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SOME ASPECTS TO BE CONSIDERED IN DESIGNATING
ARCHIPELAGIC SEA LANE PASSAGES AND TRAFFIC SEPARATION SCHEMES
IN INDONESIA

by :

Samsul Hadi
Republic of Indonesia

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

DEGREE OF MASTER OF SCIENCE

IN

GENERAL MARITIME ADMINISTRATION

Year of Graduation
1992
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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This dissertation is dedicated to:
Dwi Yully BL, Arie BP and Wendy KS.
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ABSTRACT

SAMSUL HADI : SOME ASPECTS TO BE CONSIDERED IN DESIGNATING ARCHIPELAGIC SEA LANE PASSAGES AND TRAFFIC SEPARATION SCHEMES IN INDONESIA.

The objectives of this dissertation are to analyze the implementation of innocent passage and customary routes used for international navigation, to analyze Indonesian sea regulations and give some suggestions/recommendations for establishing sea lanes and traffic separation schemes in Indonesia.

Indonesia is located between the Asian and Australian continents and it is also bounded by the South China Seas, the Pacific Ocean and Indian Ocean. On the other hand, Indonesia is an archipelagic state; there are at least 17,508 islands and Indonesian seas used for international navigation.

In order to improve safety of navigation and to protect Indonesian interests at sea, according to article 53 UNCLOS 1982, Indonesia may designate sea lanes and prescribe traffic separation schemes in Indonesian waters. In designation of such international regulations, in line with General Provisions on Ship Routeings issued by IMO, there are some aspects which should be considered thoroughly, inter-alia, the right and practice in respect of the exploitation of living and mineral resources at sea, the existence of environmental conservation areas, fishing grounds and so forth.

Through this dissertation, therefore, the author will try to analyze various aspects which influence the designation of sea lanes and traffic separation schemes, such as oil and gas exploration, fishing, population, ship calls, characteristics of straits and current marine accidents and discuss how to create and propose these regulations to IMO.

1. Chapter I. Why
This chapter will discuss five reasons why Indonesia needs to establish sea lanes and traffic separation schemes and how to obtain data and information.

2. Chapter II.
The implementation of innocent passage consists of a briefly discussion of Indonesian seas and recognition of innocent passage, etc, which will be found in this chapter.

3. Chapter III.
The existing customary international and national navigation, viz, their main routes will also be considered in this chapter.

4. Chapter IV.
In order to design sea lanes and traffic separation schemes, some problems will inevitably have to be faced.

5. Chapter V.
Various aspects of designating sea lanes in Indonesian waters, such as fishing, oil and gas
exploration, population and characteristics of the sea, are discussed in this chapter.

6. Chapter VI.
How to create traffic separation schemes is the main topic of this chapter.

7. Chapter VII.
There are some conclusions and recommendations in this chapter.
Even though UNCLOS 1982 has not come into force, some international regulations have been implemented based on international customary rules, however, it is hoped that at least in 1994 this international convention will be ratified by 60 countries as quoted in article 308 UNCLOS 1982.
TABLE OF CONTENTS

ACKNOWLEDGEMENT

ABSTRACT

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

CHAPTER I: INTRODUCTION

A. Reason for choosing the topic ........... 1
B. Objectives ................................ 4
C. Research method .......................... 5

CHAPTER II: IMPLEMENTATION OF INNOCENT PASSAGE REGIME

A. Indonesian sea .......................... 6
B. Innocent passage through Indonesian seas ......................... 8
C. Innocent passage is guaranteed .............. 11
D. Indonesia has full sovereignty in its territorial seas ............. 13

CHAPTER III: THE EXISTING CUSTOMARY INTERNATIONAL AND NATIONAL NAVIGATION.

A. The main routes for international navigation ..................... 16
B. Navigating within territorial sea and straits ..................... 18
C. The routing of national ships ..................... 20
   1. Regular liner services for cargo ships ..................... 21
   2. Passenger shipping routes ..................... 22

CHAPTER IV: PROBLEM OF DESIGNATING SEA LANES AND TSS.
A. Legal aspects are still weak................26
B. Institution..................................28
C. How to accommodate the national and
international interests......................30
D. The approval of IMO..........................32

CHAPTER V : DESIGNATION OF SEA LANES

A. Task of the Directorate General of Sea
Communications.............................35
B. An observation of sea lanes for
foreign fishing ships.......................37
C. The role of international customary
navigation..................................41
D. Indonesian interests:
   a. Fishing..................................44
   b. Offshore exploration....................47
   c. Politics and population................50
E. Indonesian sea transportation...........52
F. Current marine accidents..................55
G. Sea lane proposals........................67
H. Priority...................................60
I. Designation of sea lanes..................62

CHAPTER VI : TRAFFIC SEPARATION SCHEME PROPOSALS

A. Basic regulations..........................67
B. Status of Indonesian straits..............68
C. The closure of Indonesian straits.........71
D. Characteristics of Indonesian straits
   used for international navigation........74
E. The TSS proposal..........................76
F. Improving safety of navigation........78
G. Ships navigate outside the TSS........79
H. Contravention of COLREG 1972.............81
I. Reporting system and lines.................84
J. National ships, fishing, oil and gas
   explorations.............................88
K. Limitation of ships........................90
L. Role of hydrography and oceanography....90

CHAPTER VII : CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions.............................94
B. Recommendations..........................96

BIBLIOGRAPHY.

ANNEXES.
LIST OF ABBREVIATIONS

1. CNIS : Channel Navigation Information System.
2. COLREG : Collision Regulation.
3. DWT : Dead Weight Tonnes.
4. ETA : Estimated Time of Arrival.
5. EEZ : Exclusive Economic Zone.
6. IMO : International Maritime Organization.
7. JALA : International Association of Lighthouse Authority.
8. IHO : International Hydrography Organization.
10. KM : Kapal Motor (Motor Vessel).
15. VLCC : Very Large Crude Carrier.
16. VTS : Vessel Traffic Services / System.
17. WMU : World Maritime University.
CHAPTER I

INTRODUCTION

A. REASON FOR CHOOSING THE TOPIC

The reasons for the author choosing the dissertation topic entitled "SOME ASPECTS TO BE CONSIDERED IN DESIGNATING ARCHIPELAGIC SEA LANES PASSAGE AND TRAFFIC SEPARATION SCHEMES IN INDONESIA" are as follows:

1. Water and land ratio is 1.6:1.

According to current data, the total number of Indonesian islands are 17,506 islands. Indonesia consists of 5 main islands and approximately 17,508 small islands, spread over the Indonesian territorial seas. As the world's largest archipelago, according to Indonesian statistics for 1982, the total land area of Indonesia is 1,919,423 square kilometers. The 5 main islands are, namely, Sumatera (473,606 square kms), Java and Madura (132,187 square kms), Kalimantan (539,460 square kms), Sulawesi (189,216 square kms), and Irian Jaya and Maluku (496,486 square kms). Meanwhile, the total coastline is approximately equal to 38,000 kilometers.

The Indonesian water areas is equal to 3,166,080 square kilometers. These figures, in the light of article 47 para 1 UNCLOS 1982, in which the ratio of the area of the water to the area of the land is between 1 to 1 and 9 to 1, therefore,
Indonesia is exclusively an archipelagic state, due to the ratio of the Indonesian waters and lands is 1.6 : 1.

2. Crossroads for international navigation.

Indonesia is, from Sabang to Merauke in Irian Jaya, located between the Asian and Australian continents. It is also bounded on the north by the South China Sea, on the north and east by the Pacific Ocean and on the south and west by the Indian Ocean. Meanwhile, Indonesia has land boundaries with Papua New Guinea to the east of Irian Jaya and Malaysia, also Brunei Darussalam to the north of Kalimantan. In addition, Indonesia has sea boundaries with Papua New Guinea, Australia, the Philippines, Brunei Darussalam, Malaysia, Singapore, India and Thailand. For international navigation, however, Indonesian waters inevitably, hold a key role in the Southeast Asian region. Today, it is a fact that maritime traffic in this area passes somewhere through the sea within Indonesian territorial jurisdiction. International navigation, after passing the busy strait of Malacca and Singapore, most of them continue their voyage through the Straits of Lombok, Sunda, Makassar, Karimata in Indonesia. The Indonesian sea or straits, therefore, is a crossroads for busy international navigation between both oceans, namely the Indian and Pacific Oceans.

In conformity with article 53 para 12 of UNCLOS 1982, due to the fact that Indonesia has not designated an archipelagic sea lane passage (hereinafter called "sea lanes") and Traffic Separation Schemes (hereinafter called "TSS"), the right of innocent passage shall be exercised through the routes normally used for international navigation.

In Indonesian seas, there are at least 5 routes that can be used for "international navigation". However, in daily international shipping activities, foreign ships sometimes pass somewhere outside of the customary routes for international navigation. Their voyages or activities sometimes interfere with Indonesian interests at sea.

Roughly speaking, the implementation of innocent passage in Indonesia that should be exercised within the customary routes for international navigation, still disturbs Indonesian interests.

4. No international legal power.

In accordance with Indonesian regulations, Indonesia has the right and full sovereignty over its territorial seas. Detention of the hampered foreign fishing ships and bringing them to the Indonesian courts is necessary. Hence, especially for foreign ships that interfere or disturb Indonesian interests, Indonesia has no international legal
power to bring them to their flagstates as applied in traffic separation schemes.

As a result, if there is a foreign ship passing outside of the customary routes for international navigation and their activity disturbing Indonesian resources at sea can be detected by Indonesian Navy or Coast Guard, due to the fact that Indonesia has no international legal power and the customary routes for international navigation are not sea lanes as mentioned in UNCLOS 1982, Indonesia can not report their illegal activities in Indonesian seas to the shipowner's country as provided by a special report form recommended by IMO.


As a proponent of UNCLOS 1982, Indonesia has ratified this tremendous international convention on December 31, 1985 through an Indonesian Act number 17 of 1985.

Therefore, in order to improve safety of navigation internationally and nationally and at least to minimize the risks caused by foreign shipping infringements, Indonesia has been supported by international enthusiasm to establish sea lanes as well as TSS in its territorial seas.

B. OBJECTIVES

With regard to the need for sea lanes and traffic separation schemes in the Indonesian sea, the
objectives of this dissertation are as follows:

1. To analyze the implementation of innocent passage and the existing customary routes used for international navigation in Indonesian seas,

2. To analyze Indonesian regulations particularly those which have a correlation with sea regulations,

3. To study and discuss some aspects and give some suggestions for establishing sea lanes and TSS in Indonesian territorial seas.

C. RESEARCH METHODS

In order to obtain supporting data and information, the author uses several methods as follows:

1. Observing the Indonesian regulations.

   Using various Indonesian regulations concerning law of the sea in practice whether issued by Indonesian acts, government regulations or ministerial decisions.

2. Library research.

   In this research method studies are based on certain important data and information from the WMU library.

3. Field study.

   During winter break, the author collected information from various sources. Besides that, some information was also collected during field studies in the countries of Denmark, UK, and Sweden.
CHAPTER II
IMPLEMENTATION OF INNOCENT PASSAGE REGIME

A. INDONESIAN SEA

In 1939 the Dutch government issued an act called Staatblad number 442 on September 25, 1939 concerning the territorial seas and marine surroundings. Article 1 para 1 of this regulation, viz. Territoriale Zee en Maritieme Kringen Ordonantie 1939, stated that the breadth of Indonesian territorial seas is up to a limit not exceeding 3 nautical miles measured from the low water marks of the islands or part of the islands. (1).

From the viewpoint of Indonesian interests, it is clear that such regulation present a disadvantage for Indonesia, because there would be a high sea in the middle of Indonesian territory. The consequence of such a pocket of high sea, of course, is that all foreign ships are freely navigating, wherever they want according to the high sea regime, since the high seas are open to all states, freedom of navigation / overflight, for the laying of sub marine cables / pipelines, construction of artificial islands, fishing, scientific research, and so forth.

Because of these disadvantages, on October 28, 1928 Indonesia declared the Indonesian Young Pledge and in its declaration stated that country, nation and language as well as land and sea (called " tanah air"), are based on the unity or one entity, viz, Indonesia as
a whole.

In August 17, 1945 Indonesia declared its independence. Since then, as an independent country, Indonesia has the right of full sovereignty upon Indonesian territorial seas.

Further, on December 13, 1957 the government of Indonesia made a government promulgation signed by the Indonesian Prime Minister H. Djuanda. The most important of its announcements that the breadth of Indonesian territorial seas was 12 nautical miles measured from baselines (in low waters) along the outermost of the Indonesian islands. Compared with Kringen Ordonantie 1939, it is absolutely different.

The characteristics of Indonesian islands, which are so closely interrelated with each other in unity, gives Indonesia the right to draw the baselines on the outermost of the Indonesian islands. As a result, all areas are under Indonesian sovereignty, and there is no high sea in the middle of Indonesian territorial seas.

To support the "Djuanda declaration", the Indonesian government on February 18, 1960 by the Grace of God issued the Indonesian act concerning the Indonesian seas. Article 1 para 2 of this regulation says that the breadth of Indonesian seas is 12 nautical miles measured in accordance with article 2 para 7 of UNCLOS 1982, among others, with regard to:

a. Measured from low water level.

b. Used approximately 150 straight base lines.
c. Used approximately 195 points.

Regulation number 4 of 1960, every point in outermost island is completed with position (latitude and longitude) as well as the distance of the two adjacent points are clear. The longest distance is 122 nautical miles between Mapra Eil and Ayawi, and the shortest distance is 3.2 nautical miles between Karimun and Nipe.

From above figures, it can be said that the requirements stated in article 47 para 2 of UNCLOS 1982 states that the longest distance of 122 nautical miles stated in Indonesian regulation number 4 of 1960 does not exceed the maximum length of 125 nautical miles required by UNCLOS 1982.

As mentioned in chapter I, the total sea area is 3,166,080 square kilometers. In line with the implementation of an innocent passage regime, consequently and inevitably, ships of all states whether coastal or landlocked enjoy the right of innocent passage through Indonesian territorial seas.

B. INNOCENT PASSAGE THROUGH INDONESIAN SEAS

The meaning of innocent passage itself must be understood first. For a passage itself to be innocent, it must traverse within Indonesian seas without entering, anchoring, stopping as well as its passage will be continuous and expeditious. However, in case of force majeure, distress or incidental to ordinary
navigation needs, a vessel is allowed to anchor or stop in the middle of the sea.

As mentioned by DR Phiphat Tangsubkul, the freedom of innocent passage is solely for the purpose of continuous and expeditious only.(2).

It is innocent, as long as it is not prejudicial to the peace, good order and security of Indonesia. At least, there are 12 activities that shall be considered as a breach of the peace, good order, security, etc, inter-alia, propaganda aimed at affecting defence, fishing, and forces against the sovereignty.

However, the daily enforcement of innocent passage within the huge Indonesian sea is not possible. Basically there is no accurate data of ships movements and Indonesia itself, apparently, has no special regulation that such control is to be implemented. Except, as mentioned in the Presidential decree number 16 of 1971 stated that all foreign ships which will navigate or have a special business in Indonesia and entering to the ports, through their agents, they should get the sailing permits or security clearance first from the Ministry of Communications or Ministry of Defence and Security.

The above regulation is applied to foreign warships and noncommercial government ships, hence, commercial ships in innocent passage which are not entering the ports, no prior notification is necessary.(3).

Consequently, after passing the busy straits of
Malacca most of them traverse somewhere within Indonesian waters and finally leaving Indonesia through the Straits of Sunda, Lombok, Wetar, Karimata, Makassar. During their voyage, even though according to article 47 of UNCLOS 1982 due to the fact that Indonesia has not established sea lanes they are obliged to navigate within the customary routes used for international navigation. Such routes have not been drawn on Indonesian sea maps. There is no specification of the width of customary routes, because the characteristics of Indonesian seas is very broad and deep, vessels are not geographically navigate to specific areas and their deviations are sometimes detected by Indonesian ships. Albeit they sail outside of the customary routes, it is deemed that they are not contravening international navigation. It can be believed that during their voyages they are often meeting or crossing with Indonesian ships. Therefore, at the very least this practice required that extra attention be taken by the master to avoid the possibility of collisions.

On the other hand, in many cases the Indonesian Coast Guard or Navy has found that foreign fishing ships steal Indonesian fish, especially in the western part of Indonesia. Also a few years ago, foreign ships stole hidden treasure/property (in Indonesia is 'Harta Karun'), from shipwrecks near the eastern part of Sumatera Island. Also, there is possibility that
foreign ships navigate close to the coast in order to provide armaments to Indonesian rebels.

The problem is, if Indonesia detains foreign fishing ships or other ships for some of these interfering practices, they always say that their voyages are in innocent passage which means no country has the right to detain or disturb their voyages. However, if Indonesia has sea lanes as well as TSS approved by IMO, Indonesia has the international legal power to bring their infringements to the attention of their flag countries to obtain fines or a sentence from the court.

Consequently, the accommodation of innocent passage within customary routes used for international navigation has to be better defined by the Indonesian government.

