed with those responsible for the release when known. Mechanisms are in place nationally and internationally.

4.7 Environmental Control

No procedural document can cover all possibilities. Management should be flexible dependent on the circumstances when conflicting priorities arise. This plan will require the formation of a main centre of environmental expertise at the Saudi Coast Guard. This centre is hereby proposed as the Environment Protection Task Force. It should consist of a group of officers and operations personnel, from all branches of the Saudi Coast Guard, trained in the abatement of oil spills. They should play an active role in the development of the Plan for the most realistic and feasible scenarios.

The Environment Protection Task Force in turn should be composed of Oil Spill Response Teams located along the coastal zones of the Kingdom. An important component of such teams should be the members of the marine and aviation units. These response teams should be responsible for fighting oil pollution in the open sea and in those coastal zones, in co-ordination with other agencies.

The establishment of a co-ordination scheme with other governmental agencies and community councils as well as with the offshore industry should be considered a priority. To avoid double efforts and possible conflicts of interest a liaison office

should be an integral part of the rapid response scheme to co-ordinate efforts with other governmental agencies as well as private and multinational companies, especially the offshore oil industry. The majority of oil companies operating in the Arabian Gulf, both offshore and onshore, are associated with GAOCMAO (Gulf Area Oil Companies Mutual Aid Organisation), which was established in 1972.

GAOCMAO promoted the joint efforts to combat oil pollution within the Gulf area, and to extend help to members, in case of a calamity beyond the member's control. It is extremely important for the Plan that such co-ordination be established, as soon as a decision to implement the scheme is taken by the Headquarters of the Saudi Coast Guard.

4.7.1 Proposed Practices

The Coast Guard's practices for response to oil spills should be shaped after those suggested by the International Tanker Owners Pollution Federation, among others:

1) Respond to oil spills from any source without delay.
2) Treat any oil spill from an unknown source, threatening the Saudi coast.
3) Recovery operations should first be made by mechanical means (skimmer, absorbent materials and booms), and chemical dispersants should be the action of last resort.
4) Non-persistent oils such as gasoline, naphtha, kerosene and diesel oil may be allowed to dissipate by natural processes offshore.
5) Small spills may be dissipated by natural action in designated areas, while immediate response is mandatory in sensitive and protected areas.
6) Chemical dispersant use in declared sensitive and protected areas should be strictly prohibited. (The International Tanker Owners Pollution Federation LTD, 1985).

4.7.2 Operation Areas

For classification purposes coastal area are divided into four main areas following the regional division of the Coast Guard organization:

1) Red Sea North sector
2) Red Sea South sector
3) Gulf area North sector
4) Gulf area South sector

In the event of an oil spill combat operation, each area should be given special consideration according to the specific characteristics of the areas. For example: in south sector of the Gulf area the nature of the coast-line beach consists mostly of cliffs and reefs, scattered rocks and several tidal pools, which makes it very difficult for any craft to reach the beach area. It is also largely inaccessible by vehicles. (Hugh D. W. et al., 1993). Government sea water intakes have to be well protected and isolated with booms, barriers and nets. This area consists mostly of port and harbour basins, channels, oil industrial installations. In addition, actions can be taken with booms in channel entrances in case of emergencies to prevent oil flow into the seawater intakes for desalination plants. (Arabian Oil Company, 1990). Use of dispersants within this area should be strictly prohibited under any circumstances. Only skimmers and absorbent materials can be utilised in these areas.

These sensitive operational areas are potentially subject to leakage from several oil terminals, so that necessary precautions should be taken during loading to avoid any emergencies in operations and at the same time be prepared to act in case an incident happens.

In addition, a recommended measure should be that all vessels involved in oil operations must be equipped with dispersant application equipment and oil absorbent materials in order to take appropriate and immediate action in case of leakage or other emergency. As oil terminals and channel locations are very near to amenity beaches, extreme vigilance is necessary and instructions must be given to all concerned in those operations to tackle any sort of leakage or spill and thus prevent it from being washed ashore.

4.8 Notification Procedures

These procedures are part of the practical experience of the AOC. They have been proven to be of value, and should be taken into consideration: (Arabian Oil Company, Operations, 1990).

4.8.1 Oil Spill Response Reporting

4.8.1.1 Instructions to patrol boats, other vessels and offshore facilities

In the case of the Saudi Coast Guard instruction patrol boats, other vessels and offshore facilities should be instructed that all oil spills should be reported. The unit in charge of receiving such reports should be the proposed Environment Protection Task Force, as the operational branch of a Management Steering Group in cases of oil discharges at sea.

