Report on IMO/SACEP Assessment Mission on

Port Reception Facilities in Bangladesh, India, Maldives, Myanmar, Pakistan and Sri Lanka

April 12 – June 30, 2000

Prepared by

Trygve A. Meyer Cdr. (Ret.)
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The main findings, proposed recommendations and plan of actions as contained in this Report were used as background material and information for preparing and conducting proceedings at:

The IMO/SACEP Workshop
On Port Reception Facilities convened in Colombo, Sri Lanka,

21 – 25 August, 2000

ABSTRACT

This IMO (International Maritime Organization) Mission was undertaken with reference to Project No. PR 279 (TC03 – RAS/97305). The IMO together with SACEP (South Asian Co-operative Environment Programme) decided to appoint a Consultant and Assistant Consultant to study Annexes I – V of MARPOL 73/78 Convention, prepare a docket and conduct a Workshop in Colombo, Sri Lanka, during August 2000.

The assessment mission to the countries involved Bangladesh, India, Maldives, Myanmar, Pakistan and Maldives, was conducted by the Consultants in the period 3 May – 8 June, 2000, by visits to focal points at governmental and ministry level, port authorities as well as private sectors. The activity report for this period included as Appendix (V) of this Report, covers over 60 main events with meetings, consultations and excursion during which more than altogether 80 persons were in attendance at local points. Most of the meetings were conducted with top or high branch level executives.

The Executive Summary of this Report is followed by two main Chapters; **General Profiles of the Six Countries and their MARPOL Status**; and **Preparation of National and Regional Plans for Accession, Enhanced Enforcement Procedures of MARPOL 73/78 in the South Asian Region**. These Chapters, presented as IMO-SACEP/4 and IMO-SACEP/5, were used as documentation at the Colombo Workshop convened during 21 –25 August, 2000. The final mission Report on these Chapters as seen herein were further amended to take account of the Workshop's findings and input. This Report concludes with a Recommended Action Plan and proposals on how to implement appropriate Waste Management Practices for the region under review.

The Report sets out in Appendix VI a proposed August 2000 Colombo Workshop Programme. Other Appendices, linked with proposed master plans for the region dealing with implementation activities on reception facilities and MARPOL 73/78 compliance, are included for further study of the mission's objectives.

Note: **Although this Report is prepared in close consultation with IMO, views expressed and substantiated herein, are those of the Consultant and are not in any way attributable to the International Maritime Organization.**

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In Colombo:
***Anada R. Joshi*, Director General, SACEP**
***Prasantha Dias Abeyegunawardene*, Deputy Director, SACEP**

IMO Headquarters:
***Jean-Claude Sainlos*, Senior Deputy Director,** Marine Environment Division
***Jens H. Koefoed*, Implementation Officer,** Marine Environment Division
***Saara Lintu*, Technical Programme Officer,** Marine Environment Division

Executive Summary

This report recognises the efforts made by the governments of Pakistan and Sri Lanka in ratifying Annexes I to V; India and Myanmar Annexes I & II of MARPOL 73/78, even though the reception facilities stipulated by the Convention are not yet in place. Bangladesh and Maldives have yet to accede to the Convention.

It was found that where port reception facilities had been established they were not being required much, or were highly under-utilized, which might lead to their being made redundant or converted to other uses. In countries where port facilities have not been built or provided, some ports have instituted alternative measures by licensing private companies that collect oily waste and garbage on request from visiting ships.

Efforts have been made to analyse some of the existing impediments that have led to incomplete or delayed ratification of MARPOL 73/78 and/or inadequate implementation. The delays in constitutional regulatory efforts might be attributable to organizing systems, cost implications, or insufficient capacity to build MARPOL's requirement into countries' legislation, in particular where Acts have already been implemented embracing conservation of the marine environment. Administrative sectors might furthermore be subjected to programmes of deregulation by downsizing, or rightsizing, laws and regulations. Also, more of the current public activities could be transferred to the private sector.

Favourable consideration was given to countries' accession to MARPOL 73/78, as applicable, by administrative sectors greatly supporting the mission objectives such as Port Authorities, Departments of Merchant Marine, Pollution Control Authorities, Coast Guards, Fisheries and Merchant Marine sectors. Governmental agencies have, through enhanced coordination, been instrumental in better preserving the marine environment.

Essential for increased use of reception facility services is for nations, by coordinated efforts at the regional level, to implement self controlled measures whereby the ship's Master declared to ports - prior to vessel's arrival - the nature and quantities of waste generated during the last voyage(s), and vessel's requirements for reception facilities. Port State Control Authorities might ensure ships' compliance by controlling entries made in their Oil and Garbage Record Books. Such measures, linked with efforts to develop national and regional programmes seeking low-cost structuring of Port Reception Facilities, should effectively enhance utilisation. These goals should fall within the aims of The International Safety Management (ISM) Code and the regional MOU on Port State Control.

The Report further invites governments to consider IMO and SACEP as authoritative bodies for the region to assist in stimulating public awareness campaigns to promote interest at all levels of society in the value of enhanced protection of the marine and coastal environment.

The Report further suggests that governments consider the establishment of a regional Action Plan for enhanced MARPOL 73/78 compliance and improved use of reception facilities, that should cover: (i) the new safety culture in shipping; (ii) list of priorities; (iii) upgrading of existing facilities and their use; (iv) provision of oily waste treatment plant in selected ports; (v) cost effective and sustainable measures at all levels

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Chapter I

General Profiles of the Six Countries Including Findings on the Status of Ratification and Implementation of MARPOL 73/78

A. THE PEOPLE'S REPUBLIC OF BANGLADESH

1 General shipping related country information

1.1 Bangladesh has a coastline of 580 km bordering the Bay of Bengal. The country has 8,046 km of navigable waterways, 3,058 km of which are main cargo routes. It also has 145 km stretch of beach, with numerous sandy beaches on the islands in the atoll chain. The country has the largest area of coastal wetlands in the region, with vast tidally inundated land areas which are dominated by mangrove forests. There are three coastal protected areas.

1.2 The country's main industries include jute manufacturing, cotton textiles, food processing, steel production, fertiliser production and tea. Export commodities are mainly garments, jute and jute goods, leather, frozen fish and seafood. Import commodities are capital goods, textiles, food and petroleum products.

1.3 Rain water flowing from the mountains in India floods the rivers in the country regularly. Persistent hazardous substances reach the marine environment. In situ observation showed little garbage or pollutants floating in the river. Sewage treatment plants in Dhaka and Chittagong handle a great portion of the raw sewage generated. The effluents discharged from Chittagong's oil refinery are connected to the city's sewage system.

2 Status of ratification of MARPOL 73/78

2.1 Bangladesh has not acceded to the MARPOL 73/78 Convention.

3 Maritime activities including commercial shipping and fisheries

3.1 The country's merchant marine consists of 211 ships, 21 of which are dry cargo vessels involved in international trade, 70 are tankers and 120 are coastal vessels. In addition there are 1,500 smaller cargo vessels operating in inland waters.

3.2 Bangladesh has 73 ocean-going fishing vessels and some 6,000 coastal fishing vessels. Foreign shipping vessels are being licensed for fishing within the Exclusive Economic Zone (EEZ). Reportedly, some illegal fishing is taking place in the absence of sufficient national resources to monitor fishing activities.

4 Administrative aspects

4.1 The Bangladesh Ministry of Shipping and its subordinate departments are responsible for ship registration and controls of ships in international trade.

4.2 The transportation of commodities on the coast and inland water ways are regulated under the Merchant Shipping Act. Since 1990, the Department of Shipping has endeavoured to develop national legislation on the prevention of marine pollution that would embrace the MARPOL 73/78 convention. The proposed legislation is currently with the Ministry of Shipping. The next step will be for the Ministry of Law to further review it before it proceeds to the Cabinet for review. It will then be passed the Parliament for adoption.

4.3 National legislation for the protection of the environment exists as the Bangladesh Environment Conservation Act, 1995, under the Ministry of Environment. This law was enacted for conservation, improvement of quality standards, and control and mitigation of pollution.

4.4 Whilst the Department of Shipping has developed two ordinances intended to improve environmental control of shipping activities, so far no further action has been taken at ministerial levels. The apparent reason for this is that the Environment Conservation Act is considered to encompass the control of pollution from ships and there is a political drive for deregulation and downsizing or rightsizing laws and regulations.

4.5 Although Bangladesh has not signed the Indian Ocean Memorandum of Understanding (MOU) on Port State Control, it is in the process of depositing a letter of acceptance with the MOU Secretariat. Bangladesh maintains close liaison with the Indian Ocean MOU secretariat.

5 Ports

5.1 Chittagong Port

5.1.1 Chittagong is the main port in Bangladesh and has a tidal river port of 33 berths for ocean-going vessels. The tide difference creates currents of up to 5 knots. The port operates under the Ministry of Shipping.

5.1.2 Some 1.2 million tonnes of crude oil is imported each year from the Middle East, with a similar quantity of refined products being imported, of which 90% comes from Singapore and 10% from the Gulf. Crude oil arrives in ocean-going tankers of 90,000 -100,000 dwt. These are lightered by two tankers (*Banglar Jyoti/Banglar Shourabh*) of approximately 14,000 dwt equipped with segregated ballast tanks (SBT), which bring the oil from the deeper drafted anchorage (Kutubdia) to the oil refinery's crude oil berth, located up the river. There are two mooring berths for refined products near the refinery from which naphtha is exported in tankers of around 25,000 dwt. Coastal and inland tankers of 1000 dwt and road tank wagons undertake the domestic distribution of petroleum products. A facility for accepting garbage and oil is available and there are no delays at any stage. However, there is no plan management for the disposal of the above.

5.1.3 Apart from berths for oil products the port also has berths which embrace a container terminal, general cargo, food/grain, cement, fertilizer and ammonia terminals. The latter two are for exports. Some 90% of the container vessels operate between Chittagong, Mongla and Singapore and 10% between Colombo and Chittagong. The import of grain in dry bulk cargo vessels is from the USA and Australia. Some 125 ships per month visit the port of Chittagong.

5.1.4 50% of the berths in Chittagong are owned by the Port Authority and are leased out. The refinery company owns the berths they operate for the tankers. The port is serviced by 7 tugs and the pilotage operations come under the Port Authority.

5.2 Mongla Port

5,2,1 It is situated 65 nautical miles inland which can be approached from the Bay of Bengal through Pussur River. Approximately four hundred ocean going vessels visit this port annually. Ships' berths consist of 10 anchorage areas and 6 jetties. The ships calling at Mongla are mostly container ships, general cargo vessels and bulk carriers. There are no tankers calling with oil cargoes. The port is connected with the hinterland through a network of rivers. Recently a road connecting to Mongla was established. It is also a busy inland port.

6 Reception facilities/disposal of ship generated wastes

6.1 The Chittagong dry-dock has a facility for receiving ship generated oily waste. Apart from this facility there are no fixed port reception facilities available in the country for the collection of oily waste

from vessels. This facility is provided by contractors enlisted with the port with varies sizes of vessels. However, some companies are authorised to collect oily wastes. It is believed that very little oil dumping takes place, as oily waste is regarded as a valuable resource in Bangladesh, where its uses include fuel in the numerous brick factories, rust protection for automobiles and impregnation of wooden materials. However, without legislation in place there is no obligation on the ports and oil terminals to provide reception facilities.

6.2 Reception facilities for the reception of waste from ships transporting Annex II of MARPOL 73/78 chemicals are also available.

6.3 The port Agents are licensed by the Port Authority to arrange contractors to collect from vessels that need to dispose of garbage, dunnage and damaged cargoes. Damaged cargoes (wet damaged grain etc.) were previously disposed of in a dumping site at sea, but this has now been discontinued. A sub-terrain land is currently being used as dumping site subjected to approval by health authorities, the Customs, the Police and other public sectors.

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B. INDIA

1 General shipping related country information

1.1 India has a coastline of around 5,560 km, with approximately 3,180 km of inland waterways navigable by large vessels. India is rich in natural resources such as coal, iron ore, manganese, bauxite, natural gas, petroleum and limestone.

1.2 India's export commodities are mainly textile goods, engineering goods, chemicals and leather manufactured items. Imported goods comprise crude oil and petroleum products, machinery, fertiliser and chemicals. India's EEZ has an area of 2.01 million km^2 and is rich in oil, gas and minerals.

1.3 India has some 40 sanctuaries and wildlife protected areas in coastal waters and in islands located near main shipping lanes, such as the Lakshadweep, Andaman and Nicobar Islands. These areas have mangroves, coral reefs and important nesting beaches for a variety of species. The Andaman and Nicobar Islands are near the shipping lanes approaching the Malacca Straits, whilst the Lakshadweep island lies across the Nine Degree channel. On average, 40 super tankers pass each day. Indian ports on the west and east coasts handle about 3,810 tankers carrying 84 million tonnes of oil annually.

1.4 India has run a 10-year programme to monitor pollution at 75 locations from the Gulf of Kutch to Bangladesh. Two research vessels monitor pollution at the sea surface and in the water column, and they have detected low levels of petroleum on the west coast near the major shipping lanes. In August, when currents run eastwards due to the monsoon, tar balls are visible along the western coast. On the east coast where there is less traffic, the pollution is substantially less. Observations indicate that pollution from petroleum hydrocarbons in Indian waters demonstrates a declining trend. However, the islands with coral reefs are more vulnerable to oil pollution from shipping than the mainland.

1.5 Land-based activities contribute to the pollution of the marine environment in India as is the case in other countries. Under the umbrella of UNEP, India and four other neighbouring countries have action plans in place to mitigate degradation of the marine environment from land based activities.

2 Status of ratification of MARPOL 73/78

2.1 India has acceded to Annexes I and II of MARPOL 73/78. However it has not acceded to the optional MARPOL 73/78 Annexes III – VI.

3 Maritime activities including commercial shipping and fisheries

3.1 The Indian flag register currently totals 422 ships comprising approximately 7 million grt. About 100 of these ships are dry bulk and cargo carriers, with 92 oil tankers, 11 chemical tankers, 12 container ships and the remainder being passenger/cargo ships. Some tankers are constructed as segregated ballast tankers (SBT) or modified to operate in the clean ballast tanker (CBT) mode. Others are dedicated to petroleum product trading. Some 20 oil tankers of 25,000 to 40,000 dwt are engaged in coastal trade. Approximately 30% of the country's imports and exports are carried in Indian registered ships, whilst the remainder is carried by foreign flag vessels. Therefore, incentives exist to expand the Indian fleet trading internationally.

3.2 The 120 Indian fishing ports are used by more than 100 commercial fishing vessels of 20 metres length or more. Such vessels are registered and licensed for catches under the auspices of the ports/States that maintain the registers under the Mercantile Maritime Department. Some foreign fishing vessels that are leased to Indian companies unload the catches in Indian ports. Smaller vessels of 7 to 10 metres with sails and outboard motors are not registered. There are hundreds of thousands of smaller fishing boats operating in the coastal areas.

4 Administrative aspects

4.1 The governmental executive branches are located in the capital, New Delhi, with administrative divisions in the Republic's 25 states. The Secretary of the Ministry of Surface Transport of the Government of India has been delegated the power by the Ministry of Environment and The Mercantile Marine Department to enact rules and regulations pertaining to the prevention of marine pollution from shipping. The Ministry of Environment directs efforts in enforcing the Environment (Protection) Act, 1986, dealing with land-based pollution of coastal and oceanic zones. The enforcing and policing agency for the prevention of land-based pollution is the Central Pollution Control Board (CPCB) operating under the Central Government of India, and it is represented in all states and union territories. The fishery sectors are administered by the Ministry of Fisheries and Agriculture, which has delegated vessels' registration, licensing etc. to the port authorities in the individual states.

4.2 The administration of the Ministry of Surface Transport includes a Shipping and a Port Wing. The Marine Administration, Directorate General of Shipping operating from Mumbai, falls under the Shipping Wing. The Indian Ports Association, located in New Delhi, functions under regulatory controls by the Port Wing, and its functioning body comprises the Chairmen of all the major ports. The Indian Ports Association further delegates authority to the Chairmen of the Port Authorities in the individual states. These Chairmen, responsible for the ports' administration and pollution prevention from visiting ships, are controlled by a Board of Trustees for each port. The Chairman of each Port Trust is thus responsible for ensuring availability of port reception facilities for ship generated wastes and the operation of these.

4.3 The Directorate General of Shipping, Mumbai, and its Mercantile Department maintain the Indian Ship's Register, and issue the certifications required under the Merchant Shipping Act, SOLAS, MARPOL and other IMO conventions and ILO conventions. The Directorate has 57 surveyors with engineering and master mariner background, who are stationed in Indian ports to carry out ship inspections. India wants to ensure that visiting ships are operated in accordance with the standards as specified in the region's Memorandum of Understanding (MOU) for Port State Control, to which India is a party.

4.4 The Coast Guard Headquarters, which is located in New Delhi, is duty bound to preserve and protect the marine environment of India and prevent and control marine pollution. The legislation that supports the Coast Guard activities is the Merchant Shipping Act, Environmental (Prevention) Act, 1986, and the National Oil Spill Disaster Contingency Plan, 1996 as amended (a year 2000 update is in progress).