C. INNOCENT PASSAGE IS GUARANTEED

In conformity with Indonesian government regulation 8 of 1962, article 1 emphasizes that innocent passage is guaranteed. Article 2 of this regulation also states that innocent passage means navigation through Indonesian territorial seas and inlands waters, as follows:

a. From the high sea to the Indonesian ports and vice versa.

b. From the high sea to the high sea.

Related to article 18 para 1 of UNCLOS 1982, neither of them somewhat do not have the same formulation. This...
Passage means navigation through the territorial seas for the purpose of:

a. Traversing that sea without entering internal waters or calling at a roadstead or port facilities outside internal waters.

b. Proceeding to or from internal waters or a call at such a roadstead or port facility.

Innocent passage formulated in the Indonesian regulations previously mentioned is clearer than in UNCLOS 1982, viz, including all ships that want to call in certain ports in Indonesia. Meanwhile, UNCLOS' 1982 formulation says that passage includes calling at a roadstead and their facilities, without calling to the port. Roadstead is not port and it is located far away from port somewhat in outside of territorial sea. UNCLOS' 1982 formulation was probably directed to the narrow sea / straits or without regard for the large size of the Indonesian sea, in which such regulation should be implemented as well.

According to Indonesian regulation's degree, the act concerning the ratification of UNCLOS 1982 is of higher precedent than the government regulation 8 of 1962. Even though the previous regulation was stated in Indonesian act and the government regulation was stated by government itself without Indonesian parliament approval. However, if the meaning of passage in UNCLOS 1982 is to be applied, it means all foreign ships which
are calling in Indonesian ports during their voyage through Indonesian seas are clearly not in innocent passage, albeit their passage is not prejudicial to Indonesian peace, good order, security, environment, etc.

Conversely, the formulation of innocent passage in the Indonesian regulation above is, from the point of Indonesian interests, clearer than UNCLOS 1982. Taking into consideration the characteristics of Indonesian seas, the ships should have innocent passage during their voyage in Indonesia, but, this can not be implemented due to a level of the government regulation 8 of 1962 is lower than UNCLOS 1982.

D. INDONESIA HAS FULL SOVEREIGNTY IN ITS TERRITORIAL SEAS

Before enacting government regulation 4 of 1960, the sea area outside the limit of 3 nautical miles based on Staatblad 442 of 1939, is a high sea. Therefore, the high seas are open to all states and every state has the right to navigate on the high sea. At that time, especially before declaring Indonesian independence on August 17, 1945, the distance of 3 nautical miles was used by the Dutch colonial power to separate the Indonesian islands or Indonesian inhabitants from each other.

In line with article 1 of Indonesian act number 4 of 1960 the limit of Indonesian territorial seas is 12 nautical miles in lieu of 3 nautical miles, henceforth.
Indonesia has full sovereignty within Indonesian seas.

In addition, article 2 of UNCLOS 1982 emphasizes that the sovereignty of Indonesia extends beyond its territorial land, internal water and air space over the territorial sea.

The two regulations are as a basic regulations, even though in Indonesian regulation 8 of 1962 consists of 4 articles only. The implementation of innocent passage is not clearly formulated. It can be said that such a regulation is only to regulate the limit of Indonesian territorial seas, namely, 12 nautical miles and the other states that territorial seas are open to foreign ships and the last article states that Staatblad number 442 of 1939 which is out of date and it should be adjusted.

Finally, the sovereignty of Indonesia to exercise its right within territorial seas is not challenged or questioned. However, how to implement such sovereignty to support of regulating innocent passage within Indonesian seas still needs to be designed by the Government of Indonesia.
Endnotes chapter II.

(1). Nautical miles is a unit of distance used in navigation, equal to 6,080.20 feet or 1,853.25 meters, The Radam House of Dictionary, page 1282.


CHAPTER III  
THE EXISTING CUSTOMARY INTERNATIONAL AND NATIONAL NAVIGATION

A. THE MAIN ROUTES FOR INTERNATIONAL NAVIGATION

According to Lewis M. Alexander, in Indonesian territorial seas, there are 5 major customary routes used for international navigation. The following routes are:

1. Route I.

   For traffic moving east from the Indian Ocean, an alternative to the Malacca Strait is Sunda Strait, between Java and Sumatera Island. From Sunda Straits ships may proceed north through Gaspar Strait, either directly into and through the South China Sea to more northerly ports or northeast through Serasan Passage.

   After transiting Sunda Strait, ships heading northeasterly may also turn east through the Java Sea passing through Makassar Strait then northeast via Balut Channel into the Pacific Ocean.

2. Route 2.

   Another north-south route, utilized by deep draft tankers coming from the Persian Gulf, is through Lombok Strait, Makassar Strait and then northeast through Balut Channel to Japan or North America. Some traffics proceed north through Sibutu Passage to the Philippines.
3. Route 3.

North-south traffic transiting eastern Indonesia, enters at various points and passes northwest through Manipa Strait and Banka Passage into the Celebes Sea and to port beyond.

4. Route 4.

Coming from Torres Strait to the east and south, a fourth navigation route travels north-east close to the coast of Papua New Guinea through Obi strait and Banka passage into the Celebes Sea and to ports beyond.

5. Route 5.

A major east-west route through Indonesia is from the Malacca Strait south-east into the Java sea, utilizing either Gaspar or Karimata Straits and continuing eastward before moving into the Arafura Sea.(1)

These five routes,(2), especially routes 1 and 2, become very important to accomodate foreign ships coming from the South China Sea, owing to the limitation of the Malacca Strait in which the ships having draughts of 15 meters and above are advised to navigate through the Strait Sunda or Lombok in Indonesia. Tankers from the South China Sea or Pacific Ocean to the Middle East they usually sail through the Strait of Lombok in laden voyage and in ballast voyage using the Strait of Malacca. Albeit they do need additional sailing time which increases cost caused by
differences in distance.

On the other hand, the customary routes used for international navigation in the western part of the Indonesian seas, near Singapore, are busier than in the eastern part. The main reason is that the Port of Singapore retains its position as the world's busiest port. In 1990, Singapore handled some 45,000 ships, totalling 483 million GRT and worked 187 million tons of cargo, including 87 million tons of mineral oil and 100 million tons of general cargo.

Meanwhile, each day more than 100 ships or more than 37,000 ships each year navigate the Strait of Malacca and this number grows with the development of the European Asian Trade.

These two figures demonstrate that the routes of ships use for international navigation to and from the port of Singapore, including the routes of ships in Indonesian waters, especially in the western part are very crowded.

B. NAVIGATING WITHIN TERRITORIAL SEA AND STRAITS

In line with article 7 of government regulation 8 of 1962, as mentioned earlier, in daily international shipping practice, foreign ships exercising innocent passage can be divided into 3 categories:

1. Innocent passage for foreign fishing ships,

2. Innocent passage for foreign war-ships, non-commercial government ships, and
3. Innocent passage for foreign commercial ships.

In the case of innocent passage addressed by point 2 they are subject to prior notification. For foreign warships that they want to call into the port they need not only notification, but also security clearance. However, if their navigations are without entering the port, it is enough if they give prior notification to the Indonesian Naval Commander in-Chief. With regard to foreign commercial ships and fishing ships during their voyage from Japan to Australia it is clear that such prior notification is not required. However, for those who want to call into an Indonesian port the procedure must be handled by their agents in Indonesia in order to get an entrance permit to the port. And other arrival details must be accomplished by their agents. During their passage through the straits it is not necessary to give prior notification to the local authority.

The customary routes used for international navigation would be expected to be found in international shipping pilot's books, however, their latitude and longitude are not clear delineated. As a result, ships may sail wherever they want, as far as they do not infringe upon Indonesian interests. In fact, due to this lack of delineation the progress of those vessels in international transit is sometimes hampered by Indonesian fishermen or oil and gas exploration activities. Conversely, Indonesian
fishermen are unsure of the safe locations to spread their long nets, because every three or four hours foreign ships may come through the area where the net is set. Also, the significant potential for disaster that could occur if transiting ships collided with oil and gas exploration structure activities.

C. THE ROUTEING OF NATIONAL SHIPS

Transportation in Indonesia, as an archipelagic state is still fully dependent upon sea transportation. The essential ports are scattered in various parts of approximately 33,000 kms of Indonesian coastline. The port itself, according to the data issued by the Directorate General of Sea Communications can, regardless of the ports, be divided into two categories as follows:

a. About 93 ports owned and operated by the Public Port Corporation I, II, III, and IV.

b. About 300 small ports operated and under the improvement directly of the Directorate general of Sea Communications (i.e. The Distric of Ministerial of Communications).

Under the government regulations, there are 4 ports, namely, the Port of Tanjung Priok in Jakarta, the Port of Tanjung Perak in Surabaya, the Port of Makassar in Ujung Pandang and the Port of Belawan in Belawan, Medan. (5).

Ships calling is issued by each public Port.
Corporation, indicating that the movement of national ships or international / foreign ships, particularly in the big ports has drastically increased. It shows that the movement of ships in Indonesian seas is very busy by international shipping standards. Moreover, at least since 1983 the government has decided to operate nine luxurious passenger ships connecting various ports in Indonesia. This has added to and is expected to increase the traffic density in the territorial seas.

Similar to other developing countries, Indonesia still operates, and the government itself allows the operational of small ships, such as boats, canoes and traditional ships for carrying their commodities to various ports within Indonesian seas. These movements, of course increase the complexity and density of maritime traffic in Indonesia. In addition, within the 12 nautical miles of Indonesian territorial seas thousands of local fishermen with their small ships catch many kinds of fish for their daily family earnings.

Regarding national ship movements, they can be classified in 2 parts as follows:

1. Regular liner services for cargo ships.

According to the decision of the Directorate General of Sea Communication number DaI 13/2/5 concerning ship routes and liner services between 1984 to 1989, the shipping activities for the two distinct areas can be described as follows:
a. In the west of Indonesia.

At least, 23 ship routeings connect various ports in this area. The total of ships operating in this area was 130 ships (166,250 DWT).

b. In the east of Indonesia.

Total ships in the regular liner system are 24 liners contributing to a total of 205 ships (231,074 DWT).

2. Passenger ship routeings.

It has been mentioned above that in Indonesia nine passenger ships are in operation now, namely KM Kerinci, KM Kambuna, KM Rinjani, KM Umsini, KM Kelimutu, KM Lawit, KM Tidar, KM Tatamailau, KM Sirimau, and KM Awu.

It is necessary to present them here, because compared with other shipping types, viz, regular liner shipping and trampers, passenger ships have an exact schedule of departure and arrival as well as their routeing and port of destinations. Meanwhile, regular liner shipping means sailing regularly between a certain port and another port or connecting between one port and two or three or more ports somewhere in Indonesia. In fact, somewhat there is no exact time for when they sail issued by the owners or agents.

As of the end of 1989, the total of Indonesian ships and foreign ships chartered by Indonesian shipping companies were 10,60 ships. About 3,740
ships can be classified as small ships operated directly by the local people. (6).

Ship routeings are an interesting problem to be discussed. For passenger ships, their routeing are connecting various ports in Indonesia. It seems that passenger ship routeings are concentrated in the middle and western part of Indonesian territorial seas. So, the port of Makassar and its surroundings becomes even more crowded to accommodate the passenger ships.

On the other hand, ship routeings for cargo ships show that the middle and western parts are still dominant compared with the eastern part of the Indonesian seas.

As mentioned earlier, ship routeings for national ships have not been plotted in the sea map issued by the Indonesian Navy (i.e., the Hydrography and Oceanography Department). Their voyages are planned simply based on their experience, skills and navigational aids. If condition are not expected to be too severe they undertake their voyages which at times results in strandings and collisions within Indonesian waters.

The ship routeings in Indonesia, either for international navigation or national navigation are best described as being in disorder, if not chaos. The problem is how to overcome and minimize risks at sea in order to improve the level of safety for
the benefit of Indonesia.
Endnotes chapter III.

(1). Lewis M. Alexander, Navigational Restriction within the New LOS context, page 290.

(2). See annex 1.

(3). Bhabani Sen Gupta, TT Poulose and Hemlata Bhatia, The Malacca Strait and to the Indian ocean, a study of the strategic and legal aspects of a contravention sea lanes, page 37, as quoted by Prof DR Muchtar Kusumaatmadja, Bunga rampai hukum laut, page 242.


(5). In Indonesia, there are 4 Public Port Corporation, namely the Public Port Corporation I in Medan, the Public Port Corporation II in Jakarta, the Public Port Corporation III in Surabaya and the Public Port Corporation IV in Ujung Pandang.

CHAPTER IV

PROBLEMS OF DESIGNATION OF SEA LANES AND TSS.

A. LEGAL ASPECTS ARE STILL WEAK

After examining various aspects concerning implementation of innocent passage and the role of customary routes for international navigation, it can be seen that the two issues still need to be addressed and resolved especially in the light of legal aspects.

Indonesia undertakes and places a heavy responsibility upon international navigation interests in the Southeast Asian region. As a country which has full sovereignty over its territorial seas it must take responsibility for Indonesian earnings, especially for those who live along the coast relying on the resources of the sea and the benefits that they can derive from them. In addition, state income is derived from oil and gas revenues from the offshore areas and this too requires that close attention be paid to these issues.

Also, fishing activities are very important for Indonesia. In 1989, marine fisheries production was 2,272,179 tons. From this figure, the importance can be seen of its role in supporting the state budget. In the light of sea communications, the role of the sea is also very important and plays a dominant part in Indonesian unity.

These important matters, vis, fishing, oil and gas explorations, sea communications and support the
international shipping, all involve the activities of ships. Ships are not static, moving continuously with valuable commercial goods on board. The safe movement of ships is very complex, therefore, their movements at sea should be carefully examined to reduce the constant risk. The most important, they present to the nations environment and economy.

It is emphasized the ship routeings in Indonesia have not been clearly regulated. The existing regulations, the Indonesian act number 4 of 1960, and 8 of 1962 and also the Director General of Sea Communication decision number Dal 13/2/5 maybe just touch the surface of the various aspects of ship routeings. How to implement innocent passage and regulate the passage of foreign ships within Indonesian waters and establish customary routes to be used for international navigation still needs to be discussed in the light of the negative impacts on Indonesian interests. The main reason is that Indonesian regulations on innocent passage are, from the legal point of view, still weak in accommodating international and national navigation in Indonesia. Article 3 of Indonesian act number 4 of 1960, just says that the Indonesian seas is open for all foreign ships. Also, in government regulation 8 of 1962 concerning innocent passage, article 1 says that innocent passage is guaranteed. Nothing further is mentioned. But, how to implement the details is still left to be developed.
Consequently, Indonesia finds itself behind when compared with other countries' progress in addressing the routing of ships. Many times foreign ships have interfered with Indonesian sea resources, stealing fish or disturbing Indonesian fishing nets, snaring fishing nets with propellers as well as navigating unnecessarily outside of customary routes for international navigation. With the present legal framework, Indonesia is unable to take any action for incidents that adversely affect Indonesian interests. The problem is how to develop a framework that can address such international legal issues. Establishing internal legal authority and creating national regulations to accommodate international needs must be undertaken first. One approach to provide the legal means to overcome these problems is to design sea lanes as well as traffic separation schemes in Indonesia.

B. INSTITUTIONAL.

Government regulation 8 of 1962, article 5 says that foreign fishing ships should navigate through sea lanes that have been or will be established by the Minister / Navy Commander in-Chief. Also, article 7 emphasizes that foreign warships and non-commercial government ships will give a prior notification, except when navigation through sea lanes which have been or will be designed by the Minister / Navy Commander in-Chief. However, such sea lanes have not been
prepared. It means their sailing in Indonesian territorial seas still requires prior notification. For foreign fishing ships the designation of sea lanes should be prepared as well. In this case, in 1975, the Minister of Defence and Security issued the decision number Kep 17/IV/1975 concerning sea lanes passage for foreign fishing ships.

For foreign commercial ships, it seems that the government does not want to address their movements. Consequently, they may sail anywhere in Indonesian territorial seas. Fortunately, one of the articles in UNCLOS 1982 says that their navigations should be directed toward customary routes used for international navigation.

Studying these government regulations discussed above, and examining the authority for Indonesian institutions responsibility for designating such sea lanes could be divided between two institutions:

1. The Minister / Navy Commander in-Chief, for foreign fishing ships and non-commercial government ships.
2. An unspecified institutions for foreign commercial ships.

It may seem reasonable that the responsibility for the problem of foreign commercial ships should belong to the Department of Communications (ie. the Directorate General of Sea Communications). For foreign warships and non-commercial government ships handling by the Minister / Navy Commander in-Chief
stressing in security aspects. But, from legal point view, who responsible for establishing sea lanes for commercial ships? The next question is, in the light of UNCLOS 1982, is it possible to consider separate sea lanes for the three different kinds of foreign ships?

C. HOW TO ACCOMMODATE NATIONAL OR INTERNATIONAL INTERESTS

The customary route used for international navigation as mentioned in the chapter III is an interconnection with the ship routeings from other countries. For example, the VLCCs from the Philippines, after leaving port in the Philippines navigate within the high seas. It means, freely navigating in high seas, but if they are now entering Indonesian seas in which sea lanes have been prepared for them, they may have to adjust their direction to reach such sea lanes. This adjustment could mean, inevitably that additional time and cost will arise.