4.8.1.2 Helicopter Observation

All oil spills should be reported as soon as practicable and as soon as other essential operations permit. The point of contact helicopter control room should convey the message to the Environment Protection Task Force.

4.8.1.3 Telephone Exchange

All oil spill reports incoming to the telephone exchange should be transferred to the Environment Protection Task Force to be used in initial evaluation.

4.8.1.4 Other Means

All other messages regarding oil spillage should be transmitted by radio or telephone to the Environment Protection Task Force. It is vital to the Plan that the Environment Protection Task Force should also be the initial focal point of contact regarding oil spillage from all sources. The Environment Protection Task Force should be manned 24 hours/day.

4.9. Oil Spill Data Format

The following communications procedure is based on (AOC, 1990) practices:

4.9.1 Immediate Action: Verbal Format

Oil spill reports should be transmitted verbally in the first instance. The environment Protection Task Force's personnel receiving Oil Spill Reports should request all the information on special designed forms, as thoroughly as possible.

4.9.2 Subsequent Action

Completed oil spill report forms should be submitted as soon as possible after the incident/emergency to the Chief of the Environment Protection Task Force. (Arabian Oil Company, 1990).

4.10 Marine Craft Control Room

4.10.1 Oil spill information received should be recorded in special forms.

4.10.2 Permanent records on oil spill should be kept with format of the message received.

4.10.3 Establish immediate contact with:

- Coast Guard marine terminal..
- Coast Guard environmental advisor(s)
- Coast Guard aviation unit..

Verbal agreement should be obtained that notification of the incident has been received and will be acted upon.

4.10.4 The Environment Protection Task Force should be on continuous alert for all oil spill information until it has received notification that the emergency is over.

4.10.5 After the incident is controlled, copies of the oil spill report forms should be submitted to the Environmental Protection Agency (MEPA).

4.11 The Proposed Environment Protection Task Force of the Saudi Coast Guard

The following organizational structure, responsibilities and functions constitute an operational scenario, that the author considers feasible for the Saudi Coast Guard.

4.11.1 As soon as possible, and following an oil spill, it should ensure that the source of the oil spill is identified.

4.11.2. The Head of the Department shall immediately inform:

1) MEPA
2) The officer in charge of any spill.
3) Operating departments concerned.
4) The Maritime Administration and Safety Office.

The Head of the Coast Guard region should be responsible for reporting to the government authorities that an oil spill incident has occurred.

4.12 Actions And Responsibility

4.12.1 The Oil Spill Combat Operations of the Environment Protection Task Force should be guided by Coast Guard environmental advisor(s), and the Coast Guard Marine and Aviation Units should take responsibility for the operational activities.

4.12.2 Personnel of the Marine Units

The environmental advisors, aviation units and the head of the department concerned should determine the initial response, according to a set of alternative decisions (OEC, 1990) as follows:

Option Decisions

a) Monitor (air/sea survey) and/or await further reports.
b) Initiate local response only with available equipment and materials.
c) Initiate actions but direct appropriate back-up personnel and equipment to take action.
d) Consult within the Management Steering Group (MSG) if the incident is of likely major emergency status or whenever deemed necessary for guidance or relevant information.
e) If defined under d) as a major emergency, oil spill co-ordination passes to the Steering Group Task Force. (AOC, 1990)

4.12.3 Responsibility Depending on the Decisions Taken

The following is a set of decisions that can be logically taken, according following the OEC optional decisions

Decision a)

1. With the head of the department concerned, identify when stand down can be declared.
2. Inform the Environment Protection Task Force that incident has ended.

Decision b)

1. Continue to monitor clean-up progress via Environment Protection Task Force.
2. Consider aerial/sea survey.
3. With the head of the operation department identify when stand down can be declared.
4. Inform MEPA and all involved departments that the incident has ended.

Decision c)

1. Take appropriate actions to assist the response as situation demands with the appropriate response equipment.
2. Alert other response teams in case of need.
3. Consider air/sea survey to monitor clean- up progress-report as necessary.
4. With the head of operations identify when stand down can be declared.
5. Inform MEPA and all involved that incident has ended.