4.5 The Coast Guard dispatches appropriate representation to attend IMO meetings and prepare legislative approaches to embrace IMO rules and regulation into national law. Important marine pollution issues e.g. contingency requiring action, are prepared by the Coast Guard and channelled via the Ministry of Defence to the Ministry of Environment, who initiates appropriate steps on any implementation procedures.

5 Ports

5.1 General

5.1.1 India has 146 harbours, 31 of which are commercial ports visited by cargo vessels. The 12 major ports in India are Kandla, Mumbai, Jawaharlal Nehru, Mormugao, New Mangalore, and Cochin on the west coast, and Tuticorin, Madras (Chennai), Vishakapatnam, Paradwip, Calcutta and Haldia on the east coast. A programme is in place for making additions or expanding ports. Each port trust is in overall charge of its own operation under the Major Port Trust Act, 1963, and the Indian Port Act of 1908. The port facilities are built under the auspices of the respective Port Trust on government owned land, and are leased out to private sectors for periods of up to 30 years.

5.1.2 India has corporations that own three oil companies namely, Indian Oil Company (IOC), Bharath Petroleum (BP) and Hindustan Petroleum (HP). These oil companies operate a total of seven oil refineries, two of which are located in the Mumbai area. Petroleum products are partly distributed by a system of pipelines, which will be expanded in the future to enable transfer of products between

refineries. The potential gross yearly refining capacity is 140 million tonnes of crude oil, 100 million tonnes of which could be imported by tankers to terminals/berths located near the oil refineries. 50% of the country's consumption of petroleum products are imported. In view of the planned increased capacity of the refineries and the expansion of the inland pipeline distribution systems, it is estimated that in 5 years' time only crude oil will need to be imported. When that situation does occur, it is anticipated that the India will become an exporter of petroleum products.

5.1.3 Liquefied petroleum gas (LPG) is currently being handled in ports and liquefied natural gas (LNG) will be so from 2003.

5.1.4 In India there are six ports which have modern container terminals. Some ports and terminals have a combination of multipurpose berths for liquids, containers and dry bulk cargoes such as coal, grain, iron ore, fertilisers and other cargoes. Kandla and Visakhapatnam are deep draught ports. Tuticorin is being dredged to also facilitate calls by large vessels in the future.

5.1.5 The building of a new port is planned some 24 km north of the Port of Chennai (Madras) at Ennore. This port will be dedicated to supplying coal to the thermal power station. Once the new port has been built, the Port of Chennai will be dedicated to meet any expansions required to accommodate anticipated increased traffic for containers, crude oil and petroleum products.

5.1.6 Statistics provided by the Indian Ports Association regarding the traffic handled at major ports (number of calls) are given below.

INDIA - VESSEL TRAFFIC : CATEGORY-WISE
1998-99 AND 1997-98

(IN NOs)

PORT	PERIOD	DRY BULK	LIQUID BULK	BREAK BULK	CONTAINER	TOTAL	OTHERS	GRAND TOTAL
CALCUTTA	1998-99	17	438	261	310	1,026	23	1,048**
	1997-98	13	393	245	341	992	18	1,010
HALDIA	1998-99	347	598	108	268	1,291	-	1,291***
	1997-98	370	597	74	234	1,275	-	1,275
PARADIP	1998-99	387	286	4	1	678	17	695
	1997-98	416	225	2	-	643	33	676
VISAKHAPATNAM	1998-99	600	582	190	93	1,146	49	1,514
	1997-98	607	618	213	68	1,506	65	1,771
CHENNAI	1998-99	534	481	260	422	1,697	64	1,761
	1997-98	542	515	261	446	1,764	73	1,837
TUTICORIN	1998-99	302	136	369	266	1,073	-	1,073
	1997-98	313	146	287	238	984	-	984
COCHIN	1998-99	53	398	141	377	969	144	1,113
	1997-98	53	383	121	312	869	134	1,003
NEW MANGALORE	1998-99	152	422	150	-	724	14	738
	1997-98	184	388	157	-	729	12	741
MORMUGAO	1998-99	366	195	18	29	608	18	626
	1997-98	262	155	35	31	483	-	483
MUMBAI	1998-99	100	805	621	696	2,222	-	2,222
	1997-98	112	804	681	812	2,409	12	2,421
JNPT	1998-99	72	160	5	656	893	81	974
	1997-98	53	86	1	422	562	72	634
KANDLA	1998-99	209	1,045	341	113	1,708	-	1,708
	1997-98	221	1,001	330	133	1,685	-	1,685
ALL PORTS	1998-99	3,035	5,506	3,233	2,485	14,259	392 *	14,651
	1997-98	3,250	5,351	3,035	2,390	14,026	437 *	14,463

NOTE: * LASH/PASSENGER/TUGS/NON-CARGO VESSELS. ** One vessel worked both as Dry Bulk and Break-Bulk.

*** 25 Dry Bulk vessels worked both as Mechanical and Conventional and 5 vessels worked both as Dry Bulk and Break Bulk

5.2 Jawaharlal Nehru Port (JNF)

5.2.1 The Jawaharlal Nehru Port (JNP) was commissioned in 1989 and is the newest and most modern port in India. It was constructed with the dual view of serving as a Hub Port for its region and of solving the congestion problem in Mumbai Port. The port handles 75% of all container traffic to and from India and accommodates arrangements for smaller feeder vessels to collect or discharge containers in transit to or from other ports in the region. The distance between the port and the pilot station is 10 nautical miles and this port has a designed channel depth of 11 metres below chart datum. Vessels with a laden draught up to 12 metres can access the port, provided they utilize the tidal situation which accounts for a mean sea level of 2.5 metres above the chart datum. Arriving and departing vessels to/from the JNP and Mumbai port are serviced by a modern Vessel Traffic Management System (VTMS). The port handles a yearly traffic in excess of 11 million tonnes composed of containers, dry bulk and liquid cargoes. The multipurpose berths handle imports/exports of iron ore products, food-grain and liquid cargoes. One self-propelled pollution control vessel with a carrying capacity of 250 m^3 is being used as a reception facility for oily wastes. The port has recently put in place an Emergency Action Plan prepared by the Indian Register of Shipping. The JNP Trust has embarked on a five-year plan for the development of an integrated chemical terminal for handling all grades of chemicals including refrigerated liquefied natural gases (LNG) and pressurised liquefied petroleum gases (LPG) at an estimated cost of USD 550 million. The terminal is expected to handle a throughput of 8 million tonnes of all grades of chemicals. The project is contracted for development and operation on a Build, Operate and Transfer basis (BOT). The builders are contract bound to set up a reception facility and treatment plant for chemical wastes.

5.3 Port of Chennai

5.3.1 The Port of Chennai (Madras) has an inner and outer harbour with a dry-dock capable of facilitating maintenance of the port and other service crafts. Floating dry docks for ship repair facilities handle ships up to 40,000 dwt. Adjacent to the port is a dedicated fishing harbour, while an oil refinery is located some eight km north of the port. The length of the entrance channel is about five nautical miles with a depth limitation of 18.6 metres below chart datum. The tidal range varies between 0.4 to 1.3 metres. Maximum permissible draught at the quays varies between 8 to 17 metres at the crude oil terminal that can accommodate tankers up to 130,000 dwt (Panamax/Suezmax). Currently nine million tonnes of crude oil is imported annually for processing at the refinery, which is expected to increase to 12 million tonnes. Further, dedicated international standard terminals handle containers, fertilisers, food-grain, iron ore, coal, raw granite blocks, crude oil and petroleum products. Chemicals are imported in containers.

5.3.2 The Port of Chennai is equipped with reception facilities and oil spill combat equipment including a multipurpose harbour vessel, an oil skimmer, inflatable booms, an oily water separator, oil collection tanks, oil absorbing pads, chemical dispersants with power sprayer, one tank farm of 4400 m^3 and one mobile tanker-trailer of 10 m^3 capacity for receiving waste oil from ships. The Chennai Port Trust recently introduced the Gazette notification of the Ministry of Environment and Forest of 1989, which provides that waste from paints is categorised as hazardous waste, and prohibits chipping and painting work at ships' hulls whilst berthed in port.

6 Reception facilities/disposal of ship generated wastes

6.1 Port reception facilities for Annex I wastes were made available to ships some five to ten years ago in 11 major ports. Tankers may discharge ballast water in ports provided that the oil content conforms to the standards set in MARPOL 73/78 (15 ppm). Oily water treatment plants may discharge into the marine environment water separated out from oily water where the oil content is 10–15 ppm.

6.2 MARPOL Annex II chemical cargoes are landed in five ports by chemical tankers of approximately 20,000 dwt. Category "A" substances are imported in containers, which greatly reduces the need for reception facilities. Thus the need for reception facilities for Annex II cargoes carried in bulk is considered to be rather limited. A large quantity of chemicals is imported in containers and is landed at the container terminals. However, this may change in

the future with the port expansion programmes that opt for terminals designed for import/export of chemical cargoes in bulk.

6.3 Arrangements for garbage collection from ships exist and are operational in all major ports.

6.4 According to information provided to the consultant, the port reception facilities for oily wastes/dirty ballast/wash water are either under-utilised, or not used at all by visiting ships. Some facilities are thus made redundant, or are being used for other purposes in order to make use of the investments made. The Port Trusts have had consultations and discussions with the industrial sectors involved in order to encourage the use of the facilities; however, the situation remains unchanged. Further consultations involving a wider scope of high level governmental and broad industrial sectors for increasing the use of the facilities would thus be required.

6.5 Even the Chennai Port facilities, which include a pipeline from the crude oil terminal to the shore oily waste and de-ballasting tank, are not used very much, although the facilities appear to be adequate. The de-ballasting tank has a pipeline connection to the nearby refinery that reprocesses the oily wastes. A mobile tanker trailer can come alongside all types of ships that require reception facilities for oily wastes, but requests for its availability are limited. The tanker trailer empties all categories of oily bilge and tank wash water, slops and sludges collected from ships into the shore de-ballasting tank. Decanted water is drained from the tank and released into the marine environment after passing an oily water separator to ensure that its oil contents are less than 15 ppm. Garbage and oily wastes are collected free of charge from the quay, but a fee needs to be paid if garbage is collected using the garbage launch, e.g. from vessels at anchor. The costs of operating the reception facilities are included in the port fee structure. Passenger ships arriving appear to have onboard incinerators, which reduce the demand for garbage collection. The port also has an operational waste incinerator, whilst two others are redundant. The fact that final disposal of the oily waste and cargo slops is made directly to the oil refinery, without the involvement of any outside contracting partners, has many beneficial aspects. One is that customs formalities are commercially obviated, on the grounds that cargo slops otherwise might be regarded as cargo.

6.6 The Jawaharlal Nehru Port's 250 m^3 slop reception barge has not been used for five years, although its services would not incur any charge. However, the Customs of India operating in the port maintain that customs duty is due on cargo wastes when landed from ships. Another problem that needs to be addressed is that there is no system in place for the re-processing or final safe disposal of hazardous wastes collected from ships. A contractor company operates the garbage collection services and this runs smoothly at no direct costs to the ships. The Bombay Port Trust has contracted a few companies to attend to the collection of ship generated oily wastes, but the final disposition/re-use of the quantities collected is not monitored.

6.7 Shipping companies that have requested the oily waste collection services in ports have sometimes found that facilities were not available, or that the procedures involved were cumbersome. As a consequence there seems to be some reluctance to request port reception facilities. Most of the tankers which have unloaded crude oil and petroleum products return to the Middle East Gulf for reloading. Although stipulations in charter party require vessels to arrive in loading ports with clean ballast only and slop free, in most cases tankers call at Fujaira for bunkering, or wait for cargo readiness for shipment. These delays provide the opportunity to rid vessels of slops, dirty ballast or tank wash water to self propelled reception barges, that are available at a low cost.

C. THE REPUBLIC OF MALDIVES

1 General shipping related country information

1.1 The Republic of Maldives consists of 1,990 islands grouped into 26 natural atolls which stretch from 7 degrees north to almost 1 degree south of the equator. The chain of coral atolls, 80 – 20 km wide and 860 km long, lies on the Laccadive-Chagos submarine ridge in the Indian Ocean. The islands' coastline totals 644 km with the atolls creating an archipelago of strategic location astride and along major sea lanes in the Indian Ocean. The terrain is flat with 80% of the area one metre or less above the sea level embraced with white sandy beaches. The total area of the Exclusive Economic Zone (EEZ) is approximately 859,000 km^2.

1.2 The Maldives contains extensive and largely intact undisturbed reefs, and comprises one of the most complex reef systems in the world. More than 15 sites have been designated by the Government as protected areas.

1.3 Environmental key issues are climate change, depletion of freshwater aquifers that threaten water supplies, management of solid waste and sewage, pollution control and managing hazardous wastes. The low altitude of these islands makes them very sensitive to sea level rise.

1.4 Tourism, Maldives' largest industry, accounts for about 18% of GDP and 60% of the islands' foreign exchange receipts. Close to 0.5 million tourists visit Maldives yearly and this is increasing at a rate of 8% per year. Fishing and agriculture employ 25% of the labour force, services 21%, manufacturing and construction 21%, restaurant and hotels 16%, transport communication and others 17%. Other industries include fish processing, shipping, boat building, coconut processing, garments, woven mats, rope, handicraft coral and sand mining. Import commodities are consumer goods, intermediate and capital goods and petroleum products. Exported products are fish and clothing.

1.5 Commercial ships - including loaded oil tankers - pass the very fragile environments between the islands following international traffic patterns, through the *Eight Degrees*, the *One and a Half Degree*, the *Kaashidhoo* and the *Equatorial Channels*. Absence of sufficient aids to navigation for ships passing close to the islands causes concern.

2 Status of ratification of MARPOL 73/78

2.1 The Maldives is not a party to MARPOL 73/78. However, it is a member of the Oil Pollution Convention of 1954.

2.2 During the Consultants' visit, they underlined to the Ministry of Tourism and the Ministry of Fisheries the importance of the Maldives of acceding to MARPOL 73/78, and the benefit of this to the tourist and fishing industries.

3 Maritime activities including commercial shipping and fisheries

3.1 The Maldives merchant marine consists of approximately 60 vessels totalling less than 100,000 grt. Most of these are dry cargo, container ships and ferries. The nation's fishing vessels are registered with the Ministry of Transport. All ratings serving on the ships are Maldivians. The register embraces two oil tankers of less than 3,000 grt. The Maldives National Shipping Ltd is the main operator on the islands. The State Trading Organisation (STO) is a government commercial organisation that imports the islands' needs for petroleum products.

3.2 The Ministry of Fisheries and Agriculture has licensed some 1,500 fishing vessels called "dhonis" of less than 44 feet in length, 10 mother vessels and 17 fish collector vessels between 900-1,000 grt. The new fishing vessels are up to 75 feet long. The dhonis are allowed to fish within 75 nautical miles of the islands. Foreign ocean-

the future with the port expansion programmes that opt for terminals designed for import/export of chemical cargoes in bulk.

6.3 Arrangements for garbage collection from ships exist and are operational in all major ports.

6.4 According to information provided to the consultant, the port reception facilities for oily wastes/dirty ballast/wash water are either under-utilised, or not used at all by visiting ships. Some facilities are thus made redundant, or are being used for other purposes in order to make use of the investments made. The Port Trusts have had consultations and discussions with the industrial sectors involved in order to encourage the use of the facilities; however, the situation remains unchanged. Further consultations involving a wider scope of high level governmental and broad industrial sectors for increasing the use of the facilities would thus be required.

6.5 Even the Chennai Port facilities, which include a pipeline from the crude oil terminal to the shore oily waste and de-ballasting tank, are not used very much, although the facilities appear to be adequate. The de-ballasting tank has a pipeline connection to the nearby refinery that reprocesses the oily wastes. A mobile tanker trailer can come alongside all types of ships that require reception facilities for oily wastes, but requests for its availability are limited. The tanker trailer empties all categories of oily bilge and tank wash water, slops and sludges collected from ships into the shore de-ballasting tank. Decanted water is drained from the tank and released into the marine environment after passing an oily water separator to ensure that its oil contents are less than 15 ppm. Garbage and oily wastes are collected free of charge from the quay, but a fee needs to be paid if garbage is collected using the garbage launch, e.g. from vessels at anchor. The costs of operating the reception facilities are included in the port fee structure. Passenger ships arriving appear to have onboard incinerators, which reduce the demand for garbage collection. The port also has an operational waste incinerator, whilst two others are redundant. The fact that final disposal of the oily waste and cargo slops is made directly to the oil refinery, without the involvement of any outside contracting partners, has many beneficial aspects. One is that customs formalities are commercially obviated, on the grounds that cargo slops otherwise might be regarded as cargo.

6.6 The Jawaharlal Nehru Port's 250 m^3 slop reception barge has not been used for five years, although its services would not incur any charge. However, the Customs of India operating in the port maintain that customs duty is due on cargo wastes when landed from ships. Another problem that needs to be addressed is that there is no system in place for the re-processing or final safe disposal of hazardous wastes collected from ships. A contractor company operates the garbage collection services and this runs smoothly at no direct costs to the ships. The Bombay Port Trust has contracted a few companies to attend to the collection of ship generated oily wastes, but the final disposition/re-use of the quantities collected is not monitored.