In addition, the conditions vary depending on the interests of different foreign shipping movements. It may not so easy for all ships move their routes to newly established sea lanes if they usually navigate along far different customary routes. Additional time and associated costs would likely result.

The decisions on how to place the sea lanes or TSS will not be easy. They may be placed in the middle of the sea (between two islands) or near the coast or whether they will accommodate the customary routes used
for international navigation or be omitted is a big problem that needs to be discussed, perhaps with neighbouring countries.

According to article 53 para 5 of UNCLOS 1982 the ships in sea lanes shall not deviate more than 25 nautical miles to either side of the axisline. It means the width of the sea lanes is 50 nautical miles maximum. To be implemented in Indonesian territorial sea, of course, it is not easy to decide how many nautical miles are needed. If the width of 50 nautical miles is applied in certain Indonesian seas, again problems arise. In addition, certain fishing areas and oil and gas exploration reduce the available area.

In the straits, the problem is not so complex due to the establishment of TSS adjusted to the characteristic of the straits. Even so, the width of TSS must take into account the safety of ships movements within TSS.

The problem how to place sea lanes, if sea lanes are in the middle of the sea, how to control and mark the location of the lanes. Conversely, if sea lanes are positioned along the coasts, there exists the probability that such sea lanes could be used for the entry of illicit immigration or smuggling, and increase the risk to coastal marine resources from marine pollution incidents.

According to Atje Muhjiddin, a senior lecturer in Padjadjarah University, Bandung, Indonesia, there are many issues that must be considered with regard to
Indonesian interests in the designation of sea lanes:

1. The exploitation of marine living resources, including fish production, fish processing, fish marketing, with the objective of raising national income as well as the income of fishermen.

2. The exploration and exploitation of non-living resources such as offshore oil drilling and mineral mining.

3. Sea communications, including sea transportation for maintaining and promoting inter-island trade, as well as international shipping.


5. Marine scientific research.

6. Promotion of tourism, and

7. Activities in the field of national defence and security including enforcement and maintainance of the peace and good order in Indonesian sea.(1).

D. THE APPROVAL OF IMO.

According to article 53 para 9 of UNCLOS 1982, Indonesia should refer proposals of sea lanes and TSS to the competent international organization (ie. IMO) with a view to their adoption. If Indonesia establishes sea lanes and TSS in certain narrow channel without adoption by IMO such sea lanes and TSS do not have an international legal power.

Consequently, in the case of all foreign ships
passing outside of designated areas or contravening sea lanes prepared by Indonesian would have international legal means by which to litigate the violation to their flagstates. The IMO's approval, usually just a recommendation and of course, an involved process that should be handled by the government. However, this kind of legal means is again just a suggestion. It means if foreign ships do not want to navigate within sea lanes or TSS recommended by the IMO and their voyage is safe for their navigation, it is not a contravention of COLREG 1972.

How can one handle such a problem? Indonesia should convince IMO of the need for sea lanes for international navigation within Indonesian seas.

If the sea lanes have been prepared and approved by IMO, Indonesia would have the right to bring any infringements to court using special case reports sent directly to flagstate countries in order to get fines or penalties assessed according to their regulations.

The next problem to be faced is the method to be followed to obtain such legal power auspices of IMO. The designation of sea lanes mentioned in UNCLOS 1982 have until now never been created by any country. The sea lanes should be designed and proposed to the competent organization as a package for the whole of Indonesian area or based on the priority of certain areas.
Endnotes chapter IV.

(1). John M. Van Dyke, International navigation, Rock and Shoals a head, page 156.
A. TASK OF THE DIRECTORATE GENERAL OF SEA COMMUNICATIONS

The Directorate General of Sea Communication which is one of the three directorate generals within the Indonesian Ministry of Communications. According to Presidential Decree 44 of 1974 the main role of the Directorate General of Sea Communications is to be in charge of the management of the sea communications and maritime sector in Indonesia.

The sea communication sector encompasses all operational, technical and management aspects in the field of shipping and ports, including docks and yards.

The Directorate General of Sea Communications is headed by the Director general. The head office consists of six directorates which are as follows:

1. Directorate of Shipping and Marine Safety.
2. Directorate of Sea Traffic.
3. Directorate of Ports and Dredging.
5. Directorate of Maritime Service.
6. Directorate of Coast Guard and Sea Patrol.

The secretariat to the Directorate General of Sea Communications which assists and provides the managerial support to the Director General has six departments, namely:

a. Department of Planning.
b. Department of Personnel.

c. Department of Finance.

d. Department of Material.

e. Department of Legal.

f. Department of General affairs.

In line with the designation of sea lanes and referring back the government regulation number 8 of 1962 concerning innocent passage in Indonesia, it is uncertain which Indonesian institution is responsible for designating such sea lanes. However, if one elaborates upon the task of the Directorate General of Sea Communications, it is clear that the designation of sea lanes and TSS are the task of the Directorate General of Sea Communication (i.e, the Directorate of Sea Traffic).

Of course, since the designation of sea lanes and TSS involve operational aspects, legal aspects, financial aspects, and even, security aspects, the Directorate of Sea Traffic must cooperate with other directorates or departments internally, i.e, the Directorate General of Sea Communications, and outside institutions and others, such as the Indonesian Navy.

As a comparative problem, Denmark is a case in point. All aspect in maritime sectors, such as shipping register, nautical aspects, aids to navigation, traffic, safety at sea, including ship routeings, i.e., TSS or T routes (or tanker routes) are carried out by the Danish Maritime Authority and the Royal Danish
Administration of Navigation and Hydrography. (1).

Also in the UK, ship routeings, especially in the Dover Strait where since 1967, the first TSS was introduced as a voluntary measure with separate lanes for ships travelling in opposite directions under CNIS, the designation and operation of TSS become the task of the Department of Transport.

Sea lanes that will be prepared by Indonesian Government, for foreign commercial ships, foreign fishing ships or non-commercial government ships as well as foreign war ships are not separated each other, it means, there will not four kinds of sea lanes. Because, it is clear in article 53 para 1 of UNCLOS 1982 states that sea lanes are for the continuous and expeditious passage of foreign ships through an archipelagic waters and article 53 para 2 says that "all ships" enjoy the right of archipelagic sea lanes passage in such sea lanes.

B. AN OBSERVATION OF SEA LANES FOR FOREIGN FISHING SHIPS

In order to prevent illegal foreign fishing ships in Indonesian seas, the Minister of Defence and Security complied the article 8 of government regulation 8 of 1962 issued decision number Kep 17/IV/1975 concerning the Indonesian sea lanes for foreign fishing ships.

There are some considerations in its designation, inter-alia, as follows:

1. Sea resources of the Indonesia are of economic
importance and it is necessary to save and protect.

2. Without sea lanes for foreign fishing ships to navigate through Indonesian seas, it may be harmful to people's earnings and the state's economy.

The Minister of Defence and Security decision issued on April 22nd, 1975, in article 1, clearly decided as follows:

1. Foreign fishing ships navigate within Indonesian waters from the Pacific Ocean to the Indonesia Ocean (i.e. Indian Ocean) or vice versa should navigate via specific designated sea lanes in the Sulawesi Sea, the Strait of Makassar and the Strait of Lombok.

2. To coordinate this the axis of such sea lanes was specified as follows:
   a. In the Sulawesi Sea.
      05° 12'00" North, 127°06'00" East, 05°05'00" North, 125°35'00" East.
   b. In the Strait of Makassar.
      01°00'00" North, 117°42'00" East, 02°37'30" to 118°35'00" East, 03°25'00" South, 119°34'00" East.
   c. In the Strait of Lombok.
      05°29'30" South, 117°03'00" East, 07°57'00" South, 115°57'00" East, 08°18'30" South, 115°48'00" East, 09°07'00" South, 115°37'00" East.

3. The width of such foreign fishing ship sea lanes is measured from the axis lines, i.e. 5 nautical miles.

Also, especially in article 2 of this decision,
there are some regulations that should be obeyed by fishing ships. These are:

a. During their existence or navigation in such sea lanes, foreign fishing ships shall store, without exception, their fishing equipment in certain places which are especially designed for its equipment.

b. Their fishing equipment must be folded and / or is not ready to operate.

c. While navigating in sea lanes all foreign fishing ships are forbidden to catch fish in Indonesian seas.

Such sea lanes passage since the beginning of its designation, viz, April 22nd, 1975, is still effectively in force.

Foreign fishing ships are subject to those provisions. However, pursuant to provisions which are guaranteed by the Indonesian government, they have the right to innocent passage but must navigate through the designated sea lanes for them.

Even though Indonesia has implemented such regulations, it still finds illegal foreign fishing ships which are catching fish outside of such prepared sea lanes. If one observes the Indonesian sea map issued by the Indonesian Navy, it is clear that the existence of such sea lanes is drawn from the Strait of Makassar to the Strait of Lombok.

On the other hand, the Strait of Makassar is estimated to be from its sea characteristics, more than
sufficient for navigation by all foreign ships. Compared with the area west of the Indonesian sea, from the Strait of Lombok to the Strait of Makassar, foreign fishing ships are able to proceed directly without disturbances of any kinds.

In the middle of Lombok Strait there is a small island, Nusa Penida Island, and near the eastern part of this island sea lanes for foreign fishing ships can be found.

Sea lanes passage requirements for foreign fishing ships, if compared with the same regulation concerning sea lane passage in UNCLOS 1982 contain some regulations which are not suitable. Such sea lanes were designated 17 years ago without application to an international organization for adoption. Consequently, not all foreign fishing ships understand that a special sea lane requirements are applicable to them while in Indonesia waters.

Consulting the Indonesian pilot book, such sea lanes cannot be found, however, their existence is a part of Indonesian efforts to support and implement the innocent passage regime.

For non-foreign fishing ships, such as commercial ships, warships or government ships etc, there are no special regulations in order requiring navigation through such sea lanes. Therefore, to implement their navigation they should use international customary navigation.(2).
It is clear that such sea lanes are not the sea lanes envisioned by article 13 of UNCLOS 1982.

There are some requirements that are not fulfilled by the foreign fishing sea lanes in Indonesia, for example are:

1. Designation of such sea lanes was solely for foreign fishing ships. On the other hand, the designation of sea lanes is intended under UNCLOS 1982 for all kinds of foreign ships.

2. The width of the sea lanes is only 5 nautical miles measured from the axis line. However, in accordance with UNCLOS 1982, the sea lane should have a width of 50 nautical miles as is implied in the condition that ships shall not deviate more than 25 nautical miles to either side of such an axis line.

3. It can be stressed that foreign fishing sea lanes were not proposed to the international organization for recommendation as required by UNCLOS 1982, but their establishment preceded this convention.

C. THE ROLE OF INTERNATIONAL CUSTOMARY NAVIGATION.

Notwithstanding that Indonesia has not established archipelagic sea lanes passage within Indonesian waters, for the sake of international navigation, the government of Indonesia recognizes the innocent passage regime in conformity with UNCLOS 1982. According to government regulation number 8 of 1962 suggested that all foreign ships navigate by means of international
customary navigation which is attached in the International navigation pilot's books.(3)

However, some straits and sea areas which are used in customary navigation are very crowded, while other areas at sea are not so busy for international navigation.

The Strait of Malacca is a case in point. After traversing this strait, the ships in line with current international customary navigation used by foreign ships use two tracklines which are:

a. Through The Gaspar Strait, Bangka Strait, Java Sea to the eastern part of Indonesia or from Bangka Strait passing directly through Sunda Strait to the Indian Ocean.

b. From Malacca Strait passing directly through Karimata Strait, Java Sea and Lombok Strait to Australia or New Zealand.

Those international customary navigations paths and customary navigation tracks within Indonesian seas should be considered and examined carefully when designating sea lanes and TSS.

It seems that during their crossing within Indonesian seas, ships are not seriously hampered by rocks, shallow seas, etc. Moreover, especially in the Strait of Lombok, the characteristics are sufficient to handle supertankers irrespective of their DWT. For this reason, Indonesia has long been insistent that the only safe route for VLCCs of 200,000 tons or over,
heading from Japan was through the Strait of Lombok and Makassar. (4).

For the benefit of Indonesia, international customary navigations has been recognized by Indonesian officials, such as the Indonesian Navy, Indonesian fishing ships, Indonesian passenger ships, etc. Even though such international routes are impossible to be found in Indonesian sea regulations. For the international community, especially for the seafarers, their existence within Indonesian waters will be more easily recognized in their pilot’s books, ie, the Indonesian pilot.

However, as mentioned earlier, the exact position of customary routes used for international navigation are not stated clearly. For example, taking the routes from Singapore to Sunda Strait near Jakarta, it just states that from Singapore routes are either east of all the islands, south of the Singapore Strait, and then Selasa strait, or through one of the slightly shorter and better sheltered routes leading through Bangka Strait. The routes through Galesa Strait have better depths, in general. Furthermore, areas in the north approach to Sunda Strait are being exploited for natural resources. Routes for deep draught ships between Gelasla Strait and Sunda Strait, by way of the outer channel between Prayung and Tidung Islands, offer the best depths, alternatively the deeper and longer routes through Karimata Strait maybe preferred. (5).
This information for the sake of sea lanes, is very important. Hence, it will be more useful if such sea lanes are identified with an exact positions. This means that longitude and latitude demarcations and also breadth must be clearly stated and approved by IMO.

D. INDONESIAN INTERESTS

a. Fishing

When one discusses living sea resources, particularly in fishing, the following matters should be considered:

a. Traditional or coastal fishing.

b. Using modern ships and operating in agreement with foreign countries.

In 1927, Indonesia enacted the Indonesian Coastal Fisheries Act that could be used to improve the income fisheries and established 4 coastal fishing belts. Traditional methods used, such as all kind of fish traps, sailing craft and small motorized ships of limited capacity, were carried out along the east coast of Sumatera, the whole north coast of Java and, of course, the island of Madura and the whole west coast of Kalimantan. Especially in the eastern part of Indonesia, fishing areas can be found in the south-eastern part of Sulawesi Island, also the larger part of the coastal area of northern Sulawesi Island. Coastal fishing is further to be found in Maluku and in part of Irian Jaya.
Such traditional fishing, in the late 1970s, was scattered all over the coastal areas of the Indonesian archipelago, with at least between 1 and 2 millions fishing families.(6).

Various agreements or licencies have also been given by the Indonesian government to various foreign fishing companies.

The following are some examples of fishing agreements that can be mentioned:


2. A fisheries arrangement with the Republic of Korea. This agreement consists of the provision that the Republic of Korea would share its fishing experiences and techniques with Indonesia to develop coastal fisheries.

3. An arrangement with neighboring countries. An agreement on fishing activities in the Strait of Malacca and Malaysia, as an example, would be encouraged to invest through a joint venture with Indonesian fisheries companies.

4. Foreign investment and joint venture. The Banda Sea and the whole sea area of the eastern Indonesian part of the archipelago have been reserved for foreign investment ventures and joint ventures in fishing.
Observing the marine fisheries production in Indonesia, based on coastal areas, in 1989, it can be described as follows: (7).

<table>
<thead>
<tr>
<th>Coastal areas</th>
<th>Catches (tons)</th>
<th>Fishermen (people)</th>
<th>Fishing ships (unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>West of Sumatera</td>
<td>169,669</td>
<td>117,730</td>
<td>21,898</td>
</tr>
<tr>
<td>South of Java</td>
<td>67,911</td>
<td>63,265</td>
<td>9,117</td>
</tr>
<tr>
<td>Malacca strait</td>
<td>371,009</td>
<td>196,340</td>
<td>44,585</td>
</tr>
<tr>
<td>East of Sumatera</td>
<td>173,188</td>
<td>69,646</td>
<td>15,440</td>
</tr>
<tr>
<td>North of Java</td>
<td>446,468</td>
<td>327,735</td>
<td>55,588</td>
</tr>
<tr>
<td>Bali, Nusa Tenggara</td>
<td>233,113</td>
<td>114,340</td>
<td>36,600</td>
</tr>
<tr>
<td>West of Kalimantan</td>
<td>104,320</td>
<td>50,130</td>
<td>9,249</td>
</tr>
<tr>
<td>East of Kalimantan</td>
<td>110,214</td>
<td>94,763</td>
<td>16,045</td>
</tr>
<tr>
<td>South of Sulawesi</td>
<td>302,442</td>
<td>164,973</td>
<td>40,585</td>
</tr>
<tr>
<td>North of Sulawesi</td>
<td>103,314</td>
<td>125,890</td>
<td>38,338</td>
</tr>
<tr>
<td>Maluku and Irian</td>
<td>190,531</td>
<td>139,085</td>
<td>45,663</td>
</tr>
</tbody>
</table>

It is clear that, in Indonesia, fisheries products represent another of Indonesia's great national resources. The country's most productive fishing grounds are located in:

a. The Strait of Malacca and its surroundings, vis. West of Sumatera, North of Sumatera, East of Sumatera.

b. Around the Coast of Kalimantan and Java, such as north of Java, Bali and Nusa Tenggara.