Decision d)

1. Advise MSG representative of spill position and determine with MSG representative if MSG-Task Force intervention is appropriate. If decision is 'yes', contact MSG members to form MSG-TF. Advise Environment Protection Task Force that operation under MSG-TF control when MSG-TF emergency centre opens and is operational.
3. Pass all incident reports and logs to MSG- TF emergency group. Incident control management passes entirely to the MSG- TF.
4. If MSG does not consider that the situation warrants MSG-TF formulation; proceed as option c)

5. Keep MSG personnel advised of clean-up operation progress and ultimately stand down.
6. Advise MEPA that now incident has ended.
7. Consider final aerial/sea survey.

4.12.4 Spill Response Team Assistance

Where local immediate efforts to respond are inadequate, or to face an increasing problem, appropriate assistance personnel and equipment should be directed as follows:

l) On the instructions of head of the Coast Guard station, marine and aviation chiefs and base maintenance equipment personnel require from:

a) Marine and Aviation Department.

b) Beach Response Group.

2) It is the responsibility of the head of the response group to do the following:

a) Contact response personnel.

b) Obtain clearance and availability of vessels.

c) Authorise transportation, loading and lifting requirements.

d) Authorise equipment release.

e) Clear loading port security.

f) Manage the response activity through clean-up.

g) To Report progress and completion to the MEPA.

3) Response teams should report the equipment and materials use/damage to the supply department.

4.12.5 On-site Spill Response Responsibility

Once the incident response is under way the following procedure, suggested by the (AOC, 1990) and the (International Tanker Owners Pollution Federation, 1985) should be adopted:

4.12.5.1 Local Clean-up by immediately available personnel and equipment.

l) Take immediate remedial action, after reporting the spillage.

2) Use of dispersants should be in accordance with MEPA instructions and regulations.
3) Supervisor to report response progress via Environment Protection Task Force and any problems encountered, change in situation, or success of clean-up operation.
4) If situation/emergency deteriorates, request assistance via Environment Protection Task Force.
5) Supervisor to report response completion via Environment Protection Task Force.
6) Supervisor to record equipment material usage and/or damage, eg. absorbents, mechanical containment/recovery equipment and report to the appropriate authority.
7) Disperstant usage to be recorded.

4.12.5.2 Clean-up Assistance to Support Local Response.

l) Report changing circumstances/emergency via Environment Protection Task Force using oil spill report format.
2) Identify problems, need for extra personnel, equipment, etc.
3) Report the progress made via Environment Protection Task Force until completion.
4) Supervisor to report response completion via Environment Protection Task Force.
5) Supervisor to record equipment and material usage and or/ damage.
6) Disperstant usage to be recorded.

4.12.5.3 Procedures Under a 'Major' Oil Spill

4.12.5.3.1 Management Steering Group - Task Force (MSG-TF).

l) The head of the MSG should determine; in conjunction with MEPA, Manager Marine and Aviation - 'major' oil spill status.
2) MEPA, Manager Marine and Aviation brief MSG-TF.
3) Emergency Control Room services and facilities assembled and manned.

4.13 The Management Steering Group-Task Force in Operational Management Control.

4.13.1 Action and Responsibilities of the MSG-TF.

1) Advise the Environment Protection Task Force and other response teams of the operational status.
2) Activate regular air/sea monitoring/tracking.
3) Commence spill movement charting and predictions.
4) Alert potential points of impact (offshore facilities, desalination plant etc.).
5) Alert response teams to impact points.
6) Alert offshore industry to any potential impact with location direction and time.
7) Report emergency as required to MEPA and government agencies.
8) Evaluate any existing response

The team progress reports should serve to re-evaluate the response priorities. These should be modified as deemed necessary to respond to the allocation of priorities and resources. External professional assistance should be considered.

9) Permanent MEPA representation is essential in the working groups.
10) MSG-TF should manage clean-up effort of response teams until completion.
11) MSG-TF should declare stand down condition after final air and sea survey. Stand down is advised to MSG and response teams.
12) MSG-TF should request all incident reports, photographs, expenditures, and equipment usage for further assessment by MEPA.