6.7 Shipping companies that have requested the oily waste collection services in ports have sometimes found that facilities were not available, or that the procedures involved were cumbersome. As a consequence there seems to be some reluctance to request port reception facilities. Most of the tankers which have unloaded crude oil and petroleum products return to the Middle East Gulf for reloading. Although stipulations in charter party require vessels to arrive in loading ports with clean ballast only and slop free, in most cases tankers call at Fujaira for bunkering, or wait for cargo readiness for shipment. These delays provide the opportunity to rid vessels of slops, dirty ballast or tank wash water to self propelled reception barges, that are available at a low cost.

going fishing vessels are licensed to fish in the EEZ and pay royalties, but fishing has to take place outside the 75 nautical mile limit. The total annual catch is some 120 tonnes. The fishing industry employs 12,000 fishermen, and the yearly export of canned, frozen and dried tuna yields some USD 50 million. The Maldives Industrial Fisheries Company Ltd. (MIFCO) works in close co-operation with the Ministry of Fishing and Agriculture. It is committed to fishing using environmental friendly methods, such as pole and line fishing, which prevent over fishing and damage to coral reefs.

3.3 Foreign fishing vessels are fitted with transponders so that the Coast Guard can monitor their whereabouts at any time. The Maldives conducts an ocean research programme to monitor the condition of the reefs, the movements of fish and pearl culture.

4 Administrative aspects

4.1 The Maldives environmental laws protect the islands and marine environment from land-based pollution. The first National Environment Action Plan (NEAP), formulated in 1990, represents a combined approach to managing and solving environmental problems and establishing the mechanisms for future sound management of the environment.

4.2 The Ministry of Home Affairs Housing and Environment provides for laws and regulations to protect fragile environments and to preserve the resorts. The Ministry of Transport is concerned with IMO matters and ensures that the national commercial fleet is operated in accordance with the IMO standards. The country has a Maritime Training Centre, which operates under the Maldives National College of Higher Education. The inter islands transport sector consists mainly of motor driven dhonis. All boat drivers need licenses for the boats' seaworthiness and a certificate for the safety of navigation which must be renewed each year. This entails inspection of the boats.

4.3 The Ministry of Transport and Civil Aviation plans to have a programme for the Maldives to accede to MARPOL 73/78 in the near future. However, the requirement for the establishment of adequate reception facilities and financial aspects in that respect is, according to local information, causing concern.

4.4 The Coast Guard collaborates with the Ministries to monitor pollution of the marine environment. Patrol vessels are strategically stationed to overlook the fishing activities, and have the responsibility of attending to emergencies such as oil spills.

5 Ports

5.1 Malé has the main commercial port serving the islands and has a slip way and repair facilities for local small vessels. Gan is a small harbour in the southern part of the archipelago. Otherwise the fishermen reside and keep their boats in over 200 separate islands spread throughout 19 different atolls.

5.2 Malé can accommodate ships with draughts up to 9.5 metres and vessels up to 15,000 dwt. All types of cargo can be handled at berth except dry bulk cargoes, liquid petroleum gases and liquid natural gases. Container ships thus dominate the traffic. The anchorage can accept vessels with a draught of up to 25 metres. An anchorage is available for tankers carrying clean products that are lightered to smaller tankers of 200-2,000 grt. These tankers operate with segregated ballast tanks (SBT), use oily water separators and follow the MARPOL 73/78 standard permissible discharges of oil. The island of Funadhoo has a tank farm which is used to store kerosene, diesel, gas oil and jet fuel. Tankers anchor here and pump their cargoes ashore by means of floating hoses.

5.3 Some 600 vessels visit Malé each year. The greatest number of visits are made by container ships with 415 visits, followed by 105 visits by foreign flag fish/reefer vessels, 60 visits by oil tankers and 20 visits by passenger ships. The cargo ships come mainly from India, Sri Lanka and Singapore.

6 Reception facilities/disposal of ship generated waste

6.1 The Maldives does not import heavy oils. Petroleum products such as fuels are mostly imported in drums for internal distributions to the islands. Malé Port Authority consequently has no slop reception facility.

6.2. A system for the collection of garbage from visiting ships is in place. Illegal dumping of hazardous wastes is subjected to heavy fines. The local shipping agents cater for the needs of ships and arrange for the collection of food, maintenance work, and cargo-associated wastes, by using dhonis for ships at the anchorage, or trucks for the ships at berth. Ships are charged less than USD 80 for each collection and disposal at anchorage.

6.3 The Maldives strictly forbids the dumping or discharge of refuse, bunker oil, sewage and noxious substances in its waters. Dirty ballast and slops may not be discharged to sea or land.

6.4 The second National Environment Action Plan, which identifies the environmental priorities and policy directions for the next 5 years, provides *inter alia* that facilities should be established to collect oily wastes, chemical wastes, and garbage at ports, fishing harbours and marinas. An island near Malé is used as a garbage dumpsite and there are plans that it will be developed into an industrial zone. Limited land makes the option of landfill disposal questionable in the long term. In the future, sophisticated waste incinerators could be acquired that could provide for the safe disposal of flammable liquid wastes as well as garbage, and could yield thermal energy for power generation. Incineration, while reducing the volume of wastes, is currently seen prohibitive in terms of costs and requires the disposal of ash. The islands collect some waste oils in drums which are shipped to Singapore for recycling. Vessels carrying these drums travel to this port to meet regular dry docking and up keeping requirements.

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D. UNION OF MYANMAR

1 General shipping related country information

1.1 Myanmar has a coastline of 2,833 km and borders the Andaman Sea and the Bay of Bengal. The country has 12,800 km of waterways navigable by large commercial vessels.

1.2 The merchant marine totals some 40 ships aggregating approximately 0.5 million grt. Export goods are mainly beans, teak, rice, rubber and hardwood. Import commodities include machinery, transport equipment, construction material, food products, crude oil and petroleum products.

1.3. The northern coastline of Myanmar is low-lying and the influence of the sea is felt for a long distance inland. It is characterised by a deltaic network, with discharge of sediment-laden water which forms offshore sand and mud bars. Extensive stands of mangroves are found in this area and on the offshore islands. The main reef areas lie off the southern coast of Myanmar on the Mergui Archipelago consisting of some 800 islands.

1.4 There are no industries close to the river banks and the water is considered to be almost unpolluted although laden with sediment. Garbage and debris are hardly visible on the river. The authorities consider that there is no oil or garbage pollution from visiting ships. A contributory factor to the favourable condition of the water quality is that the rivers are deep with a huge water flow due to the tidal conditions.

2 Status of ratification of MARPOL73/78

2.1 Myanmar has ratified MARPOL 73/78 Annexes I & II.

2.2 The IMO Consultants were informed that sufficient capacity has not been available to embrace MARPOL 73/78 and its requirements into national law and regulations.

3 Maritime activities including commercial shipping and fisheries

3.1 Commercial shipping in 1999 embraced approximately 40 ships totalling approximately 500,000 grt. Of these two are oil tankers and 26 dry bulk, general cargo and container ships. Myanmar operates an open ship's register.

3.2 The average size of the ocean-going fishing vessels is 500 grt. The smaller fishing vessels operating close to shore have diesel or petrol driven engines. No figures regarding the size of the fishing fleet were obtained.

4 Administrative aspects

4.1 The Ministry of Transport regulates shipping aspects, port operations and inland water transport. The authoritative body for the registration of fishing vessels and fishing licensing is the Ministry of Livestock and Fisheries. The governing legislation for shipping is the Myanmar Merchant Shipping Act. Moreover, ships have to operate in accordance with the international safety and marine pollution conventions. Furthermore, the ports' operation is delegated to the Port Authorities.

4.2 Any deficiencies, offences or non conformity of a vessel's compliance with international and national rules and regulations are reported by port authorities to the DMA, which is the authoritative body to take appropriate action.

5 Ports

5.1 The country's two main ports are Yangon and Thilawa Port. The latter port was established a few years ago, 16 km down stream from Yangon, when further expansion of the Yangon port became restricted. Both ports are accessible to vessels of 15,000 dwt. with a draught restriction of nine metres. The average tidal range is about 5.9 metres at spring tide and 2.6 metres at neap tide. The velocity of the current is four to six knots at spring tide.

5.2 Yangon port handles all imports and more than 90% of the country's exports. It has thirteen international berths and more than forty jetties, mainly floating pontoon types to cater for domestic traffic located along six km of the river front. These handle coal, rice and mostly domestic traffic. Most of the berths are old and obsolete, requiring upgrading to cope with the increase in cargo output. During the last five years five container and general cargo wharves have been built. Yangon has two dockyards located on opposite sides of the river. Regular maintenance dredging is carried out in front of wharves and jetties and at the entrance channel between an inner and outer bar, by means of grab dredgers and split type hopper barges.

5.3 To cater for possible future developments at Thilawa, 17 plots of water front area each measuring 200 metres have been reserved for potential local and foreign investors. This port will consist of container, liquid bulk and solid bulk wharves, timber handling berths and general cargo berths.

5.4 Eight ports known as out-ports, namely Sittwe, Kyaukpytu, Thandwe, Pathein, Mawlamyine, Dawei, Myeik and Kawthoung were developed to cater for the coastal and inland-waterway traffic. All ports accommodate fishing vessels.

5 5 The general ship traffic pattern is dominated by the large number of feeder vessels operating between Singapore and Yangon, as the main port for the importation of goods. The table given below indicates the traffic pattern as from April 1999 to March 2000.

Traffic pattern - All Ports (April 1999 – Mars 2000)

Type of vessel	Yangon	Out Ports	All Ports
Oil tankers	244	132	376
Chemical tankers	-	-	-
General cargo	587	477	1,064
Container vessels	268	-	268
Bulk carriers	28	-	28
Passenger vessels	137	133	270
Fishing vessels	74	229	303
Total	**1,338**	**971**	**2,309**

6 Reception facilities/disposal of ship generated wastes

6.1 There are no reception facilities available for the reception of oily wastes from ships in Yangon. According to local information sources, some collectors of oily waste exist in Yangon, but there is no procedure or authorisation system in place for this.

6.2 As chemical cargoes land in containers, there is at present no need for reception facilities and treatment facilities for waste from MARPOL 73/78 Annex II cargoes. On the occasions when chemicals have arrived in bulk, such cargoes have been transferred to smaller feeder vessels for inland distribution at the explosive anchorage.

6.3 Notwithstanding that Myanmar has not acceded to MARPOL 73/78 Annex V (garbage), Yangon has in place a system for garbage collection managed by the Yangon City Development Committee (Municipality).

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E. THE ISLAMIC REPUBLIC OF PAKISTAN

1 General shipping related country information

1.1 Pakistan has a coastline of 1,046 km bordering the Arabian Sea. Numerous deltas and estuaries with extensive inter tidal mudflats and their associated wetlands occur along Pakistan's coastline. The Indus delta has an estimated 3,000 km^2 of delta marshes with vast areas of mangroves. Rocky shores are also a major feature in Pakistan along with sandy beaches.

1.2 The main industries embrace textiles, food processing, beverages, construction materials, clothing, paper products, tanneries, leather goods and shrimp. The main export commodities are cotton, wheat, rice, molasses, fruits, vegetables, milk and beef. Import commodities include crude oil, petroleum products, machinery, transportation equipment, vegetable oils, animal fats and chemicals.

1.3 The Indus and other rivers are monitored for organic/chemical pollution, industrial discharges, thermal pollution and oil spills. High oxygen demands, high water and sediment toxicity and high phenolic concentration have all contributed to loss of biodiversity, decaying mangroves and other ecological damage. These pollutants reach the coastal waters along with the tidal currents forcing the marine life to migrate offshore.

2 Status of ratification of MARPOL 73/78

2.1 Pakistan acceded to MARPOL 73/78 Annexes I and II and accepted Annexes III to V of the Convention. It is placing emphasis on the obligation to ensure availability of adequate reception facilities as required by the Convention.

3 Maritime activities including commercial Shipping and fisheries

3.1 The current national merchant marine consists of some 14 ships aggregating approximately 400,000 grt. The composition of the fleet is mainly dry bulk, general cargo ships and one oil tanker. These vessels operate in strict compliance with the IMO standards.

3.2 Four oil companies that handle the import/export of crude oil and petroleum products, including the inland distribution, operate in Pakistan. These are the Pakistan State Oil, and joint ventures of CALTEX, SHELL and PARCO (Pak.Ara.Co.). The state operates the four oil refineries in the country.

3.3 The licensing of fishing boats falls under the Ministry of Fishing. There are between 8,000 to 9,000 fishing boats in operation with a length of less than 24 metres, and five larger fishing vessels chartered in from Taiwan, S. Korea and China. Some 2,000 fishing boats are normally in the Fish Harbour in Karachi.

4 Administrative aspects

4.1 The Director General of Ports and Shipping reporting to the Ministry of Communication is responsible for the operations of the ports and shipping. Moreover, he is responsible for delegating the training of personnel to the Pakistan Marine Academy and the Seaman Training Centre. The Ministry deals with all IMO issues, and has ensured that the applicable IMO Conventions' standards are incorporated into national law. The Ministry of Foreign Affairs communicates with the IMO. However, the authorities in Karachi nominate the key personnel that represent the nation at IMO meetings. The Technical Section of the Director General of Ports and Shipping deals with maritime safety, protection of the marine environment, certification, surveys, statutory rules, port state control, shipping casualties and investigations. The Mercantile Marine Department registers the national fleet, and employs surveyors for statutory survey and Port State Control. A Directorate under the Director General of Ports and Shipping deals with ports, marine transportation, development programmes and the recruitment of seamen. The country provides qualified seafarers for employment in international commercial fleets.

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4.2 The Pakistan Environment Protection Act 1997 deals with air and water pollution. The Ministry of Environment has the overall authority to legislate through this Act. All national decision-making processes are performed at governmental levels in Islamabad. The drafting of legislation affecting shipping and the ports is done under the auspices of Director General of Ports and Shipping. Three applicable laws should be noted:

i) The Merchant Shipping Act, 1923;
ii) The Pakistan Merchant Shipping Law, last amended in 1998 to include prevention of water pollution from ships; and
iii) Laws covering port operations.

4.3 The Chairman of the Marine Pollution Control Board implements and monitors rules and regulations for marine pollution control. The Board meets twice a year. The Environment Protection Agency operates under the Ministry of Environment to monitor pollution control from shore-based activities and sets emission standards for the industries. The Maritime Security Agency (MSA), with its headquarter in Karachi, operates under the Ministry of Defence and is the responsible pollution control authority outside harbours and within the EEZ. It plays a coast guard role operating units of large sea-going surface crafts and helicopters. The MSA deals with the combating of accidental oil spills outside port limits.

5 Ports

5.1 Karachi Port

5.1.1 The Karachi Port Trust Act dates back to 1908 and the port covers an area of 62 km^2. The Karachi Port Trust (KPT) is responsible for the operation of the port, which consists of 29 dry cargo/container berths and 3 dedicated oil piers capable of accommodating tankers of up to 75,000 dwt. Chemicals in bulk are also landed at one of the oil piers. In 1995 some 1,900 ships called at the Karachi port, after which traffic declined slightly with 1,625 calls including 446 tankers in 1999. Eleven million tonnes of liquid cargoes including petroleum products are imported yearly. One dry cargo berth also handles tankers dedicated to the importation of lubricants and palm oils, and the exportation of molasses in bulk.

5.1.2 All ships calling at Karachi are inspected by the Marine Pollution Control Department (MPCD) of the KPT in line with MARPOL 73/78. Through this inspection it is ensured that ships do not cause any pollution of the harbour. Records related to the production and disposal of oil sludge/plastics during the past six months are checked to verify if ships have illegally discharged such waste at sea. The ships' bilges and overboard valves need to be kept chained and locked whilst in the port. The performance of oily water separators is checked. Since 1997, 82 ships have been penalised for illegal discharges. According to local information, floating patches of visible oils, that were previously commonly sighted, have almost vanished.

5.2 Port Qasim

5.2.1 Port Muhammad Bin Qasim (Port Qasim) is operated by the Port Qasim Authority under the Port Act of 1973. Situated some 50 km west from the city of Karachi, it is a modern integrated seaport catering for warehousing, transhipment, and transit trade to and from neighbouring countries in the region. It caters for the import of finished or semi-finished products in bulk and export thereof to individual markets after repackaging, or processing. A 45 km long navigable channel with a minimum depth of 11 metres can accommodate ships up to 75,000 dwt. The difference between high and low water can be as much as 3 metres causing strong tidal currents of 5 - 7 knots. Seven multipurpose berths with supporting infrastructure and back up facilities have been operational since the beginning of 1983. A bulk oil terminal started operation in 1995 to handle imports of furnace oil. Since 1997 a two berth container terminal capable of handling gear-less container vessels has been available. A jetty for the handling and storage of chemicals and chemical products in bulk became operational in the same year. Dedicated separate terminals are operational for the handling of liquefied petroleum gases (LPG), grain, fertilisers, edible oils and

molasses. The total throughput of cargoes (imports/exports) was approximately 133 million tonnes in 1999. The port was visited by 482 ships, 115 of which were container vessels, 73 carried furnace oil, 60 chemical/LPG cargoes, 40 iron ore/coal and the remaining 194 used the multi-purpose terminals which are also used for the export of some 310,000 tonnes of crude oils. Statistics provided by the Gulf Agency affirm that 684 vessels, 272 of which were tankers, visited the port in 1999.