These Indonesian coastal areas mentioned in (a) and (b) are located in the western part of the Indonesian seas, and cause these waters to be very
b. Offshore exploration

Offshore exploration of the Indonesian territorial seas is regulated or based on the Indonesian Act number 44 of 1960 concerning oil and gas exploration in Indonesia. Article 2 says that all oil and gas resources in Indonesian territorial seas including sub-soil (sub-strata) in this area is exclusively Indonesian property and owned by the state. UNCLOS 1982, especially article 49 states that Indonesia has full sovereignty in the archipelagic states which extends to the Indonesian waters enclosed by the archipelagic baselines, including the air space over the water and their bed and sub-soil as well as all resources contained therein.

It is clear that Indonesia has the right to exploit or explore all resources within Indonesian territorial seas and the continental shelf to a distance of 200 nautical miles or beyond that limit to where the depth of superjacent water allows the exploitation of such resources.

However, to exploit sea resources, especially with drilling activities, conflicting interests between Indonesia and international navigation, which use the same areas, are difficult to avoid.

The main idea of this sub topic, as with fishing activities, is to measure how far oil and gas exploration can be extended without impacting up on
international navigation in designated sea lanes.

Oil and gas reserves in Indonesia are estimated to be ultimately recoverable in several basins: (8).

<table>
<thead>
<tr>
<th>No</th>
<th>Area / Basins</th>
<th>Reservations (in billion barrels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>North Sumatera Basin</td>
<td>3.501</td>
</tr>
<tr>
<td>2.</td>
<td>Northwest Sumatera Province</td>
<td>1.786</td>
</tr>
<tr>
<td>3.</td>
<td>Sibolga Basin</td>
<td>1.825</td>
</tr>
<tr>
<td>4.</td>
<td>Central Sumatera Basin</td>
<td>2.741</td>
</tr>
<tr>
<td>5.</td>
<td>Bengkulu Basin</td>
<td>1.338</td>
</tr>
<tr>
<td>6.</td>
<td>South Sumatera Basin</td>
<td>0.143</td>
</tr>
<tr>
<td>7.</td>
<td>Northwest Java basin</td>
<td>0.122</td>
</tr>
<tr>
<td>8.</td>
<td>Sunda Basin</td>
<td>1.126</td>
</tr>
<tr>
<td>9.</td>
<td>Belliton Basin</td>
<td>1.014</td>
</tr>
<tr>
<td>10.</td>
<td>South Java Basin</td>
<td>0.379</td>
</tr>
<tr>
<td>11.</td>
<td>Northeast Java Basin</td>
<td>0.261</td>
</tr>
<tr>
<td>12.</td>
<td>Pati Basin</td>
<td>0.668</td>
</tr>
<tr>
<td>13.</td>
<td>East Natuna Basin</td>
<td>0.111</td>
</tr>
<tr>
<td>14.</td>
<td>West natuna Basin</td>
<td>0.015</td>
</tr>
<tr>
<td>15.</td>
<td>Ketungau/Melawi Basin</td>
<td>0.319</td>
</tr>
<tr>
<td>16.</td>
<td>Barito Basin</td>
<td>3.145</td>
</tr>
<tr>
<td>17.</td>
<td>Asem-Asem Basin</td>
<td>0.612</td>
</tr>
<tr>
<td>18.</td>
<td>Kutei Basin</td>
<td>22.931</td>
</tr>
<tr>
<td>19.</td>
<td>Tarakan Basin</td>
<td>2.065</td>
</tr>
<tr>
<td>20.</td>
<td>Sulawesi Basin</td>
<td>0.550</td>
</tr>
<tr>
<td>21.</td>
<td>Makassar Strait Basin</td>
<td>7.171</td>
</tr>
<tr>
<td>22.</td>
<td>Lariang Basin</td>
<td>5.227</td>
</tr>
<tr>
<td>23.</td>
<td>Makassar Basin</td>
<td>12.064</td>
</tr>
<tr>
<td>Rank</td>
<td>Basin Name</td>
<td>Reserves (Bbl)</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>24.</td>
<td>Gorontalo Basin</td>
<td>3.485</td>
</tr>
<tr>
<td>25.</td>
<td>Sulawesi Tenggara Basin</td>
<td>4.244</td>
</tr>
<tr>
<td>26.</td>
<td>Flores Basin</td>
<td>0.447</td>
</tr>
<tr>
<td>27.</td>
<td>Bali Basin</td>
<td>0.123</td>
</tr>
<tr>
<td>28.</td>
<td>Sawu Basin</td>
<td>0.362</td>
</tr>
<tr>
<td>29.</td>
<td>Timor Basin</td>
<td>0.704</td>
</tr>
<tr>
<td>30.</td>
<td>Banda Basin</td>
<td>0.526</td>
</tr>
<tr>
<td>31.</td>
<td>Halmahera Basin</td>
<td>0.290</td>
</tr>
</tbody>
</table>

The above data indicates that almost all basins in Indonesia have oil and gas reserves. However, all those areas are used for international navigation as well, namely:

1. **Between Sumatera and Kalimantan Islands.**
   There is route 1 after passing somewhere through North Sumatera Basin, Sibolga Basin, Central Sumatera Basin, South Sumatera Basin, areas containing approximately 7,392 billion barrels.

2. **Between Java and Kalimantan Islands.**
   There is route 5 through South Java Basin, Northeast Java Basin, Sunda Basin, Northwest Java Basin, areas containing approximately 3,713 billion barrels.

3. **Between Kalimantan and Sulawesi Islands.**
   This area is usually used for tankers. There is route 4 and oil and gas reservations are the biggest ones in Indonesia consisting of 50,979 billion barrels of oil which can be found in Kutei Basin, Tarakan basin, Sulawesi Basin, Makassar Strait.
Basin, and Sulawesi Tenggara Basin.

4. The remainder is in the eastern part of the Indonesian seas and the composition is not too big, except in Waropen Basin. There are 1,455 billion barrels.

Consequently, it is easily understood that offshore oil and gas exploration in Indonesia is directed to the western part of the Indonesian seas. In this area, there are at least 2 routes used for international navigation that must consider the activities of oil and gas exploration and exploitation.

In 1989 total exploratory wells were 108, and in 1990 157 wells were found. In 1989 drilling activities resulted in the discovery of 25 new wells, 11 of which were found offshore of eastern Sumatera and Java Islands.(9).

c. Politics and population

1. Politics

The political aspects of the designation of sea lanes should be considered as well. In this case, because Indonesia has not created sea lanes for foreign ships, smuggling valuable Indonesian goods via small Indonesian fishing boats, and the transfer from Indonesian small ships in the middle of the sea of Indonesian valuable goods to foreign ships can easily be found.

On the other hand, in various parts of the Indonesian seas which are located close to sensitive
areas or islands, perhaps again perhaps it will be used to smuggle weapons to a small number of Indonesian people who want to struggle against the Indonesian government. It is a very wise decision if the designation of Indonesian sea lanes as far as possible avoids these locations.

2. Population

The population in Indonesia is also concentrated in the western part of Indonesia. The largest population is in the Java Island and then Sumatera and Kalimantan Islands.

Consequently, coastal activities in these islands, such as fishing, oil and gas exploration are very high.

In order to protect against smuggling and illegal immigration (as Indonesia is still an area used to smuggle illegal immigrants from abroad), the designation of sea lanes should be envisaged considering the population along their routes and as far as possible, crowded population areas should be avoided.

More details of the Indonesian population is as follows: (10).

<table>
<thead>
<tr>
<th>Provinces</th>
<th>Areas (Sq Kms)</th>
<th>Population (people)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sumatera</td>
<td>473,606</td>
<td>28,016,000</td>
</tr>
<tr>
<td>Jawa</td>
<td>132,187</td>
<td>91,269,000</td>
</tr>
<tr>
<td>Nusa Tenggara</td>
<td>88,488</td>
<td>8,487,000</td>
</tr>
<tr>
<td>Province</td>
<td>Population</td>
<td>Area</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------</td>
<td>----------</td>
</tr>
<tr>
<td>Kalimantan</td>
<td>539,460</td>
<td>6,723,000</td>
</tr>
<tr>
<td>Sulawesi</td>
<td>189,216</td>
<td>10,410,000</td>
</tr>
<tr>
<td>Irian Jaya / Maluku</td>
<td>496,486</td>
<td>2,585,000</td>
</tr>
</tbody>
</table>

Figures above indicate that Java Island, the area of which is only 132,187 sq kms (about 8.89% of total the Indonesian islands) is inhabited by at least 91,269,000 people (61.88% of total the Indonesian population).

E. INDONESIAN SEA TRANSPORTATION

As an archipelagic state, it is especially important for the sea communication sector to support other sectors concerned. When moving goods from one area to another in order to improve their value or to support population needs somewhere in Indonesia, the ports and sea transportation have a main role in improving Indonesian economic development.

This general policy of sea transportation in Indonesia is basically directed to three sub-systems:

1. Sea transportation,
2. Port affairs,
3. Maritime safety, consisting of 7 elements:
   a. Seaworthiness,
   b. Navigation and Telecommunications,
   c. Coast Guard,
   d. Maritime services and underwater works,
   e. Dredging of navigation lanes in the ports,
   f. Pilotage, and
The end of 1989 Indonesian fleets which were owned by the shipping companies or non-shipping companies, was 9,786 units. According to ship units they can be classified as follows:

a. 611 units : 3,618,214 DWT.
b. 7,618 units : 1,198,155 GRT.
c. 1,557 units : 646,864 HP.

However, looking at shipping companies, they can be described as follows:

1. National companies:
   a. 290 units = 537,670 DWT.
   b. 5,962 units = 514,755 GRT.
   c. 448 units = 60,642 HP.

   Foreign companies:
   a. 93 units = 776,767 DWT.

2. Non national companies:
   a. 288 units = 2,303,777 DWT.
   b. 1,656 units = 683,400 GRT.
   c. 1,109 units = 585,222 HP.

In addition, there are some foreign fleets chartered by Indonesian shipping companies:

a. 80 units = 2,515,266 DWT.
b. 311 units = 95,975 GRT.
c. 183 units = 232,948 HP.

To support the movement of national or foreign ships operating in Indonesian seas, the total ports in Indonesia are as follows:

1. Ports operated by the Public Port Corporation I, II, III, and IV total 91 ports.
2. Ports operated directly by central government (12).
i.e. the District of Communication Department)
approximately 453 ports.

3. Special ports, meaning, ports or berths operated by
certain departments or institutions total:
   a. Special ports = 178 ports.
   b. Special berths = 203 berths.

Therefore, it must be understood that Indonesian
fleets on their voyages within Indonesian seas,
especially for passenger ships, liner ships or
traditional ships (i.e. various canoes), navigate in
great number across any sea lanes that will be
established by the Indonesian government. For the sake
of Indonesian benefits, foreign ships should not
infringe upon national fleet movements and conversely
Indonesian ships are also should not disturb the
navigation of ships in transit within sea lanes.

Total ship calls in 1989 and 1990 in various ports
operated by the Public Port Corporation I, II, III and
IV as follows: (13).

Public Port Corporation I in Medan.
1990 : 58,135 ships.

Public Port Corporation II in Jakarta.
1989 : 46,558 ships.
1990 : 48,884 ships.

Public Port Corporation III in Surabaya.
1989 : 54,107 ships.
1990 : 56,584 ships.
Public Port Corporation IV in Ujung Pandang.
1989 : 37,483 ships.
1990 : 39,812 ships.

A result can be seen that in the western part of Indonesian territorial seas the movement of ships to and from the ports are busier than in the eastern part.

F. CURRENT SITUATION OF MARITIME ACCIDENTS

In order to secure ship safety in Indonesian seas, it is absolutely necessary that all ships navigate only through safe areas. It means, sea lanes should be designated in safe areas and those areas have to be protected from any kind of shipwrecks (debris) caused by accidents.

In Indonesia, in the past five years (1985 to 1990), there were 1,352 maritime accidents. The number of marine accidents, according to its kind, such as sinking, collisions, strandings, fires and others, involve many kinds of ships, including fishing ships as well as inter-island ships.

The number of marine accidents caused by nature, human error, etc, during the same period (5 years) were 1,438 accidents. Most maritime casualties 41.4% were caused by nature/heavy weather. About 31.4% were caused by human error, and the rest 27.2% were caused by ship structures. In addition, in terms of marine accidents by size and type of ships, the highest percentage, 34.6% were the small ships (from 0 to 100
m3) and 35.2% were ships from 500 m3 or less and the rest 29.2% were from ships 500 m3 or over.

The number of marine accidents by kind of ships are as follows: 67.6% of accidents from motor ships; 22.1% of accidents from motorized sailing ships; 5.9% of accidents from sailing ships, and the remaining 4.4% of accidents from barges.(14).

In Indonesian seas there are shipwrecks located in various places, inter-alia, near the port of Palembang 36 shipwrecks; near Malacca Strait 9 debris, in the north of the port of Tanjung Perak Surabaya; 51 shipwrecks, in the western part of Makassar Port; 27 shipwrecks, also in the Strait of Makassar there are 20 shipwrecks and in the southern part of Java Island there are 25 shipwrecks.(15).

According to Hisaharu Kajita, the President of the Maritime International cooperation Center of Japan stated that ship movements need systems and facilities for security, including:

1. Port and terminal facilities where ships can stay safely for loading and unloading of cargoes and passengers,
2. Hydrographical tasks,
3. Aids to navigation tasks (visual and radio wave),
4. A navigation system (including prevention measures against collisions, setting of traffic separation schemes in dangerous waterways due to congestion or narrowness),
5. Radio communications for meteorological, emergency and safety purposes,
6. Search and rescue operations, and
7. Compensation system. (16).

G. SEA LANE PROPOSALS

After observing some aspects regarding the designation of sea lanes, principally they should benefit Indonesian interests without disturbing international navigation in Indonesian waters.

Considering the position of Indonesia's seas, which are separated by thousand of islands and bearing in mind international customary navigation, there should be at least three sea areas to be considered, namely:

1. The sea in the eastern part of Indonesia which consists of the Maluku Sea, the Seram Sea, the Banda Sea and the Arafura Sea,
2. The sea in the middle of Indonesia which consists of the Sulawesi Sea and Java Sea (eastern portion of Java Sea),
3. The sea in the western part of Indonesia, namely the Natuna Sea, the Kalimantan Sea and the Java Sea (western of Java sea).

In order to accommodate international customary navigation and Indonesian interests, all customary navigation passes through these three parts of the Indonesian seas; therefore, these areas are necessarily envisaged as areas within which to established sea
lanes. In order to give more detail about these areas, they will be briefly described as follows:

1. The eastern part of the Indonesian seas.

International customary navigation in this area is from Basilan Strait (under the Philippines), through Banka Passage, continuing to Manipa Strait (between Buru Island and Seram Island) passing directly to Banda Sea via Wetar Strait. However, ships also navigate to Torres Strait in Irian Jaya Island through Obi Strait.

In this area, there are at least two islands that could be regarded as sensitive areas. Therefore, the designation of sea lanes in these areas should be considered. As far as possible the designation of such sea lanes should be drawn through the middle of the sea between the two islands. It would be better to establish of sea lanes between Tanibar Island and Arue Island directly to Banda Sea continuing to the sea to the west of Buru Island. International navigation after passing through Obi Strait and Manipa Strait should be avoided, because these two islands are close to each other and full of marine resource, such as oil and gas, fish and so forth.

After passing Banda Sea (in the western part of Buru Island) a sea lane should be established directly to Balut Channel without passing Banka Passage and proceeding directly to Japan and the Philippines.
2. The middle part of the Indonesian seas.

In this area there is no other choices. Sea lanes should be drawn from Makassar Strait directly to Lombok Strait. However, there is international customary navigation that after passing the Sulawesi Sea, turns right to the Java Sea. As a result, the Java Sea is really crowded with maritime navigation and sea resources, fish, oil and gas and so forth. The ideal is to avoid the Java Sea. However, it seems that this area can not be avoided.

3. The western part of the Indonesian seas.

According to international customary navigation, there are three lanes in this area which can be described as follows:

a. From Serasan Passage (in the South China Sea) proceed directly via Gaspar Strait, Bangka Strait and Sunda Strait to the Indian Ocean.

b. From Malacca Strait passing Durian Strait, proceeding again via Gaspar Strait and Bangka Strait then turning left and passing through the Java Sea and Lombok Strait.

c. From Malacca Strait passing directly to Karimata Strait, the Java Sea and also Lombok Strait.

Practically, this area is nearly the same as the Java Sea, namely full of marine resources. International customary navigation passing through the Strait of Durian, Gaspar and Bangka should be envisaged, for the benefit of Indonesian interests.
There are only three ways that could be considered for sea lanes in this area:

a. Drawn directly from Gaspar Strait (between Bangka Island and Karimata Island) to Sunda Strait.

b. From Karimata Strait (between Karimata Island and Kalimantan Island) drawn directly to Java Sea (in the middle of Java Sea). In this area, foreign ships may navigate safely to Sunda Strait or pass from the Java Sea to Lombok Strait or to Makassar Strait.

c. Conversely, to accommodate foreign ships from Sunda Strait to Makassar Strait, sea lanes should be created from Sunda Strait to meet the sea lanes from Karimata Strait.