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CHAPTER 5

ORGANIZATION OF THE ENVIRONMENT PROTECTION TASK FORCE

5.1 Oil Spill Response Organisational Structure

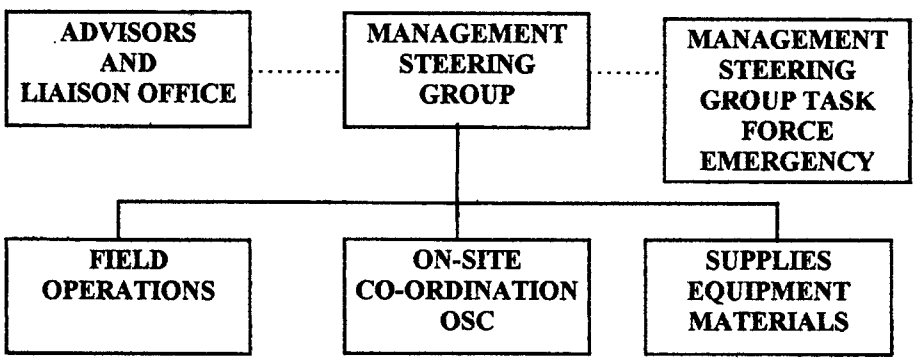
Planning the response and achieving good results are only possible with a well organized structure that ensures clear lines of command. These should be the overall responsibilities of officers. Their direct involvement and commitment are essential in ensuring the Coast Guard's success in combating pollution at sea. All this flows from the senior officers' commitment and involvement in both 'day to day' operations and during an emergency.

According to the experience, (AOC, 1990) each function should organize itself, prepare its own plans in accordance with the master Plan, designate its members' responsibilities and conduct its own internal training. In this respect the Management Steering Group should

a) define the response according to the classification of oil spills,
b) monitor general readiness, and
c) provide integrated training among functional teams through Coast Guard sponsored drills.

The general structure proposed by the author is presented in Fig. 5.1.

Figure 5.1 Proposed Simplified Spill Response Organizational Structure.



5.1.1 The Management Steering Group

The Management Steering Group comprises senior officers and external environmental specialists. The Steering Group consists of the following:

1) Senior Officer Technical Department.
2) Officer Operations.
3) Officer Maintenance.
4) Officer Government Affairs.
5) Officer General Affairs.
6) Officer Construction and Maintenance.
7) Officer Administration.
8) Officer Marine Operations.
9) Officer aviation.
10) Officer Environment Protection Task Force
11) Advisors.
12) Liaison Officer

It is essential that the role of the Management Steering Group should be considered as continuous and not only a part of an oil spill emergency. Preparedness requires constant supervision and training. The MSG should be prepared to suggest any improvement to the system. It should also organize and supervise the drills planned to gain experience and give confidence to the operational and administrative people.

5.2 The Management Steering Group in Non Emergency Role

The MSG should have the following functions, during non-emergency situations: (Jardin, G. and H. Dermott, 1993)

a) Review the Policy of the Coast Guard for oil spill response and effect changes, up-date as appropriate against changes in national and international legislation and in the Coast Guard's own internal practices.
b) Develop plans and procedures, and review them, with respect to the policy of

the Coast Guard for Oil Spill Response.

c) Assign clear responsibilities to agreed individuals, groups and departments for the development of a capability to practically achieve the aims of the MSG policy.
d) Monitor the changing ability of the Coast Guard to meet the objectives inherent in the Policy for Oil Spill Response by auditing the progress of the Environment Protection Task Force and Operational Departments.
e) Review information gathered from oil spillage internationally with the view to improve or change oil spill control policies and practices.
f) Maintain, and further develop a close relationship with government and other relevant agencies such as Gulf Area Oil Companies Mutual Aid Organisation (GAOCMAO), the Ministry of Defence, Ministry of Petroleum and Mineral Resources, the Meteorological and Environmental Protection Administration (MEPA).

To carry out its function, the Steering Group should meet periodically on a routine basis, in order to evaluate progress in the organization and administration and assess the state of readiness.

The role of the head of the Environment Protection Task Force in the Management Steering Group as a technically qualified advisor should be of great importance, and the reason for his presence in the Management Steering Group.

These audit, control and management activities should establish the foundations for all the rest of the Coast Guard actions regarding oil spills.

To achieve this important non-oil spill management function, the Management Steering Group needs a full and objective information flow. The status of facilities and inadequacies should be openly expressed as well as successes and the achievement of objectives. Furthermore, technical briefings to the Management Steering Group should be given to help in the managerial decisions in order to save

time. The receiver of this information should be the Liaison Office, acting as Secretariat.

5.3 The Liaison Group Role in Non Emergency Roles

The Liaison Office is the Secretariat of the Management Steering Group. It should be composed of the following:

1) Head of Marine Operations.
2) Head of Environmental Protection Task Force (Advisor).
3) Head of Marine and Aviation Department.
4) Head of Material and Supplies Department.

