CARIBBEAN ISLAND OPRC PLAN 2012

Regional

Caribbean Island Oil Pollution Response and Cooperation Plan

CARIBBEAN ISLAND

OPRC PLAN

2012

Published by:

Regional Activity Center / Regional Marine Pollution Emergency Information and Training Center - Wider Caribbean Region

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Glossary of Terms

CARIBPOLREP	Caribbean Pollution Report
CCA	Clean Caribbean and Americas (formerly CCC)
CCC	Clean Caribbean Cooperative
CLC	International Convention on Civil Liability for Oil Pollution Damage
Dispersants	Specially formulated agents that are sprayed on the surface of the water or are injected at the source of a sub-sea spill at various dosages on slicks to enhance its natural mixing and biodegradation in surface waters.
EEZ	Exclusive Economic Zone
EI	Environmental Impact
EOC	Emergency Operations Center
ETA	Estimated Time of Arrival
Flash Point	The lowest temperature at which the vapors above a volatile liquid form a combustible mixture with air.
In-Situ Burning	A controlled ignition of oil, other hydrocarbon products, and oil spill debris at the site of the spill. For offshore spills the burning of the floating oil may occur with or without fire-resistant booms.
IMO	International Maritime Organization
IOPC	International Oil Pollution Compensations Fund
ITOPF	International Tanker Owners Pollution Federation Limited
MARPOL	International Convention for Prevention of MARitime POLlution from Ships
MSRC	Marine Spill Response Corporation
ODP	Office of Disaster Preparedness

OPA 90	United States of America Oil Pollution Act of 1990
OPRC	Oil Pollution Preparedness, Response and Cooperation
OPRC 90	International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990
OSC	On-Scene Commander
OSSC	Oil Spill Service Center
PAH	Polynuclear Aromatic Hydrocarbon
POLREP	Pollution Report
PVC	Polyvinyl Chloride
RAC	Regional Activity Center
REMPEITC-Caribe	Regional Marine Pollution Emergency, Information and Training Center- Wider Caribbean Region
SCUBA	Self-Contained Underwater Breathing Apparatus
SITREPS	Situation Reports
Tier 1 Spills	Accidental discharges occurring at or near a facility as a result of routine operations. Impacts are low and in-house response capability is adequate. [0 to 100 bbls (< 16 m^3)].
Tier 2 Spills	Medium-sized spills occurring in the vicinity of a facility as a result of a non-routine event. Significant impacts are possible and external (regional) support for adequate spill response is required. [100 to 5000 bbls. (16 m^3 to 795 m^3)].
Tier 3 Spills	Large spills occurring either near or remote from a facility as a result of a non-routine event, and requiring substantial resources and support from national or world-wide spill co-operatives to mitigate effects perceived to be wide-reaching, i.e., of national or international significance. [over 5000 bbls. (> 795 m^3)].
UNEP	United Nations Environment Program

USCG	United States (of America) Coast Guard
VHF	Very High Frequency
Viscosity	A measure of the resistance to flow that a liquid offers when it is subjected to shear stress; higher values indicate thicker, slower-moving materials. For example, gasoline has a lower viscosity than diesel.
VOC	Volatile Organic Compound

CHAPTER 1. INTRODUCTION

1.1 Background

1.1.1 In March 1983 a conference of Plenipotentiaries met in Cartagena de Indias, Colombia, and adopted the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena Convention) and the Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region (Oil Spill Protocol).

1.1.2 The Oil Spill Protocol calls for cooperation in taking all necessary measures, both preventive and remedial, for the protection of the marine environment from oil spill incidents and places an obligation on Contracting Parties to establish and maintain, or ensure the establishment and maintenance of, the means to respond to oil spill incidents. The enactment of legislation as well as the preparation of contingency plans is included in such means.

1.2 Purpose and Objectives

1.2.1 This Plan provides a framework under which Island States and Territories may cooperate at the operational level in responding to oil spill incidents as required by Article 8 of the Oil Spill Protocol to the Cartagena Convention (See Annex A). The objectives of the Plan are to:

1. promote and implement regional cooperation in oil spill contingency planning, prevention, control and clean up;
2. develop appropriate measures of preparedness and systems for detecting and reporting oil spill incidents within the area covered by the Plan;
3. institute prompt measures to restrict the spread of oil; and,
4. identify resources to respond to oil spill incidents.

1.2.2 In summary, the overall objective of the Plan is to provide a cooperative scheme for mutual assistance from member States, Territories, and organizations in the event of a major oil spill incident which exceeds the response capability of a national government or oil industry. Venezuela was accorded an associate member status of the Caribbean Islands Oil Pollution Preparedness, Response and Co-operation (OPRC) Plan by the government experts at the 1992 meeting in Curaçao.

1.3 Geographic Area of the Caribbean Plan

1.3.1 The geographic area of the sub-regional contingency plan extends from latitude 30° N, 200 miles to the east into the Atlantic Ocean beyond the Caribbean Archipelago to the shore line of South America. To the west, the area extends into the Caribbean Sea and Gulf of Mexico following the Exclusive Economic Zone of the Island States and Territories. The geographic area of the Plan essentially is all the waters of the Exclusive Economic Zone (EEZ) of the sub-regional area of the Wider Caribbean applicable to Venezuela and the following Island States and Territories:

Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, British Virgin Islands, Cayman Islands, Cuba, Commonwealth of Dominica, Dominican Republic, French Antilles, Grenada, Haiti, Jamaica, Montserrat, Netherlands Antilles, Puerto Rico, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos, US Virgin Islands, Venezuela.

1.4 1.4. Tiered Response

1.4.1 The Caribbean Islands Oil Pollution Preparedness Response and Co-Operation (OPRC) Plan, hereafter referred to as the "Caribbean Plan", is designed as a tiered response procedure to enhance the ability of an Island State or Territory to respond to a spill which may be beyond that State's or Territory's capability. The individual Island State and Territory contingency plans, which can be annexed to the Caribbean Plan, will continue to be the guiding doctrine and are in no way superseded by the existence of the Caribbean Plan.

1.4.2 The capability of an Island State or Territory to respond to a marine pollution incident is of fundamental importance and provides the necessary foundation for a regional and sub-regional agreement. The Caribbean Plan should, therefore, be considered to be a "supplement to" rather than a "substitute for" a viable national contingency plan.

1.4.3 Each member of the Caribbean Plan should identify risk scenarios resulting from normal oil industry and shipping operations on, or in the vicinity, of its own territory. In keeping with the objectives of the Caribbean Plan it is anticipated that each Island State will develop, in co-operation with industry, a response capability (including a National Contingency Plan) to cover these operations. This National Plan should integrate and support local facility and terminal plans. The Caribbean Plan is therefore reserved for substantial accidental oil spills, or potential oil spills, which are beyond the scope or capability of the National Plan. However, if the circumstances of a small spill cause unexpected privation, assistance under the Caribbean Plan can be requested.

1.4.4 The Caribbean Plan offers an international mobilization scheme which can be utilized by the oil industry and government response teams on an international level. When a major oil spill occurs, the ability to rapidly initiate abatement procedures is essential to lessen the impact of oil encroaching on sensitive or public

areas. To achieve the stated goal of the Caribbean Plan will require that periodic testing be conducted by the member Island States and Territories. Long range goals of the Caribbean Plan should include upgrading the oil spill abatement equipment within the region and should provide regional training for personnel responsible for national response to any marine pollution emergency.

1.5 Definitions

1.5.1 "Convention" means the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region. (Cartagena Convention)

1.5.2 "Convention Area" means the marine environment of the Gulf of Mexico, the Caribbean Sea and the areas of the Atlantic Ocean adjacent thereto, south of 30° north latitude and within 200 nautical miles of the Atlantic coasts of the States referred to in Article 25 of the convention. The internal waters of these States are not included in the convention Area.

1.5.3 "EEZ" means, for the purpose of the Caribbean Plan, the Exclusive Economic Zone of an Island State or Territory extending to sea 200 miles, or to an equal division of territorial area between any two islands where the 200 mile zone would overlap.

1.5.4. "Geographic Area of Responsibility" means all the waters within 200 nautical miles of the Coast of the Island States and Territories as defined in section 1.3 of this chapter. Any action initiated within the area of responsibility will be determined by the Island State's or Territory's Lead Agency in accordance with the National Contingency Plan for the waters affected by the spill.

1.5.5 "Geographic Area of Interest" means all waters outside of the area of responsibility in which an oil spill could affect one or more of the Islands or Territories. Spills that occur in the area of interest will be monitored by the country whose area of responsibility is most likely to be affected by the movement of the spill as a result of wind and ocean currents.

1.5.6 "Focal Point Agency" means the Ministry or the Department in which the Lead Agency resides. Unless designated otherwise under Paragraph 2, Article 15 of the Convention, the Focal Point Agency is the agency designated in Island State's or Territory's National Oil Spill Contingency Plans that initiates and receives oil spill information directly from other Island State or Territory's Lead Agencies during times of an oil spill emergency. The Focal Point Agency should be the same Agency designated as the “Entitled Authority” under Article 6(1)(a)(iii) of the OPRC 90 for those States and Territories which are signatory to that Convention. The Focal Point Agency will be considered the agency responsible for the exchange of information required under Article 4 of the Oil Spill Protocol.

1.5.7 "Lead Agency" means the Competent National Authority with responsibility for oil pollution preparedness and response. Unless designated otherwise under Article 4 of the Oil Spill Protocol the Lead Agency is assumed to be the authority responsible for implementing the Oil Spill Protocol. The Lead Agency should be the same Competent National Authority designated under Article 6(1) (a) (i) of the OPRC 90 for those States and Territories which are signatory to that Convention.

1.5.8 "Response Agency" means the organization that normally responds to an oil spill during times of emergency. In some States or Territories, the Lead Agency and the Response Agency will be the same agency.