H. PRIORITY

As discussed previously in the light of maritime activities, the western part of the Indonesian territorial seas, viz, Bangka Strait, Karimata Strait, Sunda Strait and the Java Sea are more crowded and busier in comparison with the eastern part.

Fishing activities, oil and gas exploration, marine accidents, shipwrecks, shipping traffic and population centers are all located and accumulated in the western part of the Indonesian territorial seas.

Based on the Danish experience, in order to get IMO approval in the case of ship routeings, the creation of
Sea lanes should be presented and discussed per-package of sea lane. Meanwhile, Mr. E.W. Rymarz, senior technical officer for the Maritime Safety Division of IMO, suggested such sea lanes proposed to IMO should not together; however, per-unit of sea lane depends on the priorities which have to be discussed first with the competent organization. (17).

Starting from this valuable information, how can the Indonesian government design sea lanes? They should be defined according to priority based on some aspects discussed previous, namely:

a. Sea lane I.

In Bangka Strait (in the middle of Bangka Island and Karimata Island) established directly to the Sunda Strait.

b. Sea lane II.

In the middle of Karimata Strait, from this sea area it is drawn to the middle of the Java Sea (in the western part) and Sunda Strait.

c. Sea lane III.

In the middle of the Java Sea to Lombok Strait and Makassar Strait.

d. Sea lane IV.

From Lombok Strait to Makassar Strait,

e. Sea lane V.

To accommodate foreign ships in the eastern part of the Indonesian seas, from Banka Strait / Passage directly to the Arafura Sea. (18).
Considering sea lanes that shall be established, the first step is the establishment of sea lane I in the Bangka Strait to Sunda Strait. The reasons for this as follows:

1. Maritime activities are concentrated in this area,
2. The sea is not so deep and its surroundings consists of various small islands,
3. In this area oil and gas reservations are prolific.

I. DESIGNATION OF SEA LANES

To establish sea lanes it must be stipulated that such lanes must be suitable for all ships to navigate in continuous and expeditious passage through the designated sea lanes within Indonesian seas. The Republic of Indonesian's sea lane proposals are required to take into account any channel and strait used for international navigation.

Due to the characteristics of Indonesian seas, therefore, sea lanes are defined by a series of continuous axis lines from the entry point, viz, in the Strait of Karimata, Sunda, the Serasan Passage, the Strait of Lombok and between Arue Island as well as their exit points. Such sea lane passages should have a width of 50 nautical miles as is implied in the condition that ship should not deviate more than 25 nautical miles to either side of such axisline.(19).

In designation of sea lanes, the government of Republic of Indonesia takes into account
recommendations and the technical advice of IMO and is required to conform with the generally accepted international standards.

In the Strait of Bangka as the first choice, the surroundings and width of the area is more than 50 nautical miles and more than sufficient.

In order to be recognized by international seafarers, such sea lanes should, if possible, be marked by buoys. However, if the depth of the seas is more than 100 metres, it is difficult to place buoys. For this reason the area used as sea lanes should be drawn on a special sea chart or map, which should consider the general provision of ship routeings issued by IMO. (20).

According to Indonesian regulations, sea lanes should be enacted in the term of the Act (in Indonesian terminology, Undang-undang), because sea lanes for the benefit of Indonesia as a whole and their characteristic is international, therefore, before its promulgation it must be prepared, discussed and agreed not only by the Government of Indonesia but also by the Indonesian parliament.

A draft of the proposed sea lanes after discussions with various departments concerned or other institutions through the Directorate General of Sea Communications, may be submitted directly to IMO in order to get approval. In IMO discussion whether on technical aspects, legal aspects or geographical aspects the Indonesian parliament should be involved at the
After getting approval from IMO to implement the proposed sea lanes, the government must send IMO's approval to the Indonesian parliament. But, from the beginning some members of this parliament have been involved, so, it will be easier to get their approval, in order to promulgate in Indonesian Act in the Indonesian Gazette.

The date of entry into force for the sea lanes may be proposed by the requesting country. IMO's concurrence with the date automatically causes the sea lanes provisions to come into force internationally.

However, Indonesia has to promulgate IMO recommendation in the national gazette at least four months after getting approval from IMO. The important issue to be considered before submission to IMO is characteristics of the seas, such as waves, tidal, currents, etc that are measured first by the Local Hydrography and Oceanography Department and have to be approved by IHO.
Endnotes chapter V.

(1) Publication issued by both Maritime Institutions in Denmark.

(2) Hira W. Jayewhardane, the regime of island in international law, page 163.

(3) Article 2 of government regulation 8 of 1962 concerning innocent passage for foreign ships.

(4) Muchtar Kusumaatmadja, Prof DR, Bunga rampai hukum laut, no English text available, page 249.


(7) Note (6), supra, page 18, 19.


(10) Indonesian Statistic 1982.


(12) Note (11), supra, page 33.


(14) Mr Hizaharu Kajita, the maritime safety cooperation study in Indonesia, Dharma Wiratama, page 28, 29, 30.


(16) Note (15), supra, page 9.

(17) His information, March 13, 1992.


(20) Annex 3.
CHAPTER VI
TRAFFIC SEPARATION SCHEME PROPOSALS IN INDONESIA

A. BASIC REGULATIONS

The main role of the TSS is to improve safety of navigation in certain narrow channels or straits. Such separation schemes have not been established in Indonesian seas and basic regulations of the TSS are in article 41 UNCLOS 1982 which is the same article referring sea lanes.

The terminology used is 'and' not 'or'. It means that TSS can be implemented in Indonesian waters which are separated by thousand of islands, together with sea lanes. This terminology is correct that sea lanes and the TSS in the straits used for international navigation may be designated by the archipelagic states, Indonesia. For Indonesian interests and international navigation, therefore, the designation of sea lanes and the TSS should be considered and designated as parts that cannot be separated from each other, even though their designation is not at the same time.

According to article 41 para 3 of UNCLOS 1982 the TSS which will be created has to conform to the generally accepted international regulations. However, in Indonesia such separation schemes are designated or prescribed by Indonesia and will be drawn on Indonesian sea charts issued by the Minister of Defence and
Security (i.e the Indonesian Hydrography Department).

B. STATUS OF INDONESIAN STRAITS

1. Indonesian straits are not international straits.

Indonesia has asserted its jurisdiction that all straits are not international straits and under the Archipelago Declaration 1957, all waters that fall within the linked baselines used to measure the limits of 12 nautical miles territorial sea are regarded as internal waters.(1)

In accordance with Indonesian regulation number 4 of 1960, concerning Indonesian seas (in Indonesian gazette 22 of 1960) it states that all Indonesian straits (such as the Straits of Sunda, Lombok, Karimata, Wetar as well as straits that are scattered over Indonesian seas which are not used for international navigation, due to their locations being close to straits used for international navigation), may be considered for international navigation if those are needed.

In the eastern part of North Sumatera Island there are the Straits of Malacca and Singapore which are undoubtedly the most important of the maritime passages in the Southeast Asia Region. However, geographically the characteristics of those straits do not raise the issue of the rights of VLCCs above 200,000 DWT, because of navigational hazards that occur in the congested shallow straits in Singapore.
2. Problems and their impacts on Indonesian Straits.

In the light of this issue, according to Michael Leifer, the problem of navigation in the Straits of Malacca and Singapore assumes two major forms. The first is the danger of collision of ships arising from an increase in their number and size; and, the second is the consequent congestion of the narrow area and the handling characteristic of large tankers in this area.(2).

About fifty tankers of 150,000 DWT a month, fully loaded, transit through the Strait of Malacca on their way to and from Far-East destinations. Thirty five tankers of over 200,000 DWT were said to pass through the straits eight to nine times a year.(3).

Consequently, due to congestion, in 1972 the shell tanker Myrtea of 210,000 DWT hit a rock in the Strait of Malacca. On January 6th, 1975, the biggest accident occurred. A Japanese tanker Showa Maru of 244,000 DWT ran aground in the Straits of Malacca.

As a result of this accident, as quoted by Michael Leifer, through a voluntary agreement that Japanese tankers of over 250,000 DWT had been rerouted to transit the Strait of Lombok and Makassar in Indonesia. All Japan seamen were asked by shipowners to reroute all tankers over 150,000 DWT through the Strait of Lombok and Makassar, and they were supported by the Japanese Association of Captains.(4).
In order to reduce or minimize the risk of groundings, VLCC tankers of 200,000 DWT and over are recommended to use the Strait of Lombok and Makassar in order to avoid the danger of accidents in the Strait of Malacca. However, the tanker owners object to navigate through the Strait of Lombok, due to the cost, more time and money. For example, as mentioned by Choon Ho Park, one of the so-called Japanese Oil Routes, a stretch of 6,100 nautical miles from the Persian Gulf to the Strait of Lombok, makes the route longer by more than 1,000 nautical miles.\(^{(5)}\)

According to Prof Dr Mochtar Kusumaatmadja, the time needed for the navigation of the route through the Strait of Malacca and Singapura is normally 17.4 days while passing through the Strait of Lombok and Makassar would need 20.1 days, with a time difference of 2.7 days.

In accordance with the Singapore Port Authority, VLCC tankers of 150,000 to 200,000 DWT which navigated through the Strait of Malacca and Lombok in Indonesia in 1985 were nearly the same; through the Strait of Malacca about 52 %, and through the Strait of Lombok 48 %. Every month about 1,416 tankers navigated through the Strait of Malacca. Usually, VLCC tankers navigating via the Strait of Lombok are full loaded and back to the Persian Gulf they navigate through the Strait of Malacca in ballast. The Strait of Lombok is not
only navigated by tankers, but also by bulk carriers from Australia, New Zealand to East Asia and vice versa transit this routes.(6).

C. THE CLOSURE OF THE INDONESIAN STRAITS

The Strait of Lombok, Sunda, Karimata, Wetar are categorized as major shipping routes within the Indonesian archipelagic seas. In addition, all Indonesian straits are part of the Indonesian seas. Consequently, if Indonesia has a specific interest, Indonesian straits basically can be closed, even though temporarily.

However, Indonesia has been recognizing and implementing an innocent passage regime. Indonesia may not hamper foreign ships which navigate through Indonesian seas.

September 1988 is a case in point. The Indonesian Military was to conduct on air and sea exercises from 5 September to 5 October 1988 in the Strait of Malacca, Sunda and Lombok. Before these exercises, some announcements were issued that these areas were closed to all ships during the military exercises.(7).

Notwithstanding the closure of the straits for the benefit of Indonesia, this decision, namely, to close the Strait of Lombok was temporarily and both the Lombok and Sunda Straits did not close at the same time.

In order for Indonesia to have the right to

71
temporary close certain straits, it must be done without hampering international navigation and not contrary to UNCLOS 1982. Some comments will be made concerning the closure of the two straits a few years ago:

1. Based on UNCLOS 1982, Indonesia was entitled to temporary close sea lanes for the purpose of an exercise, but, it was obliged to provide alternative sea lanes as a temporary replacement. 

2. It was not directed towards hampering international navigation, but was solely motivated by the desire not to cause any danger to passing ships during temporary exercises and to provide an alternative route.

3. Article 4, para 1 of Indonesian regulation number 8 of 1962, notes that the President of the Republic of Indonesia has the authority to close, temporarily, certain parts, of Indonesian seas against passage by foreign ships, if such action is considered necessary to protect the state's defence and security.

Even though certain Indonesian straits have not been designed as a TSS, the Republic of Indonesia remains able to temporarily close straits, due to the fact that they are under the sovereignty of Indonesia. However, Denmark is a different case. The status of their straits are international straits, therefore, the Danish Government has no right to close them.
D. CHARACTERISTICS OF INDONESIAN STRAITS

As mentioned before, in the South-East Asian region there are 45 straits used for international navigation and at least 25 straits are major straits. In Indonesia at least 10 major straits are used for international traversing.

In line with sea lane proposals in chapter V, there are four major straits that will be used and managed as straits for international navigation. It means, in order to achieve innocent passage within Indonesian seas through the designation of sea lanes, their voyages, inevitably, navigate through one of the Indonesian straits, such as the Strait of Sunda, Karimata, Lombok, Makassar. These four straits, in conjunction with the designation of the TSS have to be considered.

1. The Strait of Sunda.

The Strait of Sunda is approximately 50 nautical miles in length and the narrowest land width at the point of egress to the Java Sea is 13.8 Nautical miles. And the western channel is 2.4 nautical miles in width and the width in the eastern is 3.7 nautical miles. The depth of the sea is about 40 to 55 meters.(10).

According to Michael Reifer, the Strait of Sunda is less important than the Malacca Strait and Singapore Straits. The Sunda Channel is not suitable
as a marine corridor for very large oil tankers and also the Strait of Sunda is not considered suitable for submerged passage.

The Head of the Information Department of the Indonesian Navy, Col (navy) Bambang, informed the author that at least 4 foreign ships pass through the Strait of Sunda every day. However, for the benefit of Indonesian ferries (Ro-Ro), operated by the Public Crossing Channel, River and Ferry Corporation (more popularly known as a PERUM ASDP), connecting between Merak and Bakauheni in the Strait of Sunda is crowded, because they operate 10 ferries whose trips per-day total 56 carrying 908 cars and 4,984 passengers. (11)

2. The Strait of Lombok.

It is located between the paradise island of Bali and the Island of Lombok. In accordance with the Admiralty Pilot, the Strait of Lombok is the most important passage for VLCC tankers proceeding between the Strait of Makassar and the Indian Ocean. The navigable width is 12 nautical miles and the length is about 620 nautical miles. Because of the great depth of the sea approximately 900 meters, it is most suitable for VLCCs.

The southern entrance is divided into two parts by Nusa Besar Island and Lembangan Island. Ships are navigating directly to the north and to the western part of the Flores Sea to the Strait of Makassar.
The traffic density in the Strait of Lombok is 48% that for the Strait of Malacca and Singapore.

Its problem is nearly the same as the Strait of Sunda. This strait is also operating ferries between Padang and Lembar. Total number of ferries operated is six making 12 runs per day, with 3,880 passengers and 226 cars accommodated between the two islands of Bali and Lombok.

3. The Strait of Makassar.

The Strait of Makassar is complementary to the Strait of Lombok. It is bounded by the biggest Indonesian island of Kalimantan to the west and Sulawesi Island in the eastern part. The southern entrance is divided into three channels by coral banks. The navigable channel is 205 nautical miles in length with no restrictive depths; the narrowest distance between land is 22.5 nautical miles. Safety for navigation is especially suitable for the passage of deep draft tankers and submarines. The greatest obstacle is necessary to be avoided is ship debris.

4. The Strait of Karimata.

It is located between the group of Bangka and Belitung Islands in the eastern part of the South Sumatera Island and Karimata Island. The depth of its sea is about 60 to 80 meters. Passing through the Strait of Karimata, especially bulk carriers are guaranteed safety if they navigate and follow...
the navigational direction in the Admiralty Pilot Book.

E. THE TSS PROPOSAL.

After discussing the various aspects concerning the straits in Indonesia used for international navigation, it is time to decide on the designation of the TSS in Indonesia.

In order to establish the TSS, characteristics of four straits mentioned before must be envisaged. An example is the Strait of Lombok. Sea depth is about 700 meters. The Strait of Sunda has a depth of only 40 meters. Also, the Strait of Makassar and Karimata are deeper than the Strait of Sunda and Lombok. Likewise, the density of traffic is not at the same level. The Strait of Sunda and Lombok are more crowded than others due to the existence of ferries in the two areas. On the other hand, the Strait of Sunda is only 3.7 nautical miles in width and the Strait of Lombok is only 12 nautical miles in width. Conversely, the two other straits are wide enough.

Based on these figures, even though the Strait of Sunda is just a hundred kilometers from the capital city of Indonesia, Jakarta, there is no other strait to accommodate foreign ships from the Strait of Malacca, Singapore and the Pacific Ocean and also it is caused by the establishment of sea lanes in the western part of the Indonesian seas. It is a wise measure if the
Strait of Sunda is designated as the TSS.

For the designation of a separation scheme in this area, there are some aspects to be considered:

1. The depth of the sea is about 35 meters, and the deepest sea is about 55 meters.

2. In the Strait of Sunda ferries operate connecting Merak in Java Island and Bakahuni in Sumatera Island. Ferry movements will tend to increase in the future.

3. The Strait of Sunda is also recognized by the World Community of Seafarers as a route of international customary navigation. In addition, the characteristics of the Strait of Sunda make it a logical first consideration. According to the sea chart, in the middle of the Sunda Strait is located a small island, i.e., Sangiang Island used for flora and fauna conservation. In the eastern part of this island are found the shallow seas in the Terumbu Koliot Islets. In the northeast or about 3 nautical miles from Sangiang Island are shallow seas as well, namely, the Terumbu Gosal and Tempurung Islets. Also small booms from the Second World War are found in the middle of the straits near the Sangiang Island.

These dangerous areas for navigation, in line with the designation of the TSS, would be considered as areas to be avoided and it be proposed as restricted areas. (12)
F. IMPROVING SAFETY OF NAVIGATION.