The Liaison Office should be the focal point for problems and comments identified to them from a range of individuals, groups and departments (AOC. 1990). In this role the functions and objectives of the Liaison Office should be as follows:

1) To act as the focal point for all information regarding oil spill activities in the widest sense arising in the Coast Guard e.g.:
   a) Attend questions posed by the Management Steering Group.
   b) The results of or progress status of work of any description authorised by the MSG.
   c) Requests for Management Steering Group guidance, advice, approval by the Coast Guard departments in actioning responsibilities assigned by the MSG.
d) Routine status reports, Equipment, Manoeuvre Training programmes etc.
2) The function of the Liaison Group should be to produce concise agenda summaries with supporting analysis of possible implications, technical appraisals, environmental appraisals and options to permit the MSG to have all possible information in a complete and objective form.
3) Request further information from the groups or departments generating issues/ items where clarification is necessary.
4) Pass such received information with supporting material to the MSG Secretariat.

A second but important function of the Liaison Group should be to act as a technical working group actioning under direct instructions from the MSG.

5) The preparation of drafts, working documents, technical proposals, that the MSG might from time to time require.

Given oil spill occurrences the Liaison Group should be seen to act in a role to filter and assess the flow of information.

5.4 Liaison Group in Oil Spill Emergency Role. Objectives.

It is a fact that most oil spillages are small. The Management Steering Group cannot be expected to consider or be involved in each and every occurrence by convening the Management Steering Group-Task Force. The Liaison Group with the expertise identified will be a course filter for oil spill reports. On notification of an oil spill the Liaison Group decision will be as follows:

a) Request remedial action at the scene of the spillage without reference to the Management Steering Group.
b) Request remedial action at the scene of the incident by on-scene personnel without reference to the Management Steering Group.
c) Refer oil spill reports of a nature that may require Management Steering Group guidance to the Management Steering Group Secretariat. If the Management Steering Group-Task Force is not considered necessary, then the Liaison Group should proceed as in (a) and or (b) as appropriate.

In this oil spill function, the Liaison Group's responsibilities should be as follows:

1) To receive all early oil spill reports, to instruct the immediate response actions and to advise/discuss the problem with members of the Management Steering Group. The Management Steering Group should then decide either to refer the response back for the response options or that the emergency is of sufficient importance to implement Management Steering Group-Task Force control.

2) The Management Steering Group-Task Force and the Liaison Group are to provide advice on local response, recommend additional resources and instruct the relevant departments to clean up, monitor and confirm that stand down from the emergency is possible.

It is important that in this role the Liaison Group be seen as advisory and co-ordinating. The responsibility for the work necessary to undertake the clean-up should be that either of on-site personnel with available equipment alone or with assistance from response personnel with extra equipment.

3) If the Management Steering Group-Task Force is formed, the Liaison Group role no longer continues during the emergency.

5.5 Management Steering Group in Emergency Oil Spill Roles

The roles of the Management Steering Group-TF should be:

l) Authorise release of personnel, equipment and materials for response operations in the event of a major oil spillage.

2) Determine the overall response policy on how to control the oil spillage.

3) Authorise assistance as necessary for the operational departments of the Coast Guard as the needs of the response develop and circumstances change.

4) Determine and manage the balance of oil spill response with the priorities of safety to personnel and facilities.

5) Investigate through the Chairman (Management Steering Group-Task Force), or his designated representative, requests for assistance from outside agencies e.g. GAOCMAO. Meteorological and Environmental Protection Agency of the Ministry of Defence and Aviation is to act as the advisor and co-ordinator with GAOCMAO, under the Management Steering Group authority, as the contact point and arbitrator of the response aid needs, progress and its integration with the Coast Guard.

6) Have contact with, and maintain the necessary reports to the necessary government agencies.

In the implementation of this emergency role, the Management Steering Group-Task Force must be able to function with less membership than the full Management Steering Group in its non emergency role.

The membership of the Management Steering Group-Task Force should be pre-designated with authority to activate and operate the plan held by the Chairman or the individual member delegated by the Chairman. It is essential for a strong management function that the Management Steering Group-Task Force role be introduced very quickly in a major oil spill emergency.