5.2.2 Adjacent to the port is 12,000 acres of land designated for port reliant industries with associated commercial capacities. The port therefore has immense potential for expansion and up scaling in terms of number of berths and draughts in its navigable channel.

5.2.3 The Port Qasim Authority has an Oil Spill Contingency Plan with an on the scene commander in place. Adjacent to the port is one of the country's large mangrove forests rich in fish and other fauna. The surrounding islands and creeks are looked upon as having great potential for tourism. The vast potential for tourism development and the conservation of the environment means that the safety of shipping and accident prevention are of the utmost importance.

6 Reception facilities/disposal of ship generated wastes

6.1 The Ports of Karachi and Qasim both have in place operational reception facilities for oily wastes and garbage, although these are not associated with "on site" facilities. Ships calling at the ports need facilities where they can discharge their oily wastes, plastic material and garbage. The facilities provided to ships inside the port are done through ten private contractors for oil collection and five for garbage collection which are licensed by the Conservators of the Port's Trust for that purpose. The contractors use tank wagons to collect oily waste and lorries to collect garbage from ships alongside berths. The port authorities do not allow oil collection barges to be used for this service. The activities of the contractors from the time of receiving the waste to its final disposal are monitored by the Marine Pollution Control Department.

6.2 A practice for due consideration is the Customs' rule that if the oily residues are being sold for reuse as fuel in brick manufacturing, or lubricants for small workshops industries, then a small amount of dues is payable by the contractors. If such oils find no commercial use, then dues are not charged by the Customs. The same would apply to garbage, such as wooden dunnage material. No fee is payable by the ships for the delivery of oily waste, but a small charge is made for the garbage collected.

6.3 Most chemical cargoes are landed in bulk by tankers in quantities of 10 - 15,000 tonnes. For MARPOL 73/78 compliance, an analysis of the need for reception facilities for Annex II MARPOL 73/78 chemicals and oily waste and tank wash water are needed in both ports. Arriving tankers that load crude oil and naphtha appear to come ballasted and in a segregated ballast mode of operation (SBT), which should obviate the need for disposing of dirty ballast. But smaller coastal tankers may need facilities to get rid of dirty ballast and tank wash water.

6.4 The Karachi Port Trust has earmarked a site for a shore reception facility, which is in the planning process.. There is an incinerator of 120 kg./hr. capacity fitted in the port to deal with garbage.

6.5 The Port Qasim Authority has in place a plan to build a shore reception facility and treatment plant, capable of accommodating the needs of the visiting tankers at the oil and chemical jetties. Land areas are earmarked for this purpose, and the facility with adequate tank capacity will form part of the oil spill combating system to deal with any oily water collected from cleaning activities.

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F. THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA

1 General shipping related country information

1.1 Sri Lanka is an island located in the Indian Ocean consisting of a coastline of 1,770 km. In the declaration of the Exclusive Economic Zone in 1976, the country has the sovereign right over 534,000 sqr. km. in the sea. The fishing fleet of the island consists of 30,000 different fishing crafts 20,000 of which are mechanised. The coastal and the marine environment of the island is being degraded due to both land based and sea-based pollution, especially sewage, urban waste, industrial waste and oil coming from both commercial ships and shipping crafts. The national solid waste management strategy has been approved by the Parliament and is being implemented.

1.2 The country has 430 km. of inland waterways that are navigable by shallow draught crafts. There are 62 km of crude oil and petroleum product pipelines. The waters surrounding Colombo are suffering from severe degradation, caused by sewage, oil and other industrial pollutants being released into the sea through the city's water canal systems, amongst other sources.

2 Status of ratification of MARPOL 73/78

2.1 Sri Lanka has acceded to MARPOL 73/78 Annexes I and II, and it has accepted Annexes III, IV and V of the Convention.

3 Maritime activities including commercial shipping and fisheries

3.1 The national commercial fleet consists of 52 vessels aggregating some 250,000 grt. These embrace 24 general cargo/container ships, 2 tankers, 13 fishing vessels/trawlers, 1 dredger, 3 tugs, 2 research vessels and 7 yachts. They operate under the Merchant Shipping Act, 1971, and comply with the IMO safety and marine pollution conventions. Sri Lanka is a member of Indian Ocean MOU on Port State Control.

3.2 There are some 1,500 artesanal fishing boats operating around the coast. The Ministry of Fisheries provides licenses to ocean-going, foreign flag fishing vessels to fish within the EEZ. Mother vessels collect the catches and transfer these to shore. There are 8 fishing harbours in Sri Lanka, and two more are under construction. The total catches per year are about 250,000 metric tonnes, 163,000 tonnes of which come from deep sea fishing, and the remainder from coastal activities. There is no restriction on fishing zones. Forty foot vessels and above generally fish in international waters for about a month at a time. Vessels of 3.5 grt. can fish within the EEZ for up to seven days at sea. The smaller vessels generally spend 1 to 2 days at sea.

4 Administrative aspects

4.1 The Marine Pollution Prevention Act No, 51 of 1981 has designated the Marine Pollution Prevention Authority (MPPA) as the "Agency" having overall authority over activities relating to marine pollution. Among its current major activities are:

- Complete revision of the national legislation.
- Implementation of the MARPOL 73/78 Convention.
- Infrastructure strengthening with assistance from the Government of Norway.
- The implementation of National Oil Spill Contingency Plan.
- Countrywide awareness programme.
- Establishment of regional pollution prevention units.
- Redefining the role of the Authority including changing of its name to Marine Environment Protection Authority.

4.2 The Central Environment Authority (CEA) dealing with land-based pollution comes under the auspices of Ministry of Environment. The same applies to the National Aquatic Resources Agency (NARA). The Wild-life Administration comes under the Ministry of Home Affairs & Public Administration. The Merchant Shipping Directorate comes under the Ministry of Shipping & Shipping Development. The Ports comes under Ministry of Ports Development Rehabilitation Reconstruction. Discussions with focal points revealed that the various sectors worked independently on environmental issues.

5 Ports

5.1 The three main ports are Colombo, Galle and Tricomalee. The table below shows the flow of traffic through these ports during the 12-month period from April 1999 to May 2000:

Yearly traffic patterns - main ports

Port	Oil/ Tankers	General Cargo	Bulk/ Carriers	Cement/ Carriers	Container	Passenger
COLOMBO	18 vessels at SPBM 15 vessels at SLPA Terminals	875			2,625	10
GALLE			18	30		
TRINCOMALEE			Prima Terminal receives about 20 bulk wheat vessels.	40		

5.2 Colombo Port has been steadily growing and modernising. Covering an area of 201 hectares, it has a total berth length of approximately 4 km, mainly consisting of container, cement, general cargo and grain terminals with draughts varying between 8 and 14 metres. One tanker terminal is used for the import of petroleum products. A new container terminal is under construction. The offshore single buoy mooring point is used for the import of crude oil unloaded from large tankers. A new conventional mooring buoy was commissioned 2 nautical miles off the coast of the port of Colombo to handle gas carriers.

5.3 Trincomalee Port covers an area of 2,023 hectares and has a total jetty length of 700 metres with alongside draughts varying between 6 and 10 metres.

5.4 Galle Port covers an area of 320 hectares, and the total jetty length is 260 metres with an alongside draught of 7.3 metres.

6 Reception facilities/disposal of ship generated wastes

6.1 A streamlined reception facility system is available for all ports. This system is operated by MPPA registered contractors (year 2000 - 14 contractors/ all ports), whose activities are monitored by a clearing approval document system. The system has been kept as simple as possible in keeping with MARPOL 73/78 recommendation, and has adequate supervision during the ship to shore operations by the harbour safety section and the MPPA.

6.2 The local trading pattern does not require any reception facility at the moment for bulk chemicals. The oil trade is one of importation thereby avoiding the requirement for tanker ballast water reception.

6.3 The waste received is not treated at any treatment facility. Oily waste is recycled after primary separation, while garbage joins the municipal waste stream where scavengers may recover some material for recycling. No proper disposal standard is maintained. This situation is scheduled for change soon with the implementation of the National Environmental Act, that has in its provision laws requiring a treatment system for waste prior to disposal.

6.4 There appears to be no national system in operation for the collection of hazardous (oily) waste from petroleum driven vehicles/boats. There are oil refineries, thermal power plants and cement factories that commercially should be able to dispose of oily waste. Colombo has a population of about 1 million people, and is already facing a capacity shortage of available garbage dumpsites. Therefore, environmental gains could be made by providing incinerators that could generate thermal power. When in place, these could be associated with reception facilities to be provided for under the MARPOL 73/78 Convention. Sri Lanka has a system in place for attracting foreign investors that jointly with local entities can build duty free industrial plants under its Board of Investment. This might be useful in situations where the lack of funding is an obstacle to the provision of adequate reception facilities in ports.

Chapter II

Preparation of National and Regional Plans for Accession, Enhanced Implementation and Enforcement Procedures of MARPOL 73/78 in the South Asian Region

1 Introduction

1.1 The purpose of this report was to facilitate the establishment of a program for the August 21 – 25, 2000, IMO/SACEP Workshop in Colombo, Sri Lanka, regarding steps to be taken on national and regional level for the enforcement and implementation processes of MARPOL 73/78. Promotion of the provision of adequate reception facilities in ports for the reception of ship generated wastes is essential for this progress.

1.2 The proposals made take account of the fact finding mission to Bangladesh, India, Maldives, Myanmar, Pakistan and Sri Lanka during the period of 3 May to 7 June, 2000. Briefings, meeting sessions and excursions carried out by contacting focal points in the 6 countries visited, and discussions at the IMO and SACEP headquarters, were essential for the outcome and should be pivotal in any constructive guidance planning processes and actions to be initiated. These should take account of each country's peculiarities regarding ecology, legal, economical and technical aspects, as well as the level of ships traffic.

1.3 The implementation strategy under discussion for the provision of reception facilities servicing 20 ports and up to 10 more planned, is to provide for low-cost sustainable improvement measures before taking up more sophisticated technologies. The provision of centrally and strategically located treatment facilities in the region catering for the treatment of ship generated wastes in the form of noxious chemicals, oily residues and fuel oil sludge should be considered. Consideration should also be given to making facilities available for multi purpose use including treatment of land based hazardous wastes. The collection of waste and treatment should partly, or in full, be sought financed by the proceeds of sale from recovered oil. Existing facilities and their use should be enhanced on adequacy and practical application with suitable control and policing measures in place.

1.4 The major focus should be on the integrating of environmental consideration in decision-making, management of industrial pollution, regional transfer of sound environmental technology, cleaner operation, voluntary compliance mechanisms, waste management, MARPOL 73/78 status and participation of private sectors.

2 The planning process

2.1 It is essential for the planning process that port administrations assess the need for reception facilities in accordance with the provisions of MARPOL 73/78. The recommended approach should be based on best available information on the type, average size and number of ships calling at the main ports. The estimation of the quantity of ship generated waste can for the South Asian region be based on an average ship size of 15,000 gross register tons having performed a voyage of 5-10 days' duration since its last port of call. Commercial ships operating in the region vary in size from 500 to 45,000 gross registered tons. Vessels engaged in local trade call regularly into local ports and should have adequate knowledge of the waste produced and how it has been disposed of. IMO has published its Comprehensive Manual on Port Reception Facilities (1999 Edition), together with its publication MARPOL - How to Do It (1993 Edition), which is intended to serve as guidance to administrations and industrial sectors. IMO is in the process of issuing a guideline to determine the adequacy of reception facilities.

2.2 MARPOL 73/78 Annex I cargo residues may consist of tank washings and, in cases where the ship does not possess segregated ballast tanks (SBT), dirty ballast which needs to be disposed of when loading takes place. Waste from engine rooms for all types of ships consists of used lubricating oil, fuel residues, oily sludges and oily bilge water. It consists mainly of mixtures of oil , water and solids.

2.3 Some ports in the region receive MARPOL 73/78 Annex II cargoes in bulk, and reception facilities need to be provided and scaled to meet the traffic patterns and volumes handled. It is, however, strongly advised that Annex II reception facilities are planned and run by those companies that import the cargoes in question. Annex II on chemicals carried in bulk is rather complicated, and waste treatment techniques demand very skilled personnel and techniques.

2.4 The quantity of MARPOL 73/78 Annex V garbage (kg/person/day) can be based on 40 kg produced daily on cargo ships and 10 kg on fishing vessels, taking into account the difference in manning. As a very general rule, food waste can amount to 1.4 to 2.4 and household refuse to 0.5 to 1.5 kg/person day. However, figures will vary from one vessel to another. Cargo associated waste (break bulk) can amount to 1 ton of waste per 123 tons of cargo. The amount of offloading should take account of permissible discharges of garbage and food waste more than 25 miles from land.

2.5 It should be noted that it is assumed that many commercial vessels are equipped with a waste incinerator, which to a large extent limits the quantity of waste for offloading at a given port from arriving ships.

3 MARPOL 73/78 provisions for reception facilities

3.1 Annex I : Oil

3.1.1 The standards for permissible/restricted discharges in accordance with MARPOL 73/78 Annexes I, II, and V are summarized in Appendix I of this document. The requirements of a Government, Party to MARPOL 73/78, are set out in the Annexes to the Convention as follows:

> Regulation 12 on reception facilities of Annex I states:
> "(1) Subject to the provisions of regulation 10 of this Annex, the Government of each Party undertakes to ensure the provision at oil loading terminals, repair ports, and in other ports in which ships have oily residues to discharge, of facilities for the reception of such residues and oily mixtures as remain from oil tankers and other ships adequate to meet the needs of the ships using them without causing undue delay to ships."

3.1.2 Sub-paragraphs (2) to (5) of regulation 12 of Annex I give further details on what type of port reception facilities should be provided, the capacity of such facilities, from when the facility should be ready and the obligation on each Party to notify IMO for transmission to the Parties concerned of all cases where the facilities provided under regulation 12 are alleged to be inadequate.

3.1.3 Small coastal tankers operating along the coast in the region are said to have segregated ballast tanks. In some instances the normal operation in ports will be both loading and unloading and the need for wash water to be disposed of from the cleaning of tanks seems likely. But tankers are required under MARPOL not to make any discharges when they are less than 50 nautical miles from the nearest land. It may be difficult for all types of ships to dispose of oily waste from the engine room. As for the disposal of residues from heavy residual fuel, this should not pose any problem as long as vessels are running on intermediate fuel oils.

3.2 Annex II : Chemicals carried in bulk

3.2.1 Regarding Annex II wastes (chemical cargo waste from ships carrying chemicals in bulk) the general obligations set out in regulation 7 are detailed below:

> Regulation 7 on reception facilities of Annex II states:
>
> "(1) The Government of each Party to the Convention undertakes to ensure the provision of reception facilities according to the need of ships using its ports, terminals or repair ports as follows:

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

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

3.2.2 Sub-paragraphs (2) to (4) contain requirements regarding the types of facilities in each port or terminal and repair port, the provision of a stripping arrangement and the draining of cargo hoses and piping systems of the terminal and the obligation on each Party to notify IMO for transmission to the Parties concerned of all cases where the facilities provided under regulation 7, sub-paragraph (1) or (3) are alleged to be inadequate.

3.2.3 The need to establish reception facilities for MARPOL 73/78 Annex II cargoes depends on industrial developments. But by the year 2005 there could be complexes in place within ports where there will be a need to import and export chemicals in bulk. The noxious liquid substances usually result from tank cleaning activities. It is feasible to combine tank cleaning facilities with reception facilities which require pumps and storage tanks. The most important aspect for reception of Annex II wastes is ensuring chemicals are not mixed, as mixing may create dangerous situations.

3.2.4 The importers and exporters (manufacturers) of chemicals are best in dealing with the reception of noxious substances generated onboard ships, as they are aware of the composition and nature of chemical wastes. Therefore, in the planning phase of manufacturing plants and predictions for trading, there should be provisions for the establishment of reception facilities in ports.

3.3 Annex V : Garbage

3.3.1 The strategy for compliance with Annex V is slightly more complicated than with the other MARPOL Annexes. It applies to all ships, including yachts and fishing vessels, as well as offshore platforms. The MARPOL 73/78 Convention contains a definition of garbage as being all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship and liable to be disposed of continuously or periodically.

3.3.2 Regulation 7 on reception facilities of Annex V states:

"(1) The Government of each Party to the Convention undertakes to ensure the provision of facilities at ports and terminals for the reception of garbage, without causing undue delay to ships, and according to the needs of ships using them."

3.3.3 Sub-paragraph (2) contains a requirement on the obligation of each Party to notify IMO for the transmission to the Parties concerned of all cases where the facilities provided under regulation 7 are alleged to be inadequate.

3.3.4 Annex V specifies that the disposal of any plastic into the sea, including fishing nets, ropes and plastic bags, is prohibited everywhere. Food wastes and all other garbage (including paper products, rags, glass, metals, bottles, and crockery) cannot be discharged within 12 nautical miles of land unless they first have been passed through a grinder or comminuter so as to be capable of passing through a screen with openings no greater than 25 millimetres. Even when this reduction in particle size has been achieved, the minimum distance from land at which discharge is permitted is set at 3 nautical miles.