Although the Strait of Sunda and other straits have not had established TSS, Indonesia has shown efforts to improve safety of navigation in the Indonesian seas. In 1984, the government of Japan carried out relevant surveys and studies over the period of February to September 1985. The JICA held the study of a master plan for the development of aids to navigation, namely, for long term until the year 2000. A total of 904 lighthouses, light-beacons and buoys are proposed for construction; and, for the short term, there would be 459 lighthouses and the like built. In the long term 106 radio aids will be constructed and in the short term 45 radio beacons will be constructed as well. In addition, as supporting facilities, such as buoy gases and gas factory spare buoys will be increased as well.(13).

The role and function of the Indonesian Navy in securing, maintaining sea lanes and TSS, detaining the Indonesian seas jurisdiction totally at sea and protecting all Indonesian interests is very important. As far as possible the Indonesian Navy are placed in any entrances or exit-points and turn-points of the TSS or sea lanes.

In addition, due to the designation of such separation schemes have been created by several countries, such as Denmark, the UK, Spain, etc with IMO recommendations, the approved TSS was drawn in certain
sea charts based on the general provisions on ship routeings.(14).

Rule 10 of COLREG 1972 is applicable to TSS. This rule, especially in para (b), says that a ship using a TSS shall:

a. Proceed in the appropriate traffic lane in the general direction of traffic flow for that lane,
b. So far as practicable keep clear of a traffic separation line or separation zone,
c. Normally join or leave a traffic lane at the termination of the lane, but when joining or leaving from either side shall do so at as small an angle to the general direction of traffic flow as practicable.

G. SHIPS NAVIGATING OUTSIDE OF THE TSS.

The establishment of the TSS, therefore, places some requirements or instruments to be fulfilled by the Indonesian Government, such as lighthouses, buoys, radar or racon to detect danger areas and assist movement within the TSS.

Through the prepared radar in the TSS centre, the operator knows movements of the ships in the TSS. There are two possibilities:

1. Ships follow the direction of the TSS,
2. Their voyages are outside of the TSS.

In Indonesia, the Ministry of Communications (i.e. The Directorate General of Sea Communications) has the
right to admonish the Master of a ship who proceeds in the wrong direction or outside of the TSS. This system is applied in the Strait of Dover and Danish waters. An interesting discussion between the CNIS in the Strait of Dover and the Master of a Danish ship, took place as follows:

* The Dover CNIS asked:

Are you aware you are contravening COLREG by going the wrong way in a traffic separation scheme?

* Master of Danish ship:

Yes, this is a problem, from West of Landes End and have no charts for channel and we do not know exactly where we are, so, we keep to North side Bound Esbjerg in Denmark. Are we all right?

* Dover CNIS replied:

Suggest you leave South West Lane, F1 buoy marks centre of traffic separation schemes; 073 course to that buoy and traffic separation schemes. Runs North East to North and you will be in correct lane.

* Danish ships:

Roger. We will do that. Thank you.(15).

However, according to Mr I. Winkel Smith, this above problem is a big problem due to the fact that they did not have sea charts.

If ships proceed in the wrong direction, anchoring or all crews are sleeping, these cases are to be categorized as a big problem. How can these problem be solved?
In practicable navigation, the owner or master of the ship in violation can be sent to the court and sometimes fined or jailed with the money to be paid to the government. Data from the Danish Maritime Authority has proved that there were 596 cases of the TSS contraventions during the period of 1978 to 1987. (16).

In line with article 10 of COLREG 1972, ships can avoid the TSS if the TSS is in danger. An actual case occurred last year in the Strait of Hormuz. During the Gulf War between Kuwait and Iraq in the northern part of the Hormuz TSS, then there were a lot of booms at sea near the location of the TSS. Therefore, all ships were passing in the southern part of this TSS and avoided the TSS.

H. CONTRAVENTION OF COLREG 1972

In COLREG 1972, article 10, this article is especially very important, it will be fully mentioned as follows:

a. This rule (article 10) applies to TSS adopted by the Organization (i.e. IMO) and does not relieve any vessel of her obligation under any other rule.

b. A vessel shall, so far as practicable, avoid crossing traffic lanes but if obliged to do so shall cross on a heading as near as practicable at right angles to the general direction of traffic flow.

1. A vessel shall not use an inshore traffic zone when she can safely use the appropriate traffic lane within the adjacent TSS. However, vessels of
less than 20 metres in length, such as sailing vessels engaged in fishing may use the inshore traffic zone.

2. Notwithstanding sub-paragraph 1, a vessel may use an inshore traffic zone when en route to or from a port, offshore installation or structure, pilot station or any other place situated within the inshore traffic zone, or to avoid immediate danger.

c. A vessel other than a crossing vessel or a vessel joining or leaving a lane shall not normally enter a separation zone or a separation line except:
   1. In case of emergency to avoid immediate danger.
   2. To engage in fishing within a separation zone.

d. A vessel shall so far as practicable avoid anchoring in a TSS or in areas near its termination.

e. A vessel not using a TSS shall avoid it by as wide a margin as is practicable.

f. A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane.

g. A vessel less than 20 metres in length or a sailing vessel shall not impede the safe passage of a power-driven vessel following a traffic zone.

h. A vessel restricted in her ability to manoeuvre when engaged in an operation for the maintenance of safety of navigation in a TSS is exempted from complying with this rule to the extent necessary to carry out the operation.
i. A vessel restricted in her ability to manoeuvre when engaged in an operation for the laying, servicing or picking up of a submarine cable, within a TSS, is exempted from complying with this rule to the extent necessary to carry out the operation.

All foreign ships as far as practicable should navigate within the prepared TSS. However, if navigation is outside the TSS and in order to protect Indonesian interests, such as illegal fishing, illegal immigration and smuggling, their movement can be detected by Indonesian radar or they can be caught directly by Indonesian Patrol Ships Indonesia has the right to report the contraventions of COLREG 1972 to their flag states.

If this system is applied in Indonesian seas, even though the establishment of sea lanes or the TSS are not at the same time, Indonesia has international legal power to litigate via their courts using special forms adopted by IMO.(17).

After receiving such a report, the flag state is obliged to proceed with their contravention to the court concerned. In this case the Indonesian Embassy is obliged to monitor them and the kinds of fines or punishments that are awarded to the master or the shipowner must be reported to Indonesian government.

As an example, actions taken by foreign flag states in respect of the reported contravention of rule 10 of
COLREG 1972 in the Dover Strait TSS, per 1 January 1987 - 31 March 1987, are as follows: (18).

Flag/name of ships | GRT | Contravention Action by flag | date | rule | state
--- | --- | --- | --- | --- | ---
DENMARK.
Abria | 300 | 27-3-85 10 d | Fined DKr 1,200
Andreas Boye | 499 | 15-9-85 10 d | Fined DKr 1,200
Jens Rand | 299 | 14-10-86 10 d | Fined DKr 1,200
INDIA.
Jalamudra | 10,092 | 2-8-86 10 c | Warning issued.
NETHERLAND.
Hinde IX | - | 4-6-86 10 c | Reasons accepted.
PANAMA.
Nevad A | 499 | 3-9-85 10 d | Unspecified fine.

I. REPORTING SYSTEM AND REPORTING LINE.

The designation of the TSS should be followed by an effective reporting system. In this matter all ships passing through the TSS should report to the TSS authorities via their radio communications. Denmark is again a case in point. Such reports are sent over Danish Coast Radio Stations as telegrams and are addressed to SHIPPOS AARHUS. The reporting service applies to:

1. All ships of 20,000 tons gross tonnage and above.
2. All ships with a draught of 13 metres and above.
3. All loaded oil and gas and chemical tankers of 1,600 tons gross tonnage and above.
4. All ships carrying radio active cargoes.

This reporting system has been established for the purpose of:

a. Informing ships about large ship movements, so that smaller ships can take into account their limited manoeuvrability and avoid the risk of large ships meeting one another in areas difficult to pass.

b. Informing ships about navigational hazards en-route and deviations from normal conditions of current, water level and wave height.

c. Notifying the ferry traffic in certain areas.

d. Facilitating the authorities' early and effective pollution combating action in case of an accident.

d. Notifying the authorities immediately about any deficiency which could affect safe navigation and the marine and coastal environment and about ship observations of pollution.

In order to implement such reporting, the authority drafts in specific format consist of: type of report, ship, date and time of event, position, true course, speed, port of departure, destination, pilot, route information, ETA, maximum draught, cargoes, ship size, etc.

To be implemented in the Sunda TSS, the Indonesian government may issue regulations concerning the reporting system in the TSS. Such a reporting system should be an obligation for any kinds of ships passing through the TSS. However, foreign warships shall get
prior authorization from the Ministry of Defence and Security.

In accordance with IMO resolution no. A.531 (13), adopted on 17 November 1983, reporting systems are used to gather or exchange information through radio reports. The information is used to provide data for many purposes including search and rescue, traffic services, weather forecasting and prevention of marine pollution. Ship reporting systems should comply with the following main principles:

1. Reports should contain only information essential to achieve the objectives of the system.
2. Reports should be simple and use the standard international ship reporting format and procedures. Where language difficulties may exist, the languages used should include English, using where possible the Standard Marine Navigational Vocabulary.
3. The number of reports should be kept to a minimum.
4. Reports should be free of communication charges.
5. The times and places of making reports should be sufficiently flexible to avoid interference with essential navigational duties.
6. Information obtained from the system should be made available to other systems when required for distress and safety purposes.
7. Basic information (ship's particulars, on board facilities and equipment, etc.) should be reported once, be retained in the system and be updated by
the ship when changes occur in the basic information reported.

8. The purpose of the system should be clearly defined.

9. Administrations establishing a ship reporting system should notify mariners of full details of the requirements to be met and procedures to be followed. Details regarding types of ships and areas of applicability, times and geographical positions for submitting reports, shore establishments responsible for operation of the system and services provided should be clearly specified. Charts depicting the boundaries of the system and providing other necessary information should be made available to mariners.

10. The establishment and operation of a ship reporting system should take into account:
   a. International as well as national responsibilities,
   b. The cost to ship operators and responsible authorities,
   c. Navigational hazards,
   d. Existing and proposed aids to safety, and
   e. The need for early and continuing consultation with interested parties including a sufficient period to allow for trial, familiarization and assessment to ensure satisfactory operation and to allow necessary charges to be made to the system.
11. Administrations should ensure that shore establishments responsible for operation of the system are manned by properly trained persons.

12. Administrations should consider the interrelationship between a ship reporting system and other systems.

13. A Ship reporting system should preferably use a single operating radio frequency. Where additional frequencies are necessary, the number of frequencies should be restricted to the minimum required for the effective operation of the system.

14. Information provided by the system to ships should be restricted to that necessary for the proper operation of the system and safety.

15. A ship reporting system should provide for special reports from ships concerning defects or deficiencies with respect to their hull, machinery, equipment or manning or concerning other limitations which could adversely affect navigation and for special reports concerning incidents of marine pollution.

The same with a reporting system, the government should also decide the reporting line, viz, a line in which ships after navigating the designated reporting line should give their reports to the authority. At a rough estimation such reporting line will be placed about 6 hours before ships entering the TSS.
The above issues are interesting to be discussed in line with the designation of the TSS:

1. National ship movements.

For the sake of Indonesian ships, their movements should be arranged carefully. In the Strait of Sunda there are 52 ferry movements connecting between Merak and Bakauheni. According to regulations their navigation is straight to the last destination without zig-zagging. If the TSS is applied, therefore, all kinds of ships which want to cross the TSS take at 90 degrees (at right angles). This requirement is needed in order to secure a quicker crossing to destination.

The fact that sometimes ferries and tankers use the TSS at the same time, means they will meet in the middle of the TSS. In this case the tanker or ferry has to report its position to the TSS authority, therefore, the tanker will probably reduce her speed in order to avoid a collision.

2. Fishing.

In the TSS fishing ships may catch fish in this area. However, the direction is the same as the TSS adopted by IMO. Their navigation may not stop or anchor in separation schemes. They may cross the TSS, but, they should cross directly at 90 degrees.

3. Oil and gas exploration.

Exploration of oil and gas are prohibited in the TSS, hence, it is recommended to explore oil and gas
in the restricted area and the movement of their ships also take into account the position of 90 degrees if they cross the TSS.

K. LIMITATION OF THE SHIPS

The designation of the TSS is to improve safety of navigation in a narrow channel, therefore, it can be understood that ships which navigate through the Sunda TSS's proposal should be limited in size, DWT, or maybe kind of ship and cargoes should be restricted.

It is suggested that all foreign ships of 100,000 DWT or above should navigate through the Strait of Lombok and that foreign submersible warships navigate in the Strait of Lombok on the surface.

The limitation of the ships in this area is very important, because the location of such straits close to the capital city of Jakarta and one must bear in mind the characteristics of the strait itself which is narrow and rather shallow.

L. ROLE OF HYDROGRAPHY AND OCEANOGRAPHY

A problem to be considered in designating the TSS is also the role of the Hydrography and Oceanography Department. Every point in the Strait of Sunda should be measured by the Hydrography and Oceanography Department, namely, the condition of the ground, whether sand, mud, rock, land, depth, current, tidal, wind and any kind of natural barriers. These issues
should be considered thoroughly and adopted by IHO.

In addition, as was applied when designating the TSS in Denmark, before proposing to IMO, the condition of the sea, such as tidal patterns, salinity, temperature, current, etc., should be considered in such designation.

As an illustration of the importance of the role of IHO is the fact that the Royal Danish Administration of Navigation and Hydrography, Denmark, in 1991, proposed the amended TSS between Korsoer and Sprogoe. At that time, the proposed amended TSS was submitted to IMO without IHO recommendations, therefore, IMO sent a letter to IHO concerning their recommendation of the recommended TSS in the Danish waters. In reply this letter IHO said that IHO has examined the proposed changes and concluded that as the zones involved are all in relatively deep waters, no particular hydrography problem are foreseen.

Finally, IMO gave its recommendation to the proposed amended TSS between Korsoer and Sprogoe.
Endnotes chapter VI.

(1). Tan Sri Maniakavasagan, the Malaysian Minister of Communication's speech, page 53.

(2). Michael Leifer, Malacca, Singapore and Indonesia, Legal problem, page 51.

(3). Note (2), supra, page 5.

(4). Note (1), supra, page 65.

(5). Note (7) chapter II, supra, page 259.

(6). Choon Ho Park, the Korean strait, in international navigation Rock and Shoal Ahead, page 181.

(7). Donald R. Rithwell, the Indonesian strait incident, in Marine Policy, November 1990, page 491.


(10). Note (1), supra, page 77.


(13). Hisaharu Kajita, the maritime safety cooperation study in Indonesia, Dharma Wiratama, October 1991, page 69.


(16). Data from the Royal Danish Administration Authority,
Denmark.


(18). The Department of Transport, the UK, report July 8, 1987.
CHAPTER VII
CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The conditions of sea lanes and TSS which are mentioned in UNCLOS 1982 to support safety of international navigation and national navigation and to protect Indonesian interests at sea have not been designated by the Government of Indonesia.

Through this analysis, the author's conclusions are the following:

a. To support and encourage innocent passage conditions within the Indonesian seas which for some time have been recognized, the designation of sea lanes and TSS should be done immediately. There should be at least five sea lanes in Indonesian waters. However, their designation is based on priorities adjusted to Indonesian interests, such as fishing, offshore oil and gas exploration, population, marine accident, natural barrier at sea. After observing many considerations affecting the designation of sea lanes, the first one to be established should be in the western part of the Indonesian territorial seas from the Strait of Bangka to the Strait of Sunda. Also after discussing some aspects in order to now establish TSS in Indonesia, according to national ferry movements, population, marine accident, safety and security, etc in the Strait of Sunda, this must
be the first TSS to be considered and created in Indonesian waters.

b. There are some aspects that should be considered in such designation. However, this designation should give priority to the benefit of Indonesian interests.

c. In designation of these two issues not all customary routes used for international navigation and straits that are recognized by seafarers have to be accorded sea lanes or TSS.

d. The designation of sea lanes and TSS are to be used for any kind of ships.

e. Implementation of navigation through sea lanes should not infringe the movement of national ships and all Indonesian interests at sea.

f. Sea lanes for foreign fishing ships enacted by the Minister of Defence and Security number Kep 17/IV/1975 is not sea lanes as mentioned in UNCLOS 1982.

g. Designation of sea lanes and TSS are the task of the Ministry of Communications (i.e. the Directorate General of Sea Communications), even though in the discussion may involve other institutions.

h. These conditions will improve the Indonesian navy's task of securing international navigation; therefore, the Department of Communications (i.e. the Directorate General of Sea Communications) should add and improve the aids for navigation equipments.
i. After the designation of sea lanes and TSS it will be easier to take measures to control foreign ships within Indonesian seas.

j. Designation of such matters should be drawn in the sea charts based on the symbols and abbreviations issued by IMO and IALA.