5.6 Management Steering Group-Task Force Emergency Control Room

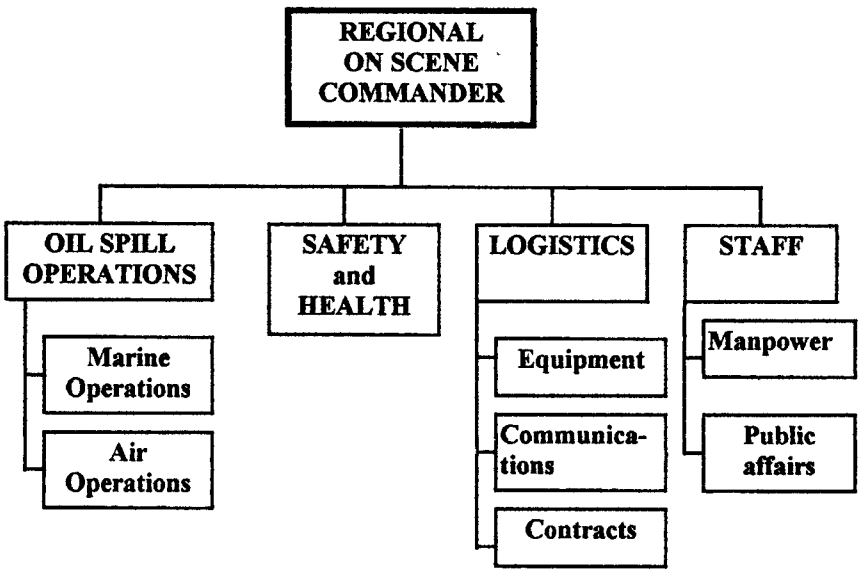
The dedicated Management Steering Group-Task Force control room should permit an environment for a satisfactory operation. Its objective (Arabian Oil Company, the Emergency, 1990) should be:

- To maintain a complete set of relevant working data
- To permit direct contact by the Management Steering Group-Task Force with anyone having pertinent report communications.
- To permit the logging/recording and timing of events.
- To free all telecommunications for emergency and operational uses only.

5.7 Environment Protection Task Force. Response Team Oil Spill Structure and Objectives

The structure of the Environmental Protection Task Force of the Coast Guard organization, proposed by the author should look like the one in Fig. 5.2.

Fig. 5.2 Simplify Structure of the Environment Task Force.



The objectives of this unit are to:

i) Contribute to the development and improvement of the Plan, the equipment and the training levels of personnel in non oil spill periods. This is to be accomplished by recommendations and proposals via the Liaison Group for Management Steering Group decision.

ii) To manage oil spill operations under Management Steering Group-Task Force control in major oil spill situations.

iii) To manage oil spill operations when the spillage is not sufficient to cause Management Steering Group-Task Force activation.

To assist all management teams in their roles in oil spills an Operations Guide should be compiled. This should summarise the state of the art of available technology.

As non-dedicated oil spill response personnel, i.e. support personnel, should be available, given the large distribution of personnel in areas, usually engaged in their

assigned duties, therfore a large number of individuals have had to be identified and attended.

Detailed tasks and responsibility activities for the response teams themselves should be provided. It should be essential that considerable flexibility is maintained between the Response Teams and their Management. Co-operation, joint operations and support will often be necessary in an emergency although the primary skills, techniques and equipment of each team may be different.

The degree of support co-operation will also depend on oil spill size and duration. Sensible compromises will have to be made. It is essential that in the continuing development of the Plan the non-emergency objectives defined above be rigorously pursued by the Saudi Coast Guard.

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CHAPTER 6

SUMMARY AND CONCLUSIONS

To the civilian functions of the Saudi Coast Guard which are so far limited to general border and sea surveillance, customs surveillance in the coastal zone, inspections of restricted areas, surveillance of fishery and hunting at sea, surveillance of continental shelf activities, reports of any significant activity in the territorial waters and coastal areas, search and rescue and hydrographic observations, this dissertation proposes the addition of a new function which takes advantage of the Saudi Coast Guard presence at sea and in coastal areas.

The Saudi Coast Guard functions in regards to oil spills at sea today, is restricted to the reporting of the incident to the Meteorological and Environment Protection Agency of the Ministry of Defence and Aviation. This agency of the Saudi government has the overall responsibility for the co-ordination of the national efforts for combating and controlling pollution of any kind in the territory of the Kingdom of Saudi Arabia. The Agency relies on information from the Saudi Coast Guard for spills at sea and from and other departments and agencies for activating the national contingency plan, if the need arise, as was the case during the great 1991 oil spill. In my opinion, the creation of this agency has been the most important step taken by the Saudi government in regards to measures for the combating of pollution in general in the territory of the Kingdom of Saudi Arabia.