3.3.5 Waste management on ships is an expensive part of the operating budget. There is a great onus on the crew to comply with the provision of the garbage management plans and the requirement of the Annex. Disposal of waste by the use of onboard incinerators is an option. But these are costly to purchase, run and maintain, and tend to

breakdown frequently. Other alternatives are storage of waste until off loading at a reception facility, or disposal of waste in an appropriate area. Garbage handling and separation are labour intensive.

3.3.6 When planning for a garbage reception facility it is pertinent to have knowledge about the types and amount of wastes that could be expected to be delivered to the port. Contact with the customer or the ships usually using the ports is therefore advisable as a part of the planning process.

4 Annex III : Waste from Packed Hazardous Substances Transported at Sea

4.1 Annex III of MARPOL 73/78 (optional) contains no requirement for reception facilities. It is, however, noted that with the increased numbers of containers handled in the main ports, there is an increasing number of containers containing hazardous substances. Except for the Port of Yangon, no other ports have dedicated controlled storage for such containers, and the fire brigades and the ports themselves do not have dedicated trained personnel or the necessary protecting gear to handle any accidents involving containers loaded with dangerous and hazardous substances. There could also be a need to provide assistance to ships which have experienced boisterous weather en route, or suffered an incident inflicting damaged to cargo and /or containers.

5 Financial aspects relating to reception facilities

5.1 The IMO Comprehensive Manual on Port Reception Facilities (1999 Edition), as already referred to, deals with funding mechanisms and operation in Chapter 11. It can be based on the "polluter pays" principle and the "shared cost" principle. The shared cost principle entails the sharing of all costs by society, usually allocated from governmental tax revenues. A combination of the two principles will result in a system with partial cost recovery, which might be suitable when combined with the collection, treatment and disposal of shore generated wastes. Three main principles apply for financing reception facilities, all of them having some advantages as well as disadvantages:

1. Costs of reception and disposal are paid by the vessels and done on a strictly commercial basis, "the Direct Cost Recovery Principle";

2. Costs of reception and treatment are included in the harbour fees, "the Non-special Fee Principle"; and,

3. Costs of reception and disposal are paid by the state or community, "the Free of Charge Principle".

5.2 The Non-special Fee Principle entails the inclusion of reception and treatment of wastes in the harbour dues, which should stimulate good housekeeping onboard vessels, and the use by ports of the best available technology to reduce costs. Vessels' operators would find that they should use what has been paid for. Furthermore, this principle reduces illegal discharges as no extra time or trouble is involved for ships to discharge their waste in ports. This principle is therefore recommended for adoption in ports.

5.3 Note should be taken that the Non-Special Fee Principle may interfere with inter port competition, but a flat charge for inclusion in the harbour fees for all the ports respectively should tentatively cover the total investment and operation. On a national basis, the sums collected could be used to equalise the expenditures and be reallocated to the reception facilities. The amount due from the smaller ships and fishing vessels, could be assessed by introducing a minimum fee regardless of whether or not the facilities are being used. A further differentiation for particular ship categories could also be considered.

5.4 Care should be taken to place some restrictions on vessels where the maintenance of oily water separators has been neglected, because they do not have to pay extra to discharge the surplus water. Furthermore, only waste produced since the vessels' last port of call should fall under the Non-special Fee Principle. Cargo which has been damaged in transit and needs to be disposed of as "waste" should likewise incur a charge equal to the actual costs of collection and its final disposal.

5.5 The upgrading of engine slop for re-use is very expensive. The engine slop, collected as buffer tanks fill up, is either sold locally for re-use at local industries or as a supplementary fuel . The price of the engine slop is expected partly to balance the cost of transportation and final safe disposal of garbage and residual fuel sludge. The value of the recovered oil is expected to be 25% of the crude oil price. With an actual crude oil price of 20 USD/barrel, the price obtainable on the market should be approximately 27 USD/tonne.

6 Management

6.1 National legislation forms the basis for port regulations and other operational matters concerning port waste management including monitoring and control measures. It is recommended that this legislation be followed by the countries in the region (if not already done so) acceding to MARPOL 73/78, and that the legislation thereafter be based on the relevant Annexes of this Convention.

6.2 It is generally recommended that national pollution control authorities be involved in the development of the facilities to be established. MARPOL 73/78 does not describe how waste should be handled and treated. Therefore, the national environmental authorities may need to set the standards for allowable emission to the air, the run off of water separated from oil and final disposal of the collected wastes.

6.3 With regard to the landed ship generated wastes, clarification may need to be sought with customs and health authorities with regard to custom dues exemptions, and procedures to be followed when damaged goods need to be landed either as wastes, or used, e.g., as animal feed.

6.4 A basic principle should be that once ship generated wastes are received ashore, their disposal should follow the same standards as for the wastes generated ashore. New regulations on ship generated waste should therefore fit into other existing and new regulations regarding waste handling. Ship generated waste reception, handling and treatment should therefore be incorporated in any regional or national waste strategy or action plan.

7 Notifications

7.1 Appendix III of this document advises that under the implementation Phase V, that a Waste Management Plan should be in place for each port which should provide guidance on waste management practices for shipping agents, shipping companies, fishing vessels and port and terminal operators.

7.2 It is recommended that national ministries of transport and/or port authorities should inform the shipping agents and other relevant industry sectors on available services and charges for the use of reception facilities. The information should give definitions and limitations of services to be rendered. The service description should detail, e.g., that garbage and oily wastes are delivered from all vessels above a certain length (to be established). Arriving vessels burning heavy residual fuel oil should have to account for the disposal of the sludge separated out, using the 1 % rule as described in paragraph 8.3 below. The users in return should give details of the scheduled times for the pickup, estimated quantities and type of wastes.

7.3 After completion of the collection operation a receipt or a de-slopping certificate written in English should be issued to vessels in international trade, including fishing vessels. Details to be entered include the quantity and type of the slops/garbage delivered to the reception facility, as well as the time and the completion of the operation. This receipt or certificate should be signed by the responsible operator of the reception facilities (and countersigned by the master) and should be issued whether or not slop or garbage is delivered.

7.4 It is further highly recommended that the final disposal of collected waste should be accounted for by the operators of the reception facilities. The licensing to operate reception facilities should embrace a documented "cradle-to-grave" system for final secure waste disposal.

8 Controls

8.1 Sanctions and penalties need to be included in the appropriate national legislation. Violations of MARPOL 73/78, including illegal discharges, would be seen as offences in many parts of the world resulting in penalties and in some cases other types of punishment (jail, etc.). This system should be administered by the national pollution control board in close co-operation with ministries of environmental affairs. The IMO Comprehensive Manual on Reception Facilities provides some details in Chapter 13. The most important aspects of any compliance and enforcement program is a clear policy statement on how national and international legislation will be enforced.

8.2 Under applicable national laws it should be a violations of the duty to keep the Oil Record Book properly and to record operations in accordance with Appendix III of Annex I of MARPOL. Failures constitute administrative offences, where flag administrations and IMO should be informed. The authorities may impose administrative fines for missing or incomplete entries in the Oil Record Book.

8.3 The quantities of oil residues (sludge) generated by machinery space operations and required to be recorded in the Oil Record Book (ref Part. I, Code C) are computed on the basis of the so-called 1% rule. According to this rule, at least 1% sludge in relation to the fuel oil consumption is produced on board vessels using heavy fuel oil as bunker. Thus treatment and disposal of this amount has to be recorded in the Oil Record Book. Court rulings regarding the 1% rule (Germany) are based on comprehensive studies on the sludge quantities produced by sea-going vessels. If, in individual cases, vessels have novel technical equipment for sludge treatment which may allow a reduction of sludge below 1%, this is duly considered. (The 1% rule does not apply to bilge water and cargo residues.)

9 Master Plan for Implementation of Activities related to MARPOL 73/78

9.1 Waste Management Practices

9.1.1 Appendix II to this document proposes a draft regional plan on implementation of recommendations for the establishment of reception facilities in the South Asia region. A body should be established which would serve as a co-ordination unit for implementation of a "waste management strategy". Proposed actions may include:

1. The designation of a co-ordination unit to activate plans, monitor development and to advise IMO on a collective basis;
2. Formation of an Advisory Panel on Waste Management Plan to deal with commercial, technical and regulatory aspects;
3. In port collection, storage, treatment of wastes and merger with other shore waste generation;
4. Offshore/anchorage (SBM) collection, storage, treatment and disposal of waste;
5. Upgrading/rehabilitation of existing facilities in the region;
6. Use of collection (shuttle) vessels/barges covering several dry/liquid cargo ports and terminals with optional inter-ports operation as found practicable;
7. Tendering procedures for establishing new reception facilities;
8. Contracting procedures for the setting up and running of reception facilities;
9. Integration of Port Reception Facilities into Oil Spill Emergency Plans; and,

10. Licensing to operate a "cradle-to-grave" system for final secure waste disposal.

9.1.2 Many parties are involved in the various waste management practices, such as the establishment of reception facility systems, their operation, waste collection, treatment and final safe disposal. The region could benefit by seeking substantial involvement of the private sectors.

9.2 Implementation of Port Plans on Waste Management

9.2.1 Appendix III to this document on national plans deals with important criteria regarding actions to be streamlined as required for each port in the region. For the implementation of the Plans, a permanent expert should be assigned to assist in the co-ordination efforts and their follow-up.

9.2.2 Affected authorities and the proposed co-ordination unit might anticipate that waste generated from sources other than vessels should also benefit from the provision of adequate reception facilities. Thus the commercial, legal and technical aspects should take this into account, where co-ordination, monitoring, control, compliance and policing mechanisms are in the hands of governmental bodies and port authorities. Similarly, when advanced municipal garbage and waste treatment plants are made available, then ports might take advantage of such development and dispose of garbage and noxious substances collected from visiting ships.

9.2.3 Recommended actions for implementation of port Waste Management Plans include:

- Each port administration should identify the need for waste reception facilities through consultation with interested parties, including private sectors such as ships' operators, oil companies, environmental organisations, and seek common approaches - adjusted to countries needs- to the adequate provision and use of port reception facilities.

- Administrations should decide on the location of facilities, practices and mode of operation.

- Administrations should ensure that the existence of reception facilities and operational details are effectively published.

- Administrations should provide a plan for the inspection of visiting ships in accordance with the MOU for the Indian Ocean Region to which the countries (except Pakistan) are Parties, with emphasis on waste generated on the last voyage(s).

- Administrations should review/audit the planning process regularly, update same as required in view of the waste received and treated, and liase with adjacent ports in the region.

- Administrations should ensure the availability of safe deposit sites, with particular emphasis on hazardous and noxious substances.

9.2.4 As already referred to in this document, the IMO Comprehensive Manual on Port Reception Facilities (1999 Edition) together with the IMO publication MARPOL - How to Do It (1993 Edition) provide detailed guidance on MARPOL Implementation, Waste Management Strategy, Project Planning, Administration and Disposal Options for Waste. Marine Administrations, the proposed Co-ordination Unit and Port Administrations would greatly benefit from utilizing these Manuals.

9.2.5 The establishment and operation of treatment facilities for ship generated waste must comply with national legislation and local regulations. The use of a harmonised manifest system for the tracking of wastes received, transported and treated in the region could provide the necessary information on which to base a compliance and

enforcement programme. Therefore, any licences issued to reception, transportation, storage and treatment companies should include conditions for regularly reporting the type and volume of wastes received and how it was disposed of.

10 Conclusions and Proposed Recommendations

This Report invites actions on national and regional levels where Port Authorities and Maritime Administrations would have important roles to play:

1. Consideration should be given to identifying legislative, economic and practical measures designed to cope with an arbitrary/indicative estimation of a yearly amount of oily waste generated by 25,000 ships, visiting 20 main ports in the six South Asian countries, of approximately 100,000 m^3, 20% of which represents fuel oil residues, 25% engine room slops and 55% cargo slops. The corresponding figure for the total amount of waste represents some 5,000 tonnes. This amount should not increase substantially as more ports are planned, as they will accommodate larger ships and thereby decrease rather than increase the number of calls.

2. Any further planning processes for the establishment of reception facilities should take account of advances in ship technology, such as the enhancement of Double Hull for new buildings, and the phasing out of single hull tankers. Further, for economic reasons, it seems practical to minimise the numbers and centralise the establishment of oily waste treatment plants. Deliveries to refineries should be sought as a preferred option. Recovered oil has a commercial value that might be allotted to the ports where the slops were collected. In the collection and processing systems for oily waste, clarification on regulatory aspects should be invited from Customs and Health Authorities. Also to be noted is that Maldives already collects slops on a national basis that are being shipped in drums to Singapore for disposal at a refinery.

3. Port Administrations would need to evaluate the quantities of dirty ballast and tank wash water generated onboard tankers requiring reception facilities. In addition come reception facilities for chemical waste as demanded by the present and future importation/exportation of chemicals in bulk. Further, disposal of such waste by incineration should be considered as an option.

4. National consideration should be given to the current uses and adequacies of reception facilities in ports and measures sought for enhancement. This includes greater use of small barges/tractor tank wagons for waste collection in ports. National rules and legislation might require adjustment to avoid penalties and/or customs duty for the sale/disposal of imported waste. Storage tanks that can separate oil from oily water mixtures should be traced for possible use as reception facilities on existing or redundant industry sites within the proximity of ports.

5. Countries might on a regional level be invited to consider measures for the establishment of strategic centrally located sites - to cater for the requirements of the six countries - that might be situated in Mumbai (Jawaharlal Port), Chennai (Madras), Colombo and Singapore. Two or more coastal tankers of 500 – 1000 grt. might be allocated for the transportation of oily waste collected in the various ports to the treatment plants.

6. Countries might consider inviting IMO and SACEP - in collaboration with possible regional agencies – to act as appropriate bodies to follow up recommendations and action plans made at the August 2000 Colombo Workshop. Consideration might also be given to establishing a Co-ordination Unit with representation from national Maritime Administrations, Port Authorities, private sectors and to soliciting assistance from other sources.

7. Countries might consider initiating action involving the fishing industries in the six countries to take account of MARPOL compliance. Oily waste and garbage generated onboard fishing vessels should - as found appropriate - be delivered to reception facilities.

8. Countries should seek to ensure sustainable operation of reception facilities by using a combination of funding mechanisms involving the UN system, public, private sectors and users, ensuring a fixed income and to provide for; i) transparency; ii) shared-cost concept for their uses; iii) no distortion of competition between ports; iv) knowledge in advance; and v) attractiveness to users and good service.

APPENDIX I

MARPOL 73/78, Annexes I, II & V: Permissible/restricted discharges of substances

Discharge criteria of Oil **Oil tankers of 150 grt. and above and other ships of 400 grt. And above**	**Discharge criteria for chemical tankers – Annex II substances.** **Below water line with 25 metres depth, 12 nautical miles from shore, steaming minimum of 12 knots**				**Sea Area outside "Special Area": less than 50 n.m. from nearest land**	**More than 50 nautical miles from land**
	A	**B**	**C**	**D**		
No discharge except when: 1. Ship is proceeding en route; and 2. the oil content of the effluent without dilution does not exceed 15 ppm; and 3. the ship has in operation oil filtering equipment with automatic 15 ppm stopping device; and 4. for oil tankers, the bilge water does not originate from cargo pump-room bilges nor is not mixed with oil cargo residues.	NIL Manual Pre wash. Delivery to Reception Facilities	1 ppm in wake of ship	1 ppm in wake of ship. Maximum quantity from each tank: 1 cubic metre or 1/3000 of tank capacity	1 sub. in 10 parts of water. Maximum quantity from each tank: No limit	**No discharge except:** clean or segregated ballast (As for "Special Areas")	**No discharge except either:** 1. Clean or segregated ballast; or when: 2. The tanker is en route; and 3. the instantaneous rate of discharge of oil does not exceed 30 litres per n.m.; and 4. the total quantity of oil discharged does not exceed 1/15,000 for existing tankers, or 1/30,000 for new tankers of the total quantity of cargo which was carried on the previous voyage; and 5. the tanker has in operation at least an oil discharge monitoring and control system.

APPENDIX I (cont.)