B. RECOMMENDATIONS

In the author’s opinion, there are some recommendations as follows:

1. Bearing in mind that Indonesian’s area is very wide and nearly 2/3 of its territorial is sea, therefore, the designation of such sea lanes should be in the three areas:
   a. Sea lane I.
      From the Strait of Bangka proceed to the western part of Java Sea directly to the Strait of Sunda.
   b. Sea lanes II.
      From the Strait of Karimata drawn directly to the Java Sea and to the Strait of Sunda.
   c. Sea lane III.
      In the middle of Java Sea to the Strait of Lombok and the Strait of Makassar.
   d. Sea lane IV.
      From the Strait of Banka drawn directly to the Strait of Lombok.
   e. Sea lane V.
      From the Strait of Banka passing to the eastern
part of the Indonesian seas to the Arafura Sea.

2. Designation of TSS in the Strait of Sunda first and other straits are not yet necessary, maybe latter on, because their characteristics are still sufficient for international / national navigation.

3. Before establishing sea lanes or TSS should be discussed in the various aspects involving departments or institutions and then proposed to IMO for its recommendation.

4. The condition of the Strait of Sunda is relatively shallow, therefore, it is necessary to limit the ship passing through this strait.

5. Sea lanes for foreign fishing ships should be adjusted.

6. The designation of sea lanes and TSS are based on the General Provision on ship routeings issued by IMO and it should be drawn on the sea charts or maps, in accordance with the Symbols and Abbreviations issued by IHO and IALA.
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14. Lombok Straits: Indonesian Map, issued by the Defence and Security Department USA and Indonesian Naval Hydrography Department.
15. Mochtar Kusumaatmadja, Prof, DR, SH, LLM: Sovereign Right Over Natural Resources in Indonesia.
17. Michael Leifer: Malacca, Singapura and Indonesia, Asean Study.
21. Sea Communication Map: Sea Transportation, book III.
PART A

GENERAL PROVISIONS ON SHIPS’ ROUTEING
General Provisions On Ships' Routeing

1 OBJECTIVES

1.1 The purpose of ships' routeing is to improve the safety of navigation in converging areas and in areas where the density of traffic is great or where freedom of movement of shipping is inhibited by restricted sea-room, the existence of obstructions to navigation, limited depths or unfavourable meteorological conditions.

1.2 The precise objectives of any routeing system will depend upon the particular hazardous circumstances which it is intended to alleviate, but may include some or all of the following:

1.3 Separation zone or line* A zone or line separating the traffic lanes in which ships are proceeding in opposite or nearly opposite directions; or separating a traffic lane from the adjacent sea area; or separating traffic lanes designated for particular classes of ship proceeding in the same direction.

1.4 Traffic lane* An area within defined limits in which one-way traffic is established. Natural obstacles, including those forming separation zones, may constitute a boundary.

1.5 Roundabout A routeing measure comprising a separation point or circular separation zone and a circular traffic lane within defined limits. Traffic within the roundabout is separated by moving in a counterclockwise direction around the separation point or zone.

1.6 Inshore traffic zone* A routeing measure comprising a designated area between the landward boundary of a traffic separation scheme and the adjacent coast, to be used in accordance with the provisions of rule 10(d), as amended, of the International Regulations for Preventing Collisions at Sea (Collision Regulations), 1972.

1.7 Two-way route A route within defined limits inside which two-way traffic is established, aimed at providing safe passage of ships through waters where navigation is difficult or dangerous.

1.8 Recommended route A route of undefined width, for the convenience of ships in transit, which is often marked by centreline buoys.

1.9 Recommended track A route which has been specially examined to ensure so far as possible that it is free of dangers and along which ships are advised to navigate.

1.10 Deep-water route A route within defined limits which has been accurately surveyed for clearance of sea bottom and submerged obstacles as indicated on the chart.

2 DEFINITIONS

2.1 The following terms are used in connection with matters related to ships' routeing:

2.2 Traffic separation scheme* A routeing measure aimed at the separation of opposing streams of traffic by appropriate means and by the establishment of traffic lanes.

* These terms are used in the 1972 Collision Regulations.
.11 Precautionary area
A routing measure comprising an area within defined limits where ships must navigate with particular caution and within which the direction of traffic flow may be recommended.

.12 Area to be avoided
A routing measure comprising an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or certain classes of ship.

.13 Established direction of traffic flow
A traffic flow pattern indicating the directional movement of traffic as established within a traffic separation scheme.

.14 Recommended direction of traffic flow
A traffic flow pattern indicating a recommended directional movement of traffic where it is impractical or unnecessary to adopt an established direction of traffic flow.

3 PROCEDURES AND RESPONSIBILITIES

Procedures and functions of IMO

3.1 IMO is recognized as the only international body responsible for establishing and recommending measures on an international level concerning ships' routing.

3.2 In deciding whether or not to adopt or amend a traffic separation scheme, IMO will consider whether:

1. the aids to navigation proposed will enable mariners to determine their position with sufficient accuracy to navigate in the scheme in accordance with rule 10 of the 1972 Collision Regulations, as amended;

2. the state of hydrographic surveys in the area is adequate;

3. the scheme takes account of the accepted planning considerations and complies with the design criteria for traffic separation schemes and with established methods of routing.

3.3 In deciding whether or not to adopt or amend a routing system other than a traffic separation scheme, IMO will consider whether the aids to navigation and the state of hydrographic surveys are adequate for the purpose of the system.

3.4 IMO shall not adopt or amend any routing system without the agreement of the interested coastal States, where that system may affect:

1. their rights and practices in respect of the exploitation of living and mineral resources;

2. the environment, traffic pattern or established routing systems in the waters concerned;

3. demands for improvements or adjustments in the navigational aids or hydrographic surveys in the waters concerned.

Responsibilities of Governments and recommended practices

3.5 A new or amended routing system adopted by IMO shall not come into force as an IMO adopted system before an effective date promulgated by the Government that proposed the system, which shall be communicated to IMO by the responsible Government. That date shall not be earlier than six months after the date of adoption of a routing system by IMO but, when new chart editions necessitate a substantially longer period between adoption and implementation, IMO shall set a later date as required by the circumstances of the case. If the Government that proposed the system is unable at the time of adoption by IMO to declare a definite date of implementation, this information should be communicated to IMO as soon as possible thereafter and the implementation date then declared should not be earlier than four months after the date on which the declaration is made; in the case of a traffic separation scheme the exact time of implementation should also be stated. If there is a protracted delay in making such a declaration, the Government concerned should periodically inform IMO of the situation and forecast when implementation is likely to be possible. Either Notices to Mariners to amend charts, or revised charts to depict the system shall be made available in ample time before the system comes into force.

3.6 The responsible Government implementing a new or amended routing system should ensure that full and final details of planned changes to aids to navigation, anchorage areas or pilot boarding areas which are closely associated with the system and important to its effective utilization by the mariner are provided to the appropriate hydrographic authority at least six months prior to the date of implementation.

3.7 The selection and development of routing systems is primarily the responsibility of the Governments concerned.

3.8 A Government proposing a new routing system or an amendment to an adopted routing system, any part of which lies beyond its territorial sea, should consult IMO so that such system may be adopted or amended by IMO for international use. Such Government should furnish all relevant information, in particular with regard to the number, edition and where possible the geodetic datum of the reference chart used for the delineation of the routing system. If appropriate, it should also provide the following additional information:

Amend. No. 6
Part A

1 the reasons for excluding certain ships or classes of ship from using a routeing system or any part thereof; and

2 any alternative routeing measures, if necessary, for ships or certain classes of ship which may be excluded from using a routeing system or parts thereof.

Such a system, when adopted, shall not be amended or suspended before consultation with and agreement by IMO, unless local conditions and the urgency of the case require that earlier action be taken. In considering the proposal, IMO shall take account of the objectives, procedures, responsibilities, methods and criteria for routeing systems as set out in these general provisions.

3.9 In an emergency such as might result from the unexpected blocking or obstruction of a traffic lane by a wreck or other hazard, immediate temporary changes in the use of the affected traffic separation scheme may be made by the responsible and sponsoring Government or Governments, with the object of directing traffic flow clear of the new hazard. In such cases, every possible measure shall be taken by the Government or Governments concerned immediately to inform shipping of the hazard and of the temporary changes which have been made.

3.10 Governments are recommended to ensure, as far as practicable, that oil rigs, platforms and other similar structures are not established within routeing systems adopted by IMO or near their terminations. When the temporary positioning of an exploration rig or a similar structure in an adopted traffic separation scheme cannot be avoided, the scheme should, if necessary, be amended temporarily in accordance with the guidelines given in section 7.

3.11 If the above exploration activities lead to the finding of important exploitation prospects, the effect of subsequent exploitation on the safety of marine traffic should be considered carefully. If the establishment of permanent installations within a traffic separation scheme is unavoidable, permanent amendments to the scheme, if deemed necessary, should be submitted to IMO for adoption.

3.12 Governments establishing traffic separation schemes, no parts of which lie beyond their territorial seas, are requested to design them in accordance with IMO criteria for such schemes and submit them to IMO for adoption.

3.13 Where, for whatever reason, a Government decides not to submit a traffic separation scheme to IMO, it should, in promulgating the scheme to mariners, ensure that there are clear indications on charts and in nautical publications as to what rules apply to the scheme.

3.14 Governments establishing routeing systems, other than traffic separation schemes, no parts of which lie beyond their territorial seas, are recommended to follow the same procedure as that set out in paragraphs 3.12 and 3.13 above.

3.15 By rules 10(k) and 10(l) respectively of the 1972 Collision Regulations a vessel restricted in her ability to manoeuvre when engaged in an operation for either the maintenance of safety of navigation or the laying, servicing or picking up of a submarine cable in a traffic separation scheme is exempted from complying with rule 10 to the extent necessary to carry out the operation. The Government or authority responsible for safety of navigation in a traffic separation scheme should ensure that:

1 the intention of undertaking such an operation is first notified to each Government or appropriate authority concerned;

2 information about such ships working in a traffic separation scheme is, as far as practicable, promulgated in advance by Notice to Mariners, and subsequently by radionavigation warnings broadcast before and at regular intervals during the operations;

3 such operations are, as far as possible, avoided in conditions of restricted visibility.


4 METHODS

In meeting the objectives set out in section 1 the following are among the methods which may be used:

1 The separation of opposing streams of traffic by separation zones, or lines where zones are not possible

Figure 1 - Traffic separation by separation zone and line
In this method, streams of traffic proceeding in opposite or nearly opposite directions are separated by separation zones (4) or lines (3); the use of zones is to be preferred, but in narrow passages and restricted waters it may be necessary to use a separation line rather than a zone so as to allow more navigable space in the traffic lanes. A length of separation line may also be substituted for a zone in positions where this may encourage and facilitate correct procedures by crossing traffic. The outside limits (6) of such traffic separation schemes are the outer boundaries of the traffic lanes. The arrows (1) indicate the established direction of traffic flow.

2 The separation of opposing streams of traffic by natural obstructions and geographically defined objects

![Figure 2 - Separation of traffic by natural obstructions](image)

This method is used where there is a defined area with obstructions such as islands, shoals or rocks restricting free movement and providing a natural division for opposing traffic streams.

3 The separation of through and local traffic by providing inshore traffic zones

![Figure 3 - Inshore traffic zones](image)

Beyond the outside limits of traffic separation schemes, ships may navigate in any direction. Where such areas lie between the traffic separation scheme and the coast they may be designated as inshore traffic zones (see also figures 4 and 10), with the purpose of keeping local traffic clear of the traffic separation scheme which should be used by through traffic.

Traffic in inshore traffic zones is separated from traffic in the adjacent traffic lane by separation zones (4) or by separation lines (3) (see also figures 4 and 10).

4 The sectorial division of adjacent traffic separation schemes at approaches to focal points

![Figure 4 - Sectorial division of adjacent traffic separation schemes at approaches to focal points](image)

This method is used where ships converge at a focal point or a small area from various directions. Port approaches, sea pilot stations, positions where landfall buoys or light vessels are located, entrances to channels, canals, estuaries, etc., may be considered as such focal points.

5 The routeing of traffic at focal points and route junctions where traffic separation schemes meet

The routeing measure to be utilized at focal points, route junctions and intersections should be selected from the most appropriate of the following methods:

5.1 Roundabouts

![Figure 5 - Separation of traffic at a roundabout](image)
Part A

If the need can be demonstrated, a roundabout may be used to guide traffic counterclockwise round a circular separation zone (4) or specified point, as illustrated in figure 5.

5.2 Junctions

Figure 6 - Separation of traffic at a crossing

Figure 7 - Separation of traffic at a junction

Figure 8 - A junction, showing a separation line substituted for a zone, where there will be crossing traffic

These methods are used where two routes join or cross. The directions of traffic flow are established in the lanes of the adjoining schemes; the separation zone may be interrupted, as shown in figures 6 and 7, or replaced by a separation line, as shown in figure 8, in order to emphasize the correct method of crossing by traffic changing from one scheme to the other.

5.3 Precautionary areas

Figure 9 - Precautionary area at a focal point

Figure 10 - Precautionary area with recommended direction of traffic flow around an area to be avoided

Figure 11 - Precautionary area at a junction, with recommended directions of traffic flow

It may be best, when routes converge, to terminate them clear of their potential joining points and in such a case a precautionary
area (9) can be instituted so as to emphasize the need for care in navigation. Figures 9 and 10 illustrate the use of such an area at focal points; a direction of traffic flow may be recommended (2) around the focal point, as shown in figure 10.

Figure 11 gives an example of how a precautionary area (9) can be used at a junction with crossing traffic. The traffic lanes are terminated short of the point where traffic is expected to cross and replaced by a precautionary area within which the recommended directions of traffic flow (2) are indicated.

Precautionary areas may also be used at the termination of any single route.

.6 Other routeing methods

Other routeing methods which may be used are as shown in figures 12 to 18:

.6.1 deep-water routes (figures 12 and 13);
.6.2 areas to be avoided (figures 10 and 18);
.6.3 recommended directions of traffic flow (figure 14), two-way routes (figure 15) and recommended routes and tracks through areas where navigation is difficult or dangerous (figures 16 and 17).

Figure 12 – Deep-water route (two-way)

Figure 13 – One-way deep-water route (within a traffic lane)

Figure 14 – Recommended directions of traffic flow between two traffic separation schemes

Figure 15 – Two-way route (with one-way sections)

Figure 16 – Recommended routes

Amdt. No. 6
5 PLANNING

5.1 Routeing systems should only be established when safety of navigation in the area can thereby be clearly improved.

5.2 The routeing system selected for a particular area should aim at providing safe passage for ships through the area without unduly restricting legitimate rights and practices, and taking account of anticipated or existing navigational hazards.

5.3 When planning, establishing, reviewing or adjusting a routeing system, the following factors shall be among those taken into account by a Government:

1. their rights and practices in respect of the exploitation of living and mineral resources;
2. previously established routeing systems in adjacent waters, whether or not under the proposing Government's jurisdiction;
3. the existing traffic pattern in the area concerned, including coastal traffic, crossing traffic, naval exercise areas and anchorage areas;
4. foreseeable changes in the traffic pattern resulting from port or offshore terminal developments;
5. the presence of fishing grounds;
6. existing activities and foreseeable developments of offshore exploration or exploitation of the sea-bed and subsoil;
7. the adequacy of existing aids to navigation, hydrographic surveys and nautical charts of the area;
8. environmental factors including prevailing weather conditions, tidal streams and currents and the possibility of ice concentrations; and
9. the existence of environmental conservation areas and foreseeable developments in the establishment of such areas.

5.4 Routeing systems should be reviewed, re-surveyed and adjusted as necessary, so as to maintain their effectiveness and compatibility with trade patterns, offshore exploration and resource exploitation, changes in depths of water, and other developments.

5.5 Routeing systems should not be established in areas where the instability of the sea-bed is such that frequent changes in the alignment and positions of the main channels, and thus of the routeing system itself, are likely.

5.6 When establishing areas to be avoided by all ships or by certain classes of ship, the necessity for creating such areas should be well demonstrated and the reasons stated. In general, these areas should be established only in places where inadequate survey or insufficient provision of aids to navigation may lead to danger of stranding, or where local knowledge is considered essential for safe passage, or where there is the possibility that unacceptable damage to the environment could result from a casualty, or where there might be hazard to a vital aid to navigation. These areas shall not be regarded as prohibited areas unless specifically so stated; the classes of ship which should avoid the areas should be considered in each particular case.

5.7 Governments considering establishing a new routeing system or amending an existing one should consult at an early stage with:

1. mariners using the area;
2. authorities responsible for aids to navigation and for hydrographic surveys and nautical publications;
.3 port authorities; and

.4 organizations concerned with fishing, offshore exploration or exploitation and environmental protection, as appropriate.

This consultation process is implied in paragraphs 3.4, 3.8, 5.3, 5.5 and 6.2.

6 DESIGN CRITERIA

6.1 The following standards should, so far as the circumstances allow, be applied in the design of ships' routeing measures.

General

6.2 Routes should follow as closely as possible the existing patterns of traffic flow in the areas as determined by traffic surveys.

6.3 The configuration and length of routeing systems which are established to provide for an unobstructed passage through offshore exploration and exploitation areas may differ from the dimensions of normally established systems if the purpose of safeguarding a clear passage warrants such a special feature.

6.4 Course alterations along a route should be as few as possible and should be avoided in the approaches to convergence areas and route junctions or where crossing traffic may be expected to be heavy.