The role played by the Saudi Coast Guard during the 1991 oil spill is still to be evaluated. The available assessment (Tawfiq, N. and Olsen D., 1993, pp. 342) of the measures taken at the time of the spill does not mention the contribution of the Saudi Coast Guard. The assessment did mention "*the disparity in oil spill experience among the various government ministries and the organization. ... some were well*

prepared to carry out their responsibilities, while many of the other ministries required much greater support from the Meteorological and Environment Protection Agency. " The paper did not assign any oil spill responsibility to the Saudi Coast Guard. In my opinion, the CG's resources can be employed in the detection and first emergency response to oil spills in the territorial waters of the Kingdom.

The dissertation deals with the ways to better utilize the Saudi Coast Guard resources and personnel in providing the immediate emergency response to oil spill emergencies. This new responsibility is based on Islamic principles which provide the right and privilege for all people to use the resources of nature, and in our commitment to not abuse, misuse, or distort the natural resources. In recognition of this responsibility the Saudi Coast Guard should take steps to ensure that the country's coastal and marine resources are preserved for future generations, by having the highest grade of preparedness to respond to oil spills at sea.

Studies of the Red Sea and Saudi Arabian Gulf coasts made by the Meteorological and Environment Protection Agency (MEPA) have demonstrated that the coastal and marine resources along both coasts have important economic, environmental, recreational, and cultural values for the Kingdom. The explosion of economic development projects in recent years has resulted in intense pressure on the country's coastal and marine resources from a wide variety of human uses.

The Saudi Arabian Gulf coast has more severe and extensive environmental problems, threatening its coastal and marine resources, than the Saudi Arabian Red Sea coast. However, there are several areas along the Red Sea coast that also deserve immediate attention. The resources in those areas are extensive and spectacular. For the time being it is likely that development pressures will continue to be greater on the Saudi Arabian Gulf coast. If the remaining coastal and marine resources of these areas are damaged or lost, this will jeopardize opportunities and values for future growth.

Besides environmental considerations, Saudi Arabia is one of the biggest oil exporters in the world. Its economy is based on the production and sale of petroleum products to the rest of the world. As such, it is obvious that problems do exist with operational spills, from ships and offshore platforms. Individual laws and treaties developed by Saudi Arabia over the past few years have established environmental protection measures that address this specific problem. While these and other initiatives are important, an overall mechanism was needed to co-ordinate the efforts made by the governmental and private organizations. MEPA (the Meteorological and Environment Protection Agency of the Ministry of Defence) is the department of the Saudi Government in charge of such co-ordination.

The Saudi Coast Guard, in my opinion, has an important role to play in the preservation of the remaining natural resources of coastal and marine areas. I have stated in this dissertation that the Saudi Coast Guard should become the eyes and the operational arm of MEPA at sea and be ready to respond to any incident involving oil spills in the territorial waters of Saudi Arabia and beyond, when there exists an imminent danger to our coasts. The Saudi Coast Guard is in a privileged position. The implementation of a unit within the Coast Guard for the abatement of oil spills at sea would be of great help to MEPA and to the country.

Considerable efforts are already being made to treat spills at sea and prevent it from reaching the coast. Organizations such as GAOCMAO (the Gulf Area Oil Companies Mutual Aid Organization), MEMAC (Marine Emergency Mutual Aid Consortium) proved themselves to be excellent examples. The first is a private organization helping the Saudi Government when requested, and the second is a mechanism established through the Kuwait Action Plan, as the experience of the great oil spill of 1991 during the Gulf War, testifies.

Although there are special problems with oil tankers, because of the large quantity of potential pollutant on board, I am of the opinion that it is important to consider the

causes of spills generally and put measures in place designed to reduce the risk across the board. This conclusion is offered not only because maritime accidents to whatever type of craft can, and often do, put lives at risk, but because all but the smallest ship carry persistent oil in bunkers which is a serious pollutant. Large container ships or bulk carriers may carry a quantity of bunkers which is as large as the cargo of a small oil tanker. It is also important to remember that even the best vessels can be put at risk by worse ones.