Restriction on Disposal of Garbage from Ships at Sea under MARPOL 73/78 Annex V

Material	Outside special area	In special area
Plastic	Prohibited	Prohibited
Dunnage, packing etc.	Over 25 n.m. offshore	Prohibited
Food waste	Over 12 n.m. offshore	Over 12 n.m.offshore
Garbage – not food	Over 12 n.m. offshore	Prohibited
Ground-up garbage	Over 3 n.m. offshore	Prohibited
Ground-up food waste	Over 3 n.m. offshore	Over 12 n.m. offshore

* * *

APPENDIX II

Draft Regional Plan on Implementation of Recommendations for the Establishment of Adequate Reception Facilities in the South Asian region, Waste Management Strategy

Action	Harmonization Regional Approach (MOU)	Port Reception Operation	Financing and Cost Recovery	Legislative processes	Implementation phase Enforcement
1 SACEP to monitor the situation and to advise IMO on collective basis	Uniform system for collection, treatment & fees	Ensure adequacy on regional level	Install positive motivation for implementation	Identify national characteristics on procedures	Advance notice of proposed rulemaking
2. Formation of a Co-operating Unit on **Waste Management Plan** for technical/regulatory aspects	Relevant bodies/ countries to be represented	Identify criteria for feasible solutions	Identify hardware set up and costing	Industry & Environmental Org. rep.	Regional .hearings on proposed rulemaking
3. In port collection, storage, treatment and disposal of wastes Merger/shore waste generation	Co-operation between neighbouring, countries	Notification for use procedures Information	Charges: Ship/ Municipality ? Resale residues	Regional regulations Port regulations	Notice to Owners Mariners Industry
4. Offshore collection, storage, treatment and disposal of wastes	Private & national sector participation	As above	As above	Regional regulation	Notice to oil companies Mariners
5. Use of collection (Shuttle) vessels covering several oil ports & terminals	Private owner corporation, participation	Tankers sized between 500 – 1000 grt.	Own Lease Private operator	MARPOL Hull/P&I SOLAS	Notice to owners Mariners Oil companies
6. Tendering Procedures for establishing reception facilities Upgrading of exist. facilities	Common set of rules & guidelines	Build, Own, Operate & Transfer basis	Provide financing and fee structure	Assign employer(s) on contracting	Provide tender documents Invitation letters
7. Contracting Procedures for the setting up and running of reception facilities	Common set of rules & guidelines	As above, Assess Requirements	Charge to cover Amortisation Running costs	Compliance with Standards HSE	Incorporation Port Waste Management Plan
8. Licensing to operate "Cradle-to-grave" system for final secure waste deposition	Compliance with uniform standards	Certificate of Adequacy on Reception facility	Incl. in fee structure on port charges	Reporting Monitoring Policing	Secure sites Training Notices

APPENDIX III

Draft Proposed National Plan on Implementation of Port Reception facilities in the South Asian Region

TASKS	Action By	2000	2001	2003	200
Phase I					
1. Completion of assessment mission report on Port Reception facilities in Selected Ports	IMO Consultant	June			
2. Follow up on Report. Prep. & arr. of Workshop in Colombo, Sri Lanka, 21 – 25 August, 2000	IMO/SACEP	July August			
3. Preparations for Bangladesh and Maldives to **Accede to MARPOL 73/78 Annexes I, II and V** – translation of legal documents as required	Ministry of Environment Maritime Administrations	Sept. to Dec.			
4. Preparation of legal documents and standards for the establishment and use of adequate reception facilities in selected ports. Follow up on Workshop	Maritime Administrations SACEP Co-ordination Unit	As above			
5.Consultation with industry sectors for establishment of port reception facilities	As above With Port Authorities	August/ October			
6. Improvement of sites, preparation for the setting up of new reception facilities/back up services	As above	Dec.			
7. Establishment of Public Awareness Programme on the use of reception facilities	IMO/SACEP Fishing/tourism industries.	Dec.			
Phase II					
1.Bangladesh & Maldives to **Accede to MARPOL 73/78.** A document of accession to be deposited with the Secretary-General of IMO (3 months for entry into force)	Assembly/Ministers/ Cabinet/Ministry of Transport & Communication		March		
2. Reception facility systems technically made operational – trial operations	Ports & Harbours			Jan	
3. **Reception facilities use, disposal of collected wastes legally and technically operational**	Port Authorities		Dec.		
4. Prohibit violations & provide sanctions	Pollution Control Board			Jan.	
5.Inspect ships/fishing vessels & monitor compliance	As above, MOU & Coast Guards		July	Apri l	
Phase III					
1. Avoid undue delay to ships	Ports & Harbours		Cont.		
2. Provide IMO with reporting documents	Ministry of Environment		Cont.		
3. Investigate casualties involving Pollution, reporting	Maritime Administrations		Cont.		
Phase IV					
Take account of developments and the need for handling chemical wastes MARPOL Annex II. Upgrading facilities to higher standards with the addition of incinerators. Study further how shore side collection of oily waste and garbage can be integrated with that delivered from ships. More economical re-cycling. Ballast water treatment.	Ministry of Transportation Ports/ Municipalities Oil/Shipping Companies/ Industry			Dec.	
Phase V					
Take account of industrial development, increased transportation and innovations in waste management. Integration with shore side Municipal Waste Management Systems. Reuse, material and energy recovery. Hazardous waste	Ministry of Transport/Maritime Adm./Ports Municipalities/ Oil				Aug

safe disposal.	Comp. Industry/ Shipping Comp.				

Appendix IV

Some Observations on Oceanography, Biogeography, Marine Biodiversity and Pollution Aspects in the South Asia Region

1 General

1.1 On the world's seas, the highest concentrations of dissolved or dispersed petroleum residues were measured in the Indian Ocean. Not surprisingly since the largest volumes of ballast water discharges appear to take place along the Arabian Sea coasts. Moreover, the Gulf Sea waters contain very high levels of petroleum hydrocarbons, probably higher than any other regional sea. A significant reduction in the constant uncontrolled discharges of oily residues from shipping and de-ballasting operations can be attained by the provision of reception facilities. The lack of their provision is generally either widespread or total.

1.2 The Central Indian Ocean Marine Region includes Bangladesh, India, Maldives, Myanmar and Sri Lanka. The region consists of three distinct areas, parts of the Arabian Sea, the Bay of Bengal and a large area of the Indian Ocean. An international bio geographic classification system (The World Conservation Union) has been adopted for the Arabian Sea, which includes Pakistan, the Central Indian Ocean, which embraces the coastal countries surrounding the Bay of Bengal, and the Maldives. Marine biodiversity conservation are listed which specifically address priority issues for the establishment and effective management of a global representative system of Marine Protected Areas (MPAs) for the protection and sustainable management of the world's marine biodiversity. Thus there are 45 existing MPAs of marine and coastal sites in the Central Indian Ocean Marine Region and 5 in Pakistan.

1.3 The Indian land mass forms a major physical division between the Arabian Sea and the Bay of Bengal. Oceanographically, the Bay of Bengal differs from the Arabian Sea in maintaining a clockwise circulation of major currents during both the north east and south west monsoons. In the Arabian Sea the surface water masses circulate counter clockwise in the north east monsoon (November – April, when the North Equatorial Current flows west) and clockwise in the in the south west monsoon (May – October when the surface current flows eastward and splits to form clockwise currents in the Arabian Sea and the Bay of Bengal). There is also a major difference in salinity. In the Arabian Sea, evaporation exceeds precipitation and runoff, leading to the formation of high salinity water masses that flow south. The Bay of Bengal has comparatively low salinity due to high runoff from rivers and precipitation. In the south east monsoon, maximum salinity is found at depths of about 100 metres as high salinity water moves into the Bay from the Indian Ocean.

1.4 The coastline surrounding the Bay of Bengal is heavily influenced by the monsoons, particularly the south west monsoon that brings heavy rains. Tropical storms also have a major impact. Shallow accreting coastlines, with deltas and coastal lagoons, dominate in Bangladesh, parts of India and Sri Lanka. The Bay of Bengal has largely soft substrata off the mainland, due to extensive river discharge, which are overlain by shallow, usually turbid waters. The coastline of Bangladesh is particularly low-lying, and is unique in the region in that the influence of the sea is felt for a long distance inland. The northern part of the coastlines of Myanmar is similar. The east and west coast of India have different characteristics . The west coast is exposed with heavy surf, rocky shores and headlands, whilst the east coast is shelving and low lying with beaches, deltas, lagoons and marshes. The Maldives, the Chagos Archipelago and Laccadive-Chagos chain extend southward from India to the central Indian Ocean.

safe disposal.	Comp. Industry/ Shipping Comp.				

1.5 India has important examples of all the main ecosystems in the region. Sri Lanka and Myanmar have similar diversity but on a smaller scale. Bangladesh is dominated by estuarine and mangrove ecosystems, and the Maldives and the Chagos Archipelago are made up entirely of atolls. Ecosystem diversity is probably most comprehensively documented in Sri Lanka, where a number of surveys of critical habitats have been carried out.

1.6 There are a number of large archipelagos in the region. The Andamans (50 islands, islets and rocks) and Nicobars (20 islands) are a volcanic chain. The Mergui Archipelago lies off the southern coast of Myanmar and consists of over 800 islands. Two other groups of islands are found in the Burmese waters, one extending from the Andaman and Nicobar islands to the mainland coast, and the other lying off the northern coast. The Preparis Islands and Coco have important seabird colonies.

1.7 The threats facing marine environments of the Central Indian Ocean are many and well documented. Of particular concern are:

- Pollution including direct sewage disposal, discharges from shipping, industrial waste, sediment and nutrient runoff.
- Land reclamation and coastal construction.
- Coral mining.
- Overfishing.
- Cutting of mangroves for fuel and aqua culture development.
- Uncontrolled tourism development.
- Sea level rise.

1.8 While some marine environments have been subject to minimal pressure and remain in good condition particularly some of the offshore islands and atolls, others are under increasing pressure and are becoming heavily degraded.

2 Bangladesh

2.1 The importation of crude oil and petroleum products is by ocean going tankers that are being lightered outside Chittagong by smaller tankers of 1000 dwt., equipped with segregated ballast tanks (SBT). These shuttle tankers deliver oil to the refinery situated near Chittagong, or deliver the petroleum products to inland destinations using the navigable waterways. Some tank washings are believed to go into the rivers.

2.2 Bangladesh is notable for its 145 km stretch of beach, with numerous sandy beaches on the islands of the atoll chain. The country has the greatest area of coastal wetlands in the region; with vast tidally inundated land dominated by major mangrove forests. There are three coastal protected areas.

2.3 The influx of run off rain water from Indian mountains makes the rivers crossing the country flooding at intervals that help reducing detrimental effects of inland pollution, but some hazardous substances would eventually reach the marine environment. On sight observation shows little garbage or pollutants floating on the water. Sewage treatment plants for Dhaka and Chittagong handle a great portion of the raw sewage generated. The effluents discharge from the Chittagong oil refinery is connected to the city's sewage system. The Department of Shipping has developed two ordinances for better environmental control of shipping activities so far without any further action being taken on ministerial levels. The apparent reason being that the Environment Conservation Act should take care of the control of pollution from ships and that there is a political drive for deregulation and downsizing or rightsizing laws and regulation.

3 India

3.1 India has some 40 sanctuaries and wildlife protected areas in coastal waters and islands located near main shipping lanes such as the Lakshadweep, Andaman and Nicobar Islands. These areas have mangroves, coral reefs with important nesting beaches for a variety of habitants.

3.2 Untreated sewage entering the marine environment from coastal areas is a threat to the ecology. A city such as Bombay with more than 14 mill. inhabitants will dispose of some 2000 mill. litre per day of sewage into the sea, of which 80 % is untreated raw sewage. This leaves bottom sedimentation containing heavy metals up to 2 km from the coastline. The northern part of India and a city such as Bombay have tidal differences of up to 7 metres providing for currents which alleviate the detrimental effects from sewage discharges. The southern part of India has smaller variances in the tides and the coastal areas will therefore suffer more from land based pollution. All rivers in India do not join up with the sea. Only when there are heavy rains will there be some runoff to the sea, causing additional seasonal land based pollution especially from agricultural pesticides and fertilisers.

3.3 India has run a 10 years programme to monitor pollution at 75 locations from the Gulf of Kutch to Bangladesh. Two research vessels monitors pollution in the water columns, and a low level of petroleum hydrocarbons is traced on the west coast near the heavy traffic shipping lanes. In the month of August, with currents running eastwards due to the monsoon, will there in particular be visible tar balls along the western coast lines, but for almost the rest of the year will the current run the other way. On the east coast with much less traffic, the pollution is much less. Observations are that pollution from petroleum hydrocarbons in Indian waters demonstrate a declining trend. However, the islands with coral reefs are more vulnerable to oil pollution from shipping than the mainland.

4 Maldives'

4.1 The Maldives covers an area of 300 sq km with a population of more than 275,000 of which some 70,000 live in the capital island Male'. 198 islands are populated with an addition of 77 islands being used as tourist resort. Of the inhabited islands, 75 have fewer than 500 people, 47 have between 1,000 and 5,000

inhabitants, and only 4 have more than 5,000 inhabitants. The coastline of the islands totals 644 km with the atolls creating archipelago of strategic location astride and along major sea lanes in Indian Ocean. The terrain is flat with 80% of the area one meter or less above the sea level embraced with white sandy beaches. The highest location of 2.4 metres is found in the Addu Atoll. The total area of the Exclusive Economic Zone (EEZ) is approximately 859,000 sq km.

4.2 The Maldives contain extensive and largely intact undisturbed reefs, and comprise perhaps one of the most complex reef systems in the world as well as the most diverse. Several of the atolls have unusual ring-shaped reefs in the lagoons, each with its own white sandy lagoon and rim of living corals. The majority of the islands is less than one sq km in size. More than 15 sites have been designated by the Government as protected areas.

4.3 Environmental key issues are climate change, depletion of freshwater aquifers that threatens water supplies, management of solid waste and sewage, pollution control and managing hazardous wastes and the low level of islands making them very sensitive to sea level rise.

4.4 Male' has 4 outlet of untreated raw sewage into the sea. It produces 400 tonnes of garbage a day that is being transported to a nearby island dumpsite. The resorts are by law required to have incinerators for the burning of nuisance waste such as plastic bottles. Industrial effluents are non-existing. All the resorts have a system in place to reduce any ill effects of sewage before being discharged into the sea outside the coral reefs. The islands with its many coral reefs are vulnerable to tar balls and sticky oils that are found on resort beaches, and the risks for possible release of oil from passing ships are reasons for concern with bearing on tourism.

4.5 Commercial ships – including loaded oil tankers – are passing the islands following traditional international traffic patterns in a very fragile environment, through the Eight Degrees, the One and a Half Degree, the Kaashidhoo and the Equatorial Channels. The absence of sufficient aids to navigation for ships passing close to the islands cause concern. Another issue is the obsolete national oil spill contingency plan that do not follow the IMO guidelines, and lack of resources to acquire oil spill combat equipment. In view of the fragile ecosystem chemical dispersants should not be used.

5 Myanmar

5.1 The northern coastlines of Myanmar are low-lying and the influence of the sea is felt for a long distance inland. It is characterised by deltaic network, with discharge of sediment-laden water with offshore sand and mud bars. Extensive stands of mangroves are found in this area and on the offshore islands. The main reef areas lies off the southern coast of Myanmar on the Mergui Archipelago consisting of some 800 islands, which lies sufficient far from the coast to have clearer water.

5.2 No industry is situated close to the rivers' side and the water is considered as almost unpolluted although laden with sediment. Garbage and debris was hardly visible on the rivers, although the city's garbage collection system has shortcomings. A contributory factor to favourable condition of the water quality is that the rivers are deep with a huge amount of water transportation due to the tidal conditions. Yangon has some sewage treatment plants in industrial zones, but raw sewage from the municipality will find its way untreated into the river. There are no national regulation in place to control the release of effluents finding their into the rivers, but it appears that new industry coming up voluntarily would ensure that treatment plants are in place.

6 Pakistan

6.1 Numerous deltas and estuaries with extensive inter tidal mudflats and their associated wetlands occur along the Pakistan coastline. The Indus delta has an estimated 3,000 sq km of delta marches with vast areas of mangroves. Rocky shores are also a major feature in Pakistan along with sandy beaches.

6.2 Land based pollutants ends up in the countries rivers with outlet to the sea, causing pollution of the marine environment. The Indus and other rivers are being monitored for mild and gross organic/chemical pollution, industrial discharges, thermal pollution and occasional oil spills. Extremely high biochemical oxygen demands toxicity in water and sediments and high phenolic concentration have all contributed to towards loss of biodiversity, decaying mangroves and other ecological damage. These pollutants reach the coastal water along with the tidal circulation forcing the marine life to migrate further offshore. The harbour of Karachi receives a vide variety of pollutants in large quantities from 200 mill. gallons/day of untreated raw sewage draining into the access river to the port. This also brings in floating garbage from the city, together with untreated effluents from hundreds of working industries. In addition comes industrial and municipal refuse from a shipyard, the Fish Harbour and marine based pollution within the localities of the perimeter of the harbour.

7 Sri Lanka

7.1 Priorities for coastal and marine conservation have been identified where a large number of coastal and marine sites are recommended for some kind of protection, which include the Hikkaduva area, Rekawa, Puttalam, and Negomo lagoons, Lagoons, Palk Bay and the Gulf of Mannar.

7.2 The islands have 430 km. navigable waterways by shallow draft crafts. There are no sewage plants in place. The lakes and canals in Colombo suffers from severe degradation of marine species, due to sewage oil and other industrial pollutants are released into the city's water canal systems, entering the marine environment.

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APPENDIX V

Some Observations on Best Achievable Protection (BAP) Standards with Industry Participation for the South Asian Region

1 General

1.1 The lack of port reception facilities has been recognised by the pilot phase of the Global Environment Facility (GEF), managed jointly by the World Bank, UNDP and UNEP. Projects underway for the establishment of reception facilities in certain regions use a combination of grant aid from the GEF and concessionary loans from the International Development Association (IDA). In taking on such commitments, funding bodies should recognise that the availability of reception facilities should be "sustainable". It is not enough simply to construct and install the installations. Ships will need to be persuaded to discharge their waste ashore, or to offshore facilities rather than at sea. A charge system instituted to cover running and amortisation costs should ensure a long lasting operation.

1.2 Oil pollution of the marine environment estimated by authoritative sources during the last decade suggests that the overall discharge comes from all types of ships and not oil tankers alone. According to data from several sources there has been a significant decline in operational discharges from tankers due to the introduction of SBT (Segregated Ballast Tanks), LOT (Load-on-Top) and COW (Crude Oil Washing). A major proportion is coming from land-based sources and the oil industry.

1.3 Most ships burn mineral oil for propulsion. This fuel, together with residues separated out from the cheaper heavy fuel oil, can escape into the sea. It has been estimated that machinery space bilges are the largest single source of oil entering the sea from ships. The amount of sludge in heavy fuel oils has increased during the last 10 to 20 years due to new refinery processes. Good figures are hard to obtain, but Det Norske Veritas Fuel Testing Quality Services estimate that the average sludge content requiring disposal as waste is 1.4%, of which 70% is sludge and the remaining 30% water. Many ships outside the tanker fleet, particularly dry cargo and fishing vessels, often have to carry water as ballast in fuel oil tanks. In addition commercial vessels other than tankers have limitations in the capacity of holding tanks for residues from bunker C fuels and engine room bilge oil water. Such deposits, together with dirty ballast and wash water from tank cleaning processes carried out onboard oil tankers, can thus create a high and visible concentration of oily discharges in the form of floating oil slicks and floating tar. These are most prevalent near major shipping and tanker routes and can be washed up on the beaches as tar balls.

1.4 The International Conference on Tanker Safety and Pollution Prevention in February 1978, leading to MARPOL 73/78, introduced the concept of "Particular Sensitive Sea Areas" ("PSSA"). Sea areas around the world may need special protection against marine pollution from ships and the dumping of wastes. To have such areas introduced in IMO. States may act individually, bilaterally, regionally, or multilaterally to protect fragile ecosystems.

1.5 The 1992 U.N. Conference on Environment and Development (UNCED) developed a programme which adopts a "precautionary approach" to the marine pollution problem and the impact upon legislation to combat same. The interpretation of the principle has under scientific advice become stricter, shifting from the previous permissive approach to policies based upon sophisticated environment impact assessment studies. The direct toxic effects of petroleum exposure vary widely in marine organisms resulting in degradation or adversely affecting reproductive capabilities. In cases of uncertainty relating to the effect of acute and chronic toxicity and bioaccumulation of substances released into the sea, legislation should seek to eliminate detrimental risks even though they may not be clearly demonstrated. This relates in particular to the substances contained in MARPOL 73/78 Annex II, which introduced a degree of differentiation, or hazard profiles.

1.6 Annex I treats all oil products, from heavy crude oils to refined volatile solvents, in exactly the same way even though their effects on the marine environment are seen to be completely different. This should taken into consideration in the quantification of substances and decanting efforts made on ballast voyages to eliminate water quantities in slops for delivery to reception facilities.

2 Industrial Self-regulating Mechanisms

2.1 ISM Code. The International Management Code for the Safe Operations of Ships and for Pollution Prevention (International Safety Management (ISM) Code) was made compulsory for oil tankers as from July 1998, under a new Chapter IX in SOLAS 74/78. The Code strengthened the last decade's "quality" drive in shipping for the removal of sub-standard shipping, its management and registration of ships with less developed flag administrations.

2.2 The international shipping community was thus given a legal tool to effectively manage the factors vital to safety and pollution prevention. The Code should ensure that the mandatory rules and regulations are met as well as compliance with applicable codes, guidelines, and standards recommended by the maritime industry organisations, including Administrations, Classification Societies and the IMO.

2.3 In the ISM Code's context some vital specific requirements require the shipping companies amongst others to:

- Establish a safety and environmental protection policy stating how the objectives are to be achieved;
- define levels of authority and lines of communication between shore and shipboard personnel;
- establish instructions and procedures to ensure the safe operation of ships and protection of the marine environment, in compliance with international and flag state legislation;
- Master to ensure reporting and analysis of accidents, incidents and non-conformities in order to avoid recurrence.

2.4 The ISM Code should help ship Masters to comply with rules and regulations and avoid illegal discharges of oily waste and garbage in violation of regulations. Thus it should be a valuable tool for consideration in assessing further how the South East Asian Sea Area can be better managed for pollution avoidance.

2.5 Cleaner Seas Charter Party Clauses. Most charter parties used in the oil trades contain standard provisions which place a legal obligation upon the parties to the contract, including the Masters, to duly comply with MARPOL. They call for collaboration by partnership where burdens and obligation are shared for effective MARPOL compliance. But most independent oil trading companies nullify such provisions by stipulating under the chartering terms and conditions that vessels are to arrive in loading

port slop free and with clean ballast only, regardless of the trading pattern. With such provisions the marine environment will continue to be exposed to illegitimate oil discharges.

2.6 The governments of States in the South Asian region might be invited to consider imposing conditions for oil trading to include stipulations that contracts of affreightment should operate in the spirit of MARPOL compliance.

2.7.1 COW and LOT Operation. It is assumed that a few cargo shippers in the loading ports, including port authorities, will demand that tankers load the slop accumulated from tank cleaning, coupled with the settled water decanted en route, on top of the next cargo loaded (LOT system). Currently, many operators may, if no LOT is required, be tempted to sell the slop quantities to collection services already on station.

2.7.2 MARPOL's minimum requirements for COW to reduce cargo residues in tanks after unloading are: 60% of the tanks for conventional vessels (Single Hulls/Pre-MARPOL or non-SBT tankers) and 25% of the tanks for SBT/New Double Hulled crude carriers. The extent of COW will be determined by Charterers' instructions. Time is money also for Charterers, and the COW operation will extend the vessels' stay at the berth by some 6-8 hours as a minimum. Some refineries in discharge ports would thus prefer minimum COW whereas other would go for more, up to a full COW to maximise on cargo outturn. The extent of this operation will thus have a bearing on the amount of cargo residues retained onboard for disposal prior to the next loading.

2.7.3 Non-STB tankers with long ballast voyages – steaming more than 6 days in calm weather and sea conditions and more than 50 n.m. from nearest land – providing the conditions for an efficient LOT system operation, would arrive in the region with concentrated slop in slop tanks and clean ballast water in cargo tanks.

2.7.4 Also, it has been noted that to avoid sludge build-up in shore tanks and to mitigate evaporation losses caused by COW, some oil refineries now require charterers to instruct vessels to perform minimum COW in the discharge ports. With a limited COW, the sludge and oily residues that need to be disposed of, which otherwise can amount to 0.2% of the tankers' deadweight, are increased to 0.4%.

2.7.5 Every 2 1/2 years the tankers will have to visit a repair yard with dry-docking facilities, or under certain circumstances the required maintenance programme may be carried out whilst the ship is still afloat, which reduces the actual dry-dockings by 50% to 5-year intervals. The above should be taken into account when estimating the amount of de-sludging for required dry-docking and gas-freeing for hot work for tankers entering the South East Asian region for repairs.

2.8 Chemical/Parcel Carriers –MARPOL Annex II. The traffic of chemical carriers trading to the region is relatively small, as most chemicals are imported in containers. But when chemicals are imported in bulk, the discharge into the sea of slops containing residues from the most hazardous substances, categorised as A residues, is prohibited and must therefore be discharged into appropriate reception facilities.

2.8.1 Cargo tanks having delivered a Category A substance shall be mandatorily pre-washed prior to vessel leaving port, and the water delivered to a reception facility. Active involvement by Charterers/Shippers/Receivers and the Master is required for the safe disposal of noxious liquid substances. Thus the operators of terminals and shippers/receivers of cargo should be made responsible for arranging reception facilities and the safe disposal of the residues.

2.9 Mobilisation of Ships Agents in Waste Management System. It is typical for commercial ships to make arrangements for ship calls and port reception of wastes through their shipping agents, who in turn should arrange the applicable services with port authorities or commercial waste Management

Companies. Shipping Agents should therefore play a pivotal role in ships' compliance with MARPOL 73/78.

4.3.15 In the implementation plan for the region shipping agents should be given a role to facilitate and co-ordinate the exchange of information between the ship, the port and terminal, and the waste management company in a series of information linkages related to waste discharge request, arrangements, and confirmation of arrangements with stipulation of estimated quantities. The ship, shipping agent, port and terminal designated or selected waste management companies, and the shipping operators should work together on the basis of criteria to be established to make the linkages workable and effective. Should such linkages not be made or be broken, MARPOL implementation is incomplete. Non-compliance of a vessel can lead to a number of enforcement complications such as: port delays, civil and criminal penalties against the Master and/or vessel/terminal operators/ waste Management Company.

3 Quality Shipping Campaign for Improved Protection of the Marine Environment

3.1 The last decade has been marked by "quality" and "safety" culture drives where the rights and duties lie at the heart of efforts to eliminate the scourge of substandard ships. A concise definition of a substandard ship is still missing, but some argue that such vessels are not maintained and operated in accordance with internationally agreed standards. The challenge is to ensure the uniform application of rules and regulations by all flag States and by all other parties who have responsibility for their implementation.

3.2 The campaign may succeed by devising the correct environment for an international business as a fundamental requirement for international trade. This should be complimented by a duty for States to ensure the provision of adequate waste reception facilities for ships in port. The States in the South Asian region may institute a "quality drive" by administrations, ships operators and charterers alike for ships visiting ports, or transiting the area, and optimising MARPOL 73/78 compliance.

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APPENDIX VI

Tentative Programme for discussion

IMO/SACEP

Workshop on Port Reception Facilities in Bangladesh, India, Maldives, Myanmar, Pakistan and Sri Lanka

21 – 25 August 2000

Inter Continental Hotel
Colombo, Sri Lanka

Item No.	TOPICS	OBJECTIVES/OUTCOME (What delegates will understand & recommend)	RESOURCE PERSONS/SPEAKERS	TIME
	Day one **Session 1:**			
1.	Opening Session Opening Statement Welcome address	Highlight importance of all countries to accede to MARPOL 73/78 and provide for reception facilities.	**SACEP** – A. R. Joshi, Director General IMO –officer **J.H.Koefoed** Implementation Officer **(Minister level)** **SACEP**	0900
2.	Workshop Outline	How the Workshop is organised, objectives and presentations of Panel Speakers/Resource Persons etc.	**IMO Consultant** Cdr. T. A. Meyer	0930
3.	MARPOL 73/78: status, achievements and objectives of the international evolutionary process for cleaner marine environment.	Understand relationship and correlation, key considerations and obligations on ratification and implementation of MARPOL, and the precautionary approach. Introduction of the IMO Manual, MARPOL-How to do it?	**IMO Officer** J.H. Koefoed.	0945
	Coffee break			1030
4.	International Shipping: Trades, trends and forecast.	Composition of the world's commercial fleets. Ship design and operation for MARPOL compliance.	**IMO Consultants** Cdr. T. A. Meyer Cdr. H. Soysa	1045
5.	National Commercial Ship Trading and Fisheries in S. E. Asia.	Understand the MARPOL obstacles involved and the extent of coast-wise marine activities in the S. E. Asian waters.	**IMO Consultants**	1115
6.	Panel discussion	Questions & answers		1145
	Lunch			1200
7.	**Session two:** Establishment of six or more Working Groups.	It seems imperative to establish the Working Groups at an early stage during the Workshop, to maximize output for their work on day four. Six of the Working Groups should mainly concentrate on individual country aspects. One or more Groups could deal with Regional issues.	IMO Consultants	1330
8.	Country profiles on the assessment of ship generated wastes: Annex I Annex II Annex V	Fact sharing on evaluation of ships' traffic patterns, port calls and assessment of ship generation of wastes for disposal to reception facilities.	**IMO Consultants**	1415
	Tea Break			1530
9.	Reception Facilities: Annex I - Reg. 12 Annex II - Reg. 7 Annex V - Reg. 7	Familiarisation with the IMO Comprehensive Manual on Port Reception Facilities.	**IMO Officer**	1545
10.	Panel discussion	Questions and answers		1630
	Close of day			1700

Item No.	TOPICS	OBJECTIVES/OUTCOME (What delegates will understand & recommend)	RESOURCE PERSONS/SPEAKERS	TIME
	Day two **Session 3:**			
11.	a) Country profiles on availability of reception facilities and requirements for meeting MARPOL's requirements: Annex I Annex II Annex V	Sharing of outcome/evaluation of the IMO Consultants findings from visits to ports and focal points in the region.	**IMO Consultants**	0830
	b) Financing and cost recovery systems on the operations of reception facilities.	The Singapore Maritime Port Authority experience explained, with emphasis on the whole of the South East Asian Region.	**MPA** – Z. Alam and Capt. C. Eng Kat	0930
	Coffee break			1030
12.	Country profiles on marine from land based pollution.	Focussing on the present status of marine pollution from land based sources in the S. E. Asian region.	**National Institution of Ocean Technology, Madras** Dr. B. R. Subramanian, Project Director	1045
13.	Panel discussion	Questions and answers		1130
	Lunch			1200
14.	**Session 4:** National profiles on land based and marine pollution control legislation; organisation; administration and management: Bangladesh, India, Maldives Myanmar; Pakistan; Sri Lanka.	Participants to share information and understand complexities, obstacles for improvements.	**Local expert participant from each of the six countries.**	1330
	Tea break			1500
15.	Continuation of session 14,also with any other countries represented at the Workshop.	As above under 14.	As above under 14.	1545
16.	Panel discussion	Questions and answers		1630
	Close of day			1700

Item No.	TOPICS	OBJECTIVES/UTCOME (What delegates will understand & recommend)	RESOURCE PERSONS/SPEAKERS	TIME
17.	**Day three** **Session 5:** Reception facilities; the technical requirements for reception facilities and the practicality of integrating existing and future capacity; and sophistication of land based and sea based wastes treatment and disposal systems. Recycling of wastes.	Understand methodology with support systems on how to do it.	**IMO Consultants**	0830
	Coffee break			1000
18.	The implementation of a phase by phase in systems for the establishment of adequate reception facilities; – the cases for regional and inter ports co-operation.	Understand and support optional systems on how to do it.	**IMO Consultants**	1015
19.	Panel discussion	Questions and answers		1130
	Lunch break			1200
20	**Session 6:** Visit to **Kandalama** Hotel with overnight stay. Bus departure			1400
21.	**Delegates' Dinner**	Focus on the presentation on an "ecological friendly" resort.	**Hotel management**	2030
22.	**Day four** **Session 7:** Eco-tour of hotel.	Understand how to do it.	**Hotel Management**	0830
23.	Working Groups on the implementation of MARPOL 73/78. Technical and legal aspects.	• National legislation; • Maritime Administration; • Infrastructure and support services; • Human resource capacity; • Device early steps for advancement on implementation/enforcement of national legislation. • (More ?)	**The Workshop will break into six (or more) Working Groups.**	0930
	Lunch			1200
	Bus departure			1500
	Arrival Colombo Checking in at hotel.			1800

Item No.	TOPICS	OBJECTIVES/OUTCOME (What delegates will understand & recommend)	RESOURCE PERSONS/SPEAKERS	TIME
24.	**Day five** **Session 8:** Presentations of the results and recommendations for each of the Working Groups.	Discussion	**Each country's expert delegate to present the outcome**	0830
25.	Recommended action plan and requirements for implementing MARPOL 73/78 for the S. E. Asian countries; co-operation with industry sectors.	Understand and support recommendations for effective action plans on the implementation of MARPOL and the establishment of reception facilities.	**IMO Consultants**	1000
	Coffee break			1030
26.	**Session 9:** MARPOL sanctions: enforcement and compliance, Regional MOU on Port State Control.	Understand the legal aspects and implications involved with quality assurance; and the policing systems.	**IMO Officer**	1045
27.	Development and implementation of management/auditing strategy for waste reception facilities at Ports and Marinas.	As above.	**IMO Consultants**	1115
28.	Panel discussion	Questions and answers		1145
	Lunch			1200
29.	**Session 10:** Discussion of national and regional steps that need to be taken in order to implement recommendations that have developed during the WORKSHOP.		**Introductory remarks by IMO Consultants; followed by representatives from each country.**	1330
	Tea break			1530
30.	**Closing of the Workshop.**		**IMO Officer/ SACEP**	1600-1630
	PRESS CONFERENCE		**IMO/SACEP**	1700

APPENDIX VII

Activity Report /Meeting Scedules

13 April – 09 June, 2000

LONDON:

Thursday 13 April:	
AM/PM	Briefing IMO Headquarter
17 April – 21 April	Performed preparatory work on mission
Friday 28 April:	
AM	Draft proposal on agenda for Workshop submitted to IMO
	Briefing IMO Headquarter
Tuesday 2 May:	
PM	Flight departure for Colombo, Sri Lanka

SRI LANKA/Colombo:

Wednesday 3 May:	
AM	Arrival Colombo. (Traffic delay 1 hour)
	Met with Associate Consultant for the IMO Mission. Cdr. Hiran Soysa
PM	Briefing South Asia Co-operative Programmes (SACEP)
Thursday 4 May:	
AM	Meeting with Marine Pollution Prevention Authority (MPPA)
PM	Field trip planning/drafting at hotel
Friday 5 May:	
AM	Attended to airlines flight tickets arrangement
PM	Attended to airlines flight tickets arrangement
	Drafting at hotel
Saturday 6 May:	
AM	Reported on situation to IMO
PM	Field trip to lakes and canals City of Colombo
Sunday 7 May:	
AM	Drafting at hotel
Monday 8 May:	
AM	Flight departure Colombo

Myanmar/Yangon:

Monday 8 May:	
AM	Arrival Yangon (Traffic delay 1 hour)
PM	Meeting with National Commission for Environmental Affairs (NCEA)
Tuesday 9 May:	
AM	Meeting with WinTrade Company Ltd. (Maersk Container)
	Field trip to Yangon River and industrial complex
PM	Meeting with Myanma Port Authority

Field trip to Port of Yangoon

Wednesday 10 May:

AM	Meeting with Golden Eagle International Co., Ltd.
PM	Flight departure for Bangkok
	Arrival Bangkok

Bangkok:

Thursday 11 May:

AM	Curtsy visit to the UNEP Headquarters
PM	Drafting at hotel

Friday 12 May:

AM	Flight departure for Dhaka

Bangladesh/Dhaka/Chittagong:

Friday 12 May:

PM	Arrival Dhaka
	Field trip to the Bangladesh Memorial Park

Saturday 13 May:

AM/PM	Meeting/luncheon with Department of Shipping
PM	Excursion in the city of Dhaka
	Drafting at hotel

Sunday 14 May:

AM	Flight departure for Chittagong
	Arrival Chittagong (Traffic delay 3 hours)
	Visit to Chittagong Drydock Ltd
PM	Visit to Eastern Refinery Ltd.
	Visit to Seaman's Training Centre
	Meeting with Mercantile Marine Dept.
	Meeting with Chittagong Port Authority

Monday 15 May:

AM	Flight departure Chittagong
PM	Arrival Delhi

India/Delhi/Bombay/Madras:

Tuesday 16 May:

AM	Visit to Ministry of Transport for activity planing
PM	Meeting with Indian Ports Association

Wednesday 17 May:

AM	Meeting at the Ministry of Transport
PM	Meeting with the Commandant Coast Guard Headquarters

Thursday 18 May:

AM/PM	**National Holiday**
PM	Flight departure from New Delhi
	Arrival Bombay (Mumbai). (Traffic delay 3 hours caused by heavy rains in Mumbai during the night/morning, halting

	airport and city traffic. (The worst May torrential downpour in 50 years causing severe flooding in some areas)
Friday 19 May:	
AM	Meeting with Mumbai Port Authorities
	Meeting with Deputy Director General of Shipping
PM	Boat trip to Jawaharlal Nehru Port (JNP)
	Meeting at the JNP Trust
	Excursion to the Container Terminals (5)
	Visit to the Vessel Traffic Management Centre (JNP)
Saturday 20 May:	
AM	Drafting at Hotel
PM	Meeting with Pratibha Shipping Company Ltd.
	Joint meeting with focal points in the office of Directorate General of Shipping (12 persons in attendance)
	Meeting with Director General of Shipping
Sunday 21 May:	
AM	Flight departure from Bombay
PM	Arrival Madras (Chennai)
Monday 22 May:	
AM	Meeting at the Chennai Port Trust
	Excursion to the Port of Chennai
PM	Meeting at the National Institute of Ocean Technology
	Meeting with Sanmar Shipping Limited
Tuesday 23 May:	
AM	Flight departure for Colombo
PM	Arrival Colombo
Sri Lanka/Colombo:	
Wednesday 24 May:	
AM	Meeting with Ministry of Shipping & Shipping Development
	Meeting with Maritime Administration – Merchant Shipping
	Visit to the Merchant Shipping – Examination Centre for Seafarers' Competencey
PM	Drafting at hotel
Thursday 25 May:	
AM	Meeting with the Central Environmental Authority
PM	Drafting at hotel
Friday 26 May:	
AM	Meeting with representatives from shipping companies
PM	Attended to travel arrangements
Saturday 27 May:	
AM	Drafting at hotel
Sunday 28 May:	
AM	Excursion to the Colombo Port
PM	Travel to airport
	Flight departure

Monday 29 May:

AM — Arrival Karachi

FM — Meeting with the Ministry of Communications Ports & Shipping Wing
Meeting with the Karachi Port Trust
Excursion in the Port of Karachi
Meeting with the Marine Pollution Control
with visit to the Oil Spill Combat Centre and its laboratory

Tuesday 30 May:

AM — Visit to Port Qasim Authority
Excursion in the Port and Oil Spill Combating Centre
Meeting with the Director General (Administration)

PM — Meeting with the Ministry of Communication. Ports and Shipping Wing. Karachi
Meeting with Headquarter Maritime Security Agency followed by luncheon
Meeting with the Marine Pollution Control
Meeting with the Director General Ports & Shipping

Wednesday 31 May:

AM — Meeting with the Gulf Agency Company

PM — Travel to the airport

Thursday 01 June:

AM — Flight departure
Arrival Colombo

FM — Drafting at hotel
Attended to travel arrangements
Reported on situation to IMO

Friday 02 June;

AM — Meeting with SACEP

PM — Meeting with Global Coral Reef Monitoring Network South Asia
Meeting with Sri Lanka Ports Authority
Lecturing: Institute of Engineers. Colombo

Saturday 03 June:

AM — Flight departure
Arrival Male. the Maldives

FM — Drafting at hotel

Sunday 04 June:

AM/PM — National Holiday

Monday 05 June:

AM/PM — National Holiday

Tuesday 06 June:

AM — Meeting with Ministry of Home Affairs. Housing and Environment
Meeting with Ministry of Transport and Civil Aviation

PM	Meeting with Maldives Port Authority
Wednesday 07 June:	
Am	Meeting with the Coast Guard
	Meeting with Ministry of Tourism
PM	Meeting with the Ministry of Fisheries
	Flight departure for London
Thursday 08 June:	
PM	Arrival London Heathrow
Friday 09June:	
AM	Debriefing in IMO Headquarte
Monday 26 June	
AM	Preparation of documents for Workshop in Consultation with IMO
	Draft documents submitted to IMO for comments
Friday 30 June:	
	Finalization of documents taking into account comments received.
<u>London 18 August</u>	
PM	Flight departure for Colombo
<u>Colombo/Sri Lanka</u>	
Saturday 19 August	
AM	Arrival Colombo
Sunday 20 August	
PM	Assisted SACEP with Workshop preparation
Monday 21 – Friday 25 August	
PM/AM	Attended at the Colombo Workshop and presented documents
Saturday 26 August	
AM	Flight departure for London
Monday 29 August – 30 August	
AM/PM	Preparation of final document of assignment
Thursday 31 August	
AM	Submitted final report to IMO for comments

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APPENDIX VIII

TERMS OF REFERENCE FOR CONSULTANT TO PREPARE BASE DOCUMENTS AND TO PRESENT THESE AT A WORKSHOP ON PORT RECEPTION FACILITIES FOR BANGLADESH, INDIA, MALDIVES, MYANMAR, PAKISTAN AND SRI LANKA.

PROJECT TITLE: Regional Workshops on Port Reception Facilities and on Oil Spill Contingency Plan.

PROJECT NO: PR 279 (TC03- RAS/97/305)

Background:

The MARPOL 73/78 convention is a key instrument in the global effort to prevent and manage marine pollution. Although India, Myanmar, Pakistan and Sri Lanka have already ratified MARPOL 73/78, Bangladesh and the Maldives have not yet done so. The lack of reception facilities is one of the main stumbling blocks in the ratification and implementation of MARPOL 73/78 and is best addressed at the regional level.

Objective:

To enable appropriate personnel in the region to make arrangements and prepare infrastructure necessary for the ratification of MARPOL 73/78.

Terms of Reference:

Acting upon the instructions of the Secretary-General of IMO or other officials acting on his behalf, the consultant shall during a period of 54 working days between

14th April 2000 and 31st August 2000, carry out the following tasks:

1. Visit IMO, London to attend a briefing session.
2. Conduct preparatory work in country of residence, including:

(a) preparing and sending out correspondence to the competent authorities in the region outlining the main information which the consultant will be collected during his/her mission to the region; and

(b) preparing documentation relating to the organization of the Workshop on Port Reception Facilities (e.g., agenda for the workshop, draft letters of invitation etc.).

3. conduct, together with an Assistant Consultant, a needs assessment mission to the following countries to meet relevant persons in both the government and private sectors in order to collate information for documents which the consultant will be preparing for the workshop in accordance to point 4 of these Terms of Reference:

- Sri Lanka;
- India;
- Bangladesh;
- Myanmar;
- Pakistan; and
- Maldives.

4. Prepare documents, in country of residence, on the ratification and implementation of MARPOL 73/78 for the countries concerned to address, *inter alia*, the following.

- Introduction on MARPOL 73/78 and the legal requirements regarding reception facilities;
- The need for additional reception facilities taking into account the traffic pattern in the ports concerned and possible locations for such facilities;
- Existing and possible future sustainable public sector – private sector financing mechanisms for the provision and operation of reception facilities for the region;
- Draft master plans for the implementation of activities related to MARPOL 73/78 in the region; and,
- The main stumbling blocks given for the lack of ratification and implementation of MARPOL 73/78.

5. Advise and supervise the Assistant Consultant in the preparation of the following two documents for the Workshop:

- The current availability of reception facilities in the main ports handling MARPOL ships in the six countries, including information on the type of waste received, their capacities and conditions for operation; and,
- The status of ratification and implementation of MARPOL 73/78 annexes and how this has been incorporated into the national laws in the six countries in question; and

6. Visit IMO, London to attend a debriefing session after the mission.

7. Present the report on ratification and implementation of MARPOL 73/78 at the Workshop on Port Reception Facilities and co-share the function of workshop facilitator with the Assistant Consultant, an IMO officer and with two facilitators provided by Singapore under the IMO-Singapore Memorandum of Understanding.

8. Prepare a final report (in country of residence).

The Consultant shall:

(a) Liaise with the Assistant Consultant throughout the mission and when preparing the documents for the Workshop;
(b) Advise and supervise the Assistant Consultant in preparing the documents assigned to him; and
(c) Work together with IMO staff throughout the assignment.

Timing:

14th April 2000	Visit of Consultant to IMO for briefing
17th to 21st April 2000	Conduct preparatory work
28th April 2000	Consultant to send out agenda for Workshop to IMO
2nd May to 1st June 2000	Mission of consultant to six countries to collate information
5th June 2000	Debriefing in IMO
6th to 26th June 2000	Prepare documents for Workshop

26th June 2000	Consultant to send documents to IMO
30th June 2000	Finalization of documents taking into account comments received
21st to 25th August 2000	Act as Workshop facilitator and present documents at the Workshop
29th to 30th August 2000	Preparing final report of assignment
31st August 2000	Submitting final report to IMO for comments

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APPENDIX IX

Contacts/Focal Points/Persons

Sri Lanka:

South Asia Co-operative Environment Programme (SACEP)
Anada R. Joshi (Ph.D Env. Management), Director General
Prasantha Dias Abeyegunawardene (B Sc.), Deputy Director, Programmes
Marine Pollution Prevention Authority (MPPA)
Dhanapala Weersekara, Chairman
Ravi Tayavatue, Consultant
UN Consultant in Environment Management
K.H.J. Wijayadasa
Ministry of Shipping & Shipping Development
R.S. Athukorala (Mrs), Secretary
Maritime Administration – Merchant Shipping
A.R.M. Abeyratne Banda, Deputy Director
Central Environmental Authority
K.G.D. Bandaratilaka, Deputy General (Technical)
R. Rathamanoharan, Deputy Director (Pollution Control)
Sri Lanka Ports Authority
Nihal Keppetipola, Capt., Harbour Master
Global Coral Reef Monitoring Network South Asia
Emma Whittingham, Regional Co-ordinator
Sri Lanka Shipping Company Limited
M. Reza, Managing Diector
Contship Agencies Limited
J.D.F. Peries
MISC Agencies Lanka (Pvt.) Ltd
M. Faizer Hashim, Director

Myanmar/Yangon:

Ministry of Foreign Affairs/National Commission for Environmental Affairs (NCEA)
Than Htoo, Assitant Director, Ph.D. Statistics & Economics
Myanma Port Authority
Thein Htay (Col.), Managing Director
U Tin Soe (Cdr.), General Manager
Myint Ngwe (Cdr./Master Mariner), Deputy General Manager (Traffic)
Win Trade Company Ltd. (Maersk Container)
Thein H. Pru, Operations
Golden Eagle International Co. Ltd.
Aye A. Sint, Adm. officer

Thailand/Bangkok:

UNEP, Regional Office for Asia and Pacific
Lai Kurukulasuriya, Chief Environmental Law Programme

Bangladesh/Dhaka/Chittagong:

Dhaka — **Department of Shipping**
M.Badiuzzaman, Chief Engineer & Ship Surveyor
A.K.M Ahsanul Azim, Capt. Chief Nautical Surveyor
A.K.M. Shafiqullah, Capt. Nautical Surveyor

Chittagong — **Eastern Refinery Ltd**
Rashidul Hoque, M.Sc.,Deputy Gen. Mnager, (Dev. & Contr.)
Chittagong Drydock Ltd
Enamul Baqui, M.Sc.Engr., General Manager (Marketing Plan.& Design)
Seamen's Training Centre
Kazi Ali Imam, MNI (UK), Master Mariner, Principle
Mercantile Marine Department
Abdul Haq, Principal Officer
M. Habibur Rahman, Master Mariner, Nautical Surveyor
Chittagong Port Authority
Nazmul Alam, Master Mariner, Dock Master
M.Quamrul Hossain, Master Mariner, Harbour Master

India/New Dehli/Bombay/Madras:

New Dehli — **Indian Ports Association**
A.N.M. Kishore, Capt., Managing Director
Amal Chakravorty, Member, Chartered Institute of Transport, Director Planning (Retd) Calcutta Port Trust
Government of India, Ministry of Surface Transport/Ministry of Transport
S. Gopalan, Development Advisor (Ports)

Bombay — **Directorate General of Shipping (DGS)**
D.T.Joseph, (IAS), Director-General of Shipping & Ex-Officio Addl. Secretary to the Govt. of India
R. Ravichandran, (IRS), Deputy Director General of Shipping
Anatha Prasad.NS, Assistant General of Shipping, Govt. of India Ministry of Surface Transport
B.K. Biswas, Chief Surveyor, DGS
Rajiv K. Gupta, Surveyor, DGS
R. Ravichandran, Surveyor, DGS
Sundnip Kumpa, Projects, DGS
Neerav K. Gupta, Capt., Deputy Conservador,
N.M. Sassoon, Director Bombay Port Trust
Shridhav More, Director Pollution Control, **Bombay Port Trust**
A. Chatteju, Director, Merchantile Marine Department
P.C. Chaturvedi, Capt., Dy. Conservator, **Kandla Port Trust**
Vinod K. Chavla, Director (Shipping), **Oil Coordination Committee (OCC)**
R. Ahluwalia, Capt., Marine Advisor, **OCC**

Pratibha Shipping Company Ltd.
K. Nada, Chief Executive Officer

Madras **Chennai Port Trust**
P.P. Mokasi, Capt., Deputy Port Conservator
R.K. Hariprasad, M.A., Chief Public Relations Officer
National Institute of Ocean Technology
B.R. Subramanian, Ph.D., Project Director, Dept. of Ocean Development, Govt. of India Integrated Coastal and Marine Area Management(ICMAM) Project Directorate
Sanmar Shipping Limited
N.T. Prasanna, Asst. Vice President, Commercial

Pakistan/Karachi/Port of Qasim:

Karachi **Ministry of Communications Ports and Shipping Wing**
Gul Zaman Malik, Rear Admiral, Director General
Saifuddin Latif, Capt., Chief Nautical Surveyor
Karachi Port Trust
Anwar Mohuddin, Commodore, General Manager
Marine Pollution Control
Zahid Majeed, Director Administration
Irshad Ahmed, Lt. Cdr., Staff Officer Marine Pollution
Shahzad Aamir, Lt.Cdr., Staff Officer Marine Pollution Control
Maritime Security Agency
Muhammad J. Akhtar, Rear Admiral, Director General
Gulf Agency Company
Petter Bille, Managing Director
Javed Iqbal, Capt., General Manager Opertions
Abid Mukhtar Ahmed, Capt. Manage Operations
Port Qasim Authority

Qasim Khalid Bashir Khawaja, Brigadier, Director General (Administration)
Ahmad Kamal Alavi, Deputy General Manager, Environment & Safety
R.Y. Usmani, Manager

Maldives/Male:

Ministry of Home Affairs, Housing and Environment
Mohamed Khaleel, Director, Environmental Affairs
Ministry of Transport and Civil Aviation
Mohamed Thowfeequ, Director General
Maldives Ports Authority
Ahmed Rasheed, Capt., Harbour Master
Ministry of Fisheries, Agriculture and Marine Resources
Jadullah Jameel, Executive Director
Abdul Shaeed, Dr., Superintendent
Ministry of Tourism
Mohamed Saheed, Deputy Minister of Tourism
Ministry of Defence and National Security
Ahmed Zahir, Director General NSS Coast Guard, Lt. Colonel
Headquarters of the the National Security, NSSCoast Guard
Ibrahim Afzal, Lieutenant