6.5 The number of convergence areas and route junctions should be kept to a minimum, and should be as widely separated from each other as possible. Adjacent traffic separation schemes should be placed such that nearly opposing streams of traffic in the adjacent schemes are separated as widely as possible. Route junctions should not be located where concentrated crossing traffic, not following established routes, may be expected, e.g. ferry traffic.

6.6 Routes should be designed to allow optimum use of aids to navigation in the area, and of such shipborne navigational aids as are required or recommended to be fitted by international conventions or by IMO resolutions and recommendations.

6.7 The state of hydrographic surveys within the limits of a routeing system and in the approaches thereto should be such that full information on existing depths of water and hazards to surface navigation is available to nautical charting authorities.

Traffic separation schemes

6.8 The extent of a traffic separation scheme should be limited to what is essential in the interests of safe navigation.

6.9 Traffic lanes should be designed to make optimum use of available depths of water and the safe navigable areas taking into account the maximum depth of water attainable along the length of the route. The width of lanes should take account of the traffic density, the general usage of the area and the sea-room available.

6.10 Where there is sufficient space, separation zones should be used in preference to separation lines to separate opposing streams of traffic and to segregate inshore traffic zones from adjacent traffic lanes. Separation zones or lines may also be used to separate a traffic lane from adjacent sea areas other than inshore traffic zones, in appropriate circumstances, taking into account traffic density and the available means of fixing ships' positions.

6.11 It should be possible for ships to fix their position anywhere within the limits of and in the immediate approaches to a traffic separation scheme by one or more of the following means, both by day and by night:

1. visual bearings of readily identifiable objects;
2. radar bearings and ranges of readily identifiable objects; and
3. D/F bearings.

6.12 When it is considered essential to provide within a traffic separation scheme an additional lane for ships carrying hazardous liquid substances in bulk, as specified in the International Convention for the Prevention of Pollution from Ships, 1973, in circumstances where it is not possible for ships to fix their position as set out in paragraph 6.11 over the whole area of that lane and an electronic position-fixing system covers that area, the existence of that system may be taken into account when designing the scheme.

6.13 The minimum widths of traffic lanes and of traffic separation zones should be related to the accuracy of the available position-fixing methods, accepting the appropriate performance standards for shipborne equipment as set out in IMO resolutions and recommendations.

6.14 Where space allows the use of traffic separation zones, the width of the zone should, if possible, be not less than three times the transverse component of the standard error (measured across the separation zone) of the most appropriate of the fixing methods listed in paragraph 6.11. Where necessary or desirable, and where practicable, additional separation should be provided to ensure that there will be adequate early indication that traffic proceeding in the opposite direction will pass on the correct side.
6.15 If there is doubt as to the ability of ships to fix their positions positively and without ambiguity in relation to separation lines or zones, serious consideration should be given to providing adequate marking by buoys.

Converging and junction areas

6.16 Whichever of the several available routeing methods is chosen for use at a route junction or in a converging area, it must be a cardinal principle that any ambiguity or possible source of confusion in the application of the 1972 Collision Regulations must be avoided. This principle should be particularly borne in mind when establishing or recommending the direction of traffic flow in such areas. If recommended directions of traffic flow are adopted, these should take full account of the existing pattern of traffic flow in the area concerned, and also of all other applicable provisions of ships’ routeing.

6.17 At route junctions the following particular considerations apply:

1. the need to encourage the crossing of traffic lanes as nearly as possible at right angles;

2. the need to give ships which may be required to give way under the 1972 Collision Regulations as much room to manoeuvre as possible;

3. the need to enable a stand-on vessel to maintain a steady course, as required by the 1972 Collision Regulations, for as long as possible before the route junction; and

4. the need to encourage traffic not following an established route to avoid crossing at or near route junctions.

Deep-water routes

6.18 In designing deep-water routes, consideration should be given to marking critical turning points. Any wrecks or sea-bed obstructions which lie within the limits of a deep-water route and which have less depth of water over them than the minimum depth of water for the route as indicated on the charts, should be marked.

7  TEMPORARY ADJUSTMENTS TO TRAFFIC SEPARATION SCHEMES

7.1 When the temporary positioning of an exploration rig is unavoidable, the design criteria and the provisions for planning should be taken into account before permitting the positioning of the rig or subsequently adjusting a traffic separation scheme.

7.2 The said adjustments should be made in accordance with the following:

1. when the drilling location is situated near the boundary of a traffic lane or separation zone, a relatively slight adjustment of the scheme could have such effect that the drilling rig and its associated safety zone are sufficiently clear of the traffic lane;

Example

Original situation

Adapted situation
Part A

if a small temporary adjustment of the traffic lane is not possible the whole or part of the scheme could be temporarily shifted away from the drilling area so that traffic connected with the drilling operations will stay clear of the lane;

Example

**Original situation**

**Adapted situation**

.3 temporary local interruption of the scheme or part of the scheme in the area of location of the drilling rig. Such an interruption could be made a precautionary area;

.4 temporary suspension of the whole scheme.

7.3 In each case, exploration sites should be reviewed and such conditions specified as the responsible Government may deem necessary to ensure safety of navigation in the area.

7.4 Details of these temporary adjustments should be forwarded to IMO and to appropriate hydrographic offices at least four months before the rig is positioned within an adopted traffic separation scheme so as to allow ample time to inform shipping. When the duration of such temporary adjustments is expected to be six months or more, this should be made known to the relevant hydrographic authorities in order to allow appropriate action to be taken in notifying mariners.

7.5 In the event of a temporary adjustment to a traffic separation scheme remaining in force for more than one year, the responsible Government should consider whether permanent amendments to the scheme may ultimately become necessary and, if appropriate, initiate timely procedures for IMO to adopt such amendments.

8 THE USE OF ROUTEING SYSTEMS

8.1 Routeing systems are intended for use by day and by night in all weathers, in ice-free waters or under light ice conditions where no extraordinary manoeuvres or ice-breaker assistance are required.

8.2 Routeing systems are recommended for use by all ships unless stated otherwise. Bearing in mind the need for adequate under-keel clearance, a decision to use a routeing system must take into account the charted depth, the possibility of changes in the sea-bed since the time of the last survey, and the effects of meteorological and tidal conditions on water depths.

8.3 A ship navigating in or near a traffic separation scheme adopted by IMO shall in particular comply with rule 10 of the 1972 Collision Regulations to minimize the development of risk of collision with another ship. The other rules of the 1972 Collision Regulations apply in all
respects, and particularly the rules of part B, sections II and III, if risk of collision with another ship is deemed to exist.

8.4 At junction points where traffic from various directions meets, a true separation of traffic is not really possible, as ships may need to cross routes or change to another route. Ships should therefore navigate with great caution in such areas and be aware that the mere fact that a ship is proceeding along a through-going route gives that ship no special privilege or right of way.

8.5 A deep-water route is primarily intended for use by ships which, because of their draught in relation to the available depth of water in the area concerned, require the use of such a route. Through traffic to which the above consideration does not apply should, as far as practicable, avoid using deep-water routes.

8.6 Precautionary areas should be avoided, if practicable, by passing ships not making use of the associated traffic separation schemes or deep-water routes, or entering or leaving adjacent ports.

8.7 In two-way routes, including two-way deep-water routes, ships should as far as practicable keep to the starboard side.

8.8 Arrows printed on charts in connection with routeing systems merely indicate the general direction of established or recommended traffic flow; ships need not set their courses strictly along the arrows.

8.9 The signal YG meaning *You appear not to be complying with the traffic separation scheme* is provided in the International Code of Signals for appropriate use.

9 REPRESENTATION ON CHARTS

9.1 The legends, symbols and notes appearing in paragraphs 9.2, 9.3, 9.4 and 9.5 are recommended by the International Hydrographic Organization as guidance for the representation of details of routeing systems and associated measures on nautical charts. They are included to illustrate the information likely to be found on charts and as an aid to those designing proposed routeing systems for adoption by IMO.

9.2 Use of legends on charts and in notes

<table>
<thead>
<tr>
<th>Legend</th>
<th>Use of legend</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic separation scheme</td>
<td>Not usually shown on charts.</td>
</tr>
<tr>
<td></td>
<td>Referred to in notes as <em>traffic separation scheme</em> or its national language equivalent.</td>
</tr>
<tr>
<td>Inshore traffic zone</td>
<td><em>Inshore traffic zone</em> or its national language equivalent is shown on charts and is referred to in notes.</td>
</tr>
<tr>
<td>Precautionary area</td>
<td><em>Precautionary area</em> or its national language equivalent may be shown on charts in lieu of the symbol and is referred to in notes.</td>
</tr>
<tr>
<td>Deep-water route</td>
<td><em>DW</em> is shown on charts to indicate the deep water, <em>DW</em> or <em>deep-water route</em> is referred to in notes.</td>
</tr>
<tr>
<td>Area to be avoided</td>
<td><em>Area to be avoided</em> or its national language equivalent is shown on charts and is referred to in notes.</td>
</tr>
<tr>
<td>Two-way route</td>
<td><em>Two-way route</em> is not usually shown on charts but is referred to in notes.</td>
</tr>
<tr>
<td>Recommended route</td>
<td><em>Recommended route</em> is not usually shown on charts but is referred to in notes.</td>
</tr>
<tr>
<td>Recommended track</td>
<td><em>Recommended track</em> is not usually shown on charts but is referred to in notes.</td>
</tr>
</tbody>
</table>
### 9.3 Symbols for basic elements of routeing measures

Unless otherwise specified, symbols are printed on charts in colour, usually magenta.

<table>
<thead>
<tr>
<th>Routeing term</th>
<th>Symbol</th>
<th>Description</th>
<th>Applications</th>
<th>Notes and paragraph references</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Established direction of traffic flow</td>
<td></td>
<td>Outlined arrow</td>
<td>Traffic separation schemes and deep-water routes (when part of a traffic lane)</td>
<td>(1) (2)</td>
</tr>
<tr>
<td>2 Recommended direction of traffic flow</td>
<td></td>
<td>Dashed outlined arrow</td>
<td>Precautionary areas, two-way routes, recommended routes and deep-water routes</td>
<td>(1)</td>
</tr>
<tr>
<td>3 Separation lines</td>
<td></td>
<td>Tint, 3 mm wide</td>
<td>Traffic separation schemes and between traffic separation schemes and inshore traffic zones</td>
<td>(3) (4) and paragraph 9.4</td>
</tr>
<tr>
<td>4 Separation zones</td>
<td></td>
<td>Tint, may be any shape</td>
<td>Traffic separation schemes and between traffic separation schemes and inshore traffic zones</td>
<td>(4) (5) and paragraph 9.4</td>
</tr>
<tr>
<td>5 Limits of restricted areas (charting term)</td>
<td></td>
<td>T-shaped dashes</td>
<td>Areas to be avoided and defined ends of inshore traffic zones</td>
<td>(6) and paragraph 9.4</td>
</tr>
<tr>
<td>6 General maritime limits (charting term)</td>
<td></td>
<td>Dashed line</td>
<td>Traffic separation schemes, precautionary areas, two-way routes and deep-water routes</td>
<td>(7)</td>
</tr>
<tr>
<td>7 Recommended tracks: one-way two-way</td>
<td></td>
<td>Dashed lines with arrowheads (colour black)</td>
<td>Generally reserved for use by charting authorities</td>
<td></td>
</tr>
<tr>
<td>8 Recommended routes</td>
<td></td>
<td>Dashed line and dashed outlined arrows</td>
<td>Recommended routes</td>
<td></td>
</tr>
<tr>
<td>9 Precautionary areas</td>
<td>⚠️</td>
<td>Precautionary symbol</td>
<td>Precautionary areas</td>
<td>(8)</td>
</tr>
</tbody>
</table>

For examples of routeing measures using these basic symbols see figures 1 to 18 in section 4.
NOTES

1 Arrows dispersed over width of route. Arrows may be curved. Where the traffic lane is converging, arrows should be oriented to the approximate average directions of the side boundaries.

2 Arrow omitted at intersections (other than roundabouts) to avoid implying priority of one lane.

3 Separation line 3 mm wide where chart scale permits.

4 Tint light enough not to obscure detail beneath it.

5 If traffic lanes are separated by natural obstacles, may be replaced by the symbol for general maritime limits at the boundaries of the lanes.

6 Stems of dashes point towards the area in question.

7 Symbol intended for tracks to be followed closely through inadequately surveyed areas.

8 Legend Precautionary area or its national language equivalent may also be used within the precautionary area instead of the symbol.

9.4 Boundary symbols in detail

Example: Boundary symbol 8 means that the boundary, indicated by the line, between a precautionary area and an inshore traffic zone is to be shown by T-shaped dashes, with the stems of the Ts pointing towards the ITZ.

1 Traffic separation scheme (ends)
Open sea

2 Traffic separation scheme (sides)
Open sea

3 Traffic separation scheme
Inshore traffic zone

4 Traffic separation scheme next to traffic separation scheme

5 Inshore traffic zone (ends)
Open sea

6 Precautionary area
Open sea

7 Precautionary area
Traffic separation scheme

8 Precautionary area
Inshore traffic zone

9 Deep-water route (sides)
Open sea

10 Deep-water route (ends)
Open sea

Ammt. No. 6
9.5 Cautionary and explanatory notes on charts

9.5.1 Traffic separation schemes and other routeing measures

The existence of special provisions applying to particular measures should be mentioned on the charts affected, if necessary referring mariners to the full text in sailing directions.

9.5.2 Deep-water routes

Where maintenance of a minimum depth can be guaranteed, the least depth (e.g. 22 m) may be given after the abbreviation DW. In other cases charted soundings will indicate the least depth, preferably in conjunction with a note giving the date of the latest survey.

9.5.3 Areas to be avoided

Notes on conditions governing avoidance of areas (classes and sizes of ships, nature of cargoes, etc.) should preferably be given on charts and should always be given in sailing directions.
REPORT OF A CONTRAVENTION OF THE INTERNATIONAL REGULATIONS
FOR PREVENTING COLLISIONS AT SEA, 1972

**CONTRAVENING VESSEL**

The vessel ............................................................
Flag ............................................................
Port of Registry ..................................................
Call sign ......................................................
Type ............................................................
Reference number ...........................................
GRT ............................................................
On the ..............................................................
between ..........................................................
Contravened the International Regulations as specified hereafter.

<table>
<thead>
<tr>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Outside scheme</td>
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<td>□ Traffic separation scheme</td>
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<tr>
<td>□ Lane</td>
</tr>
<tr>
<td>□ Separation zone</td>
</tr>
<tr>
<td>□ Associated inshore zone</td>
</tr>
<tr>
<td>□ Other location</td>
</tr>
<tr>
<td>□ International waters</td>
</tr>
<tr>
<td>□ Territorial waters of .........................</td>
</tr>
</tbody>
</table>

**PLOTTING AND IDENTIFICATION**

The contravening vessel has been plotted by (method) ........................................
as shown on attached chart, and identified by (craft) ........................................
on the ............................................... at .................................. (UTC) in position .................

**WEATHER/TIDE CONDITIONS**

Wind ............................................................
Direction ..........................................................
Speed/Sea State ..............................................
(Speed: (Douglas) ..........................................
Force (Beaufort) ............................................
Visibility ......................................................
(Miles) Time of high water at ................................(UTC)

**CONTRAVENED REGULATIONS**

<table>
<thead>
<tr>
<th>RULE 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ a i</td>
</tr>
<tr>
<td>□ c</td>
</tr>
<tr>
<td>□ g</td>
</tr>
<tr>
<td>□ b ii</td>
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<tr>
<td>□ d</td>
</tr>
<tr>
<td>□ h</td>
</tr>
<tr>
<td>□ b iii (joining)</td>
</tr>
<tr>
<td>□ e</td>
</tr>
<tr>
<td>□ f</td>
</tr>
<tr>
<td>□ i</td>
</tr>
<tr>
<td>□ b iii (leaving)</td>
</tr>
<tr>
<td>□ Other Rules/No</td>
</tr>
</tbody>
</table>

**REMARKS**

The United Kingdom would like to be advised of any action taken in this case

Signed ..........................................................
Date ..........................................................

Annex 5.
To whom it may concern.

This is to certify that Mr. Samsul Hadi, Master of Law, from Indonesia, student at the World Maritime University, Malmö, Sweden, has carried out his field study concerning Aids to Navigation, especially with the scope of designating Ship's Routing and Traffic Separation Schemes and its aspects.

Over the two weeks from 2nd to 14th March 1992 Mr. Samsul Hadi has been assigned to or visiting the following government offices:

1. The Royal Danish Administration of Navigation and Hydrography (Ministry of Defence):
   - The Inspectorate.
   - Pilotage and Coastal Rescuing Division.
   - Oceanographic/Hydrographic Division.
   - Aids to Navigation Division and 
   - Buoy Tender ARGUS.

2. The Danish Maritime Authority (Ministry of Industry and Transportation):
   - The Nautical Department (relations to IMO etc.).

I agree to advice and evaluate as a co-assessor of his thesis entitled "Some aspects to be considered in designating archipelagic sea lanes passage and traffic separation schemes in Indonesia".

Anker Nissen
Head of Inspectorate