A dilemma has always existed: to prevent or cure. Experience shows that in the context of marine pollution this is a false statement. Total prevention of pollution will always prove an unattainable goal, and a capacity to cure will always be required. Complete cure is rarely possible. As substances are being released into the environment they can never be totally recovered. Most marine areas, on the other hand, are able to recover in time. Up-till now attention has been paid to limitation of the cause of damage. I stress here that it can be the contrary. The concentration should be on preventing the escape of pollutants from ships, offshore platforms, ports, etc. through the enactment of regulations and a close supervision. Meanwhile, it is necessary to have a strong organization in charge of detecting and combating pollution at sea. I think the Coast Guard has the power and discipline to start a program for the control and supervision of oil releases at sea.

The responsibilities of the Coast Guard are placed beyond the physical coasts. Coast Guard men once at sea are frequently exposed to and must make interpretations of national and international laws and act accordingly. I have tried in this dissertation to describe the most important international legal instruments for the prevention of pollution at sea. After 23 years of MARPOL 73/78 regulations, inevitably incidents and accidents still occur, because the cause of pollution from ships, if not all the pollution, is human a failing. Whether it is the immediate cause or not it does not matter. The most modern and finest ship can be wrecked by a negligent crew, also a disaster may overtake the best of crews, if there are defects in the design of their

ship. Once more the need to have an organization able to respond quickly to incidents when they occur is deemed necessary.

The Saudi Coast Guard should also prepare officers and crews in the application of the most important legal instruments. One example constitutes the application of MARPOL provisions. Although the Kingdom is not a party to the Convention, there are many technical provisions that can be of help to them in the application of law in cases of oil releases at sea. Knowing what is permitted by international law and what is not would help officers and crew to better comply with the duties entrusted to them.

Its is also recognised that the Kingdom of Saudi Arabia must work within the framework of international law and co-operation in seeking to reduce the chances of oil pollution incidents at sea. It is also accepted that international law, treaties and conventions do move forward. UNCLOS 1982 was itself a major step forward and, it is accepted in the areas with which this dissertation is concerned as being an accurate statement of current international law.

Planning the response and achieving good results are only possible with a well organized structure that ensures clear lines of command. These should be the overall responsibilities of officers. Their direct involvement and commitment are essential in ensuring the Coast Guard's success in combating pollution at sea. All flows from this senior officers' commitment and involvement in both 'day to day' operations and during an emergency.

The necessary stages that a contingency plan requires are described. Emphasis is placed on the organization of the operational and administrative unit responsible for a rapid response to oil spills and contingency planning in the Saudi Coast Guard. Another important aspect refers to how the plan would fit in the national scheme, and what would be required for co-ordination with other agencies.

The way to face the problem of being ready to respond to oil spills is through the formulation of a general contingency plan which addresses the strategies, formulates policies, develops the operational approaches, structures the organization, assigns responsibilities and dictates uniform procedures. This is a first step towards the formulation of the contingency plan to respond to oil spills at sea, and far from being an exhaustive description of it.

The structure included in the plan follows the general administrative organization of the Saudi Coast Guard. The dissertation proposes the establishment of a Management Steering Group in charge of policy making. The operational branch of this group is the Environment Protection Task Force in charge of the actual work of combating and cleaning oil when an incident has struck.

In my opinion priorities are somewhat obvious. Training should be number one. To train people within the Coast Guard in methods, use of equipment and abatement of oil spills at sea is the first step. The development of the organization in charge of the administration and operations, although essential, is secondary to training.

I believe that the legislation necessary to implement some of my recommendations is already enacted in Law No. 157 of 20/11/1411H. Other legal instruments should include general provisions such as:

(a) to exercise jurisdiction to the maximum extent consistent with the Kingdom of Saudi Arabia's obligations under the Conventions. The power to detain ships would be extended to the maximum area permitted by SOLAS; and

(b) to enable regulations to be made covering aspects of port and coastal state jurisdiction which are recognised by international law but which are not governed by specific conventions or other international agreements to which Saudi Arabia is not a party.

Legislation on the second of these points should be confined to, but cover the whole scope of, Port and Coastal State Jurisdiction recognised by international law, that is it would be directed at the objectives specified in Article 21 of UNCLOS and in particular

-- the safety of navigation and regulation of maritime traffic" (paragraph 1 (a)),

-- the conservation of the living resources of the sea (paragraph 1 (c)) and

-- the preservation of the environment of the Kingdom of Saudi Arabia and

-- the prevention, reduction and control of pollution of its waters (paragraph 1 (i)).

It should exclude power to make rules and regulations upon commercial grounds. It should be clear that the power could not be used in a way which would result in discrimination contrary to international law against vessels not under the Kingdom of Saudi Arabia's flag.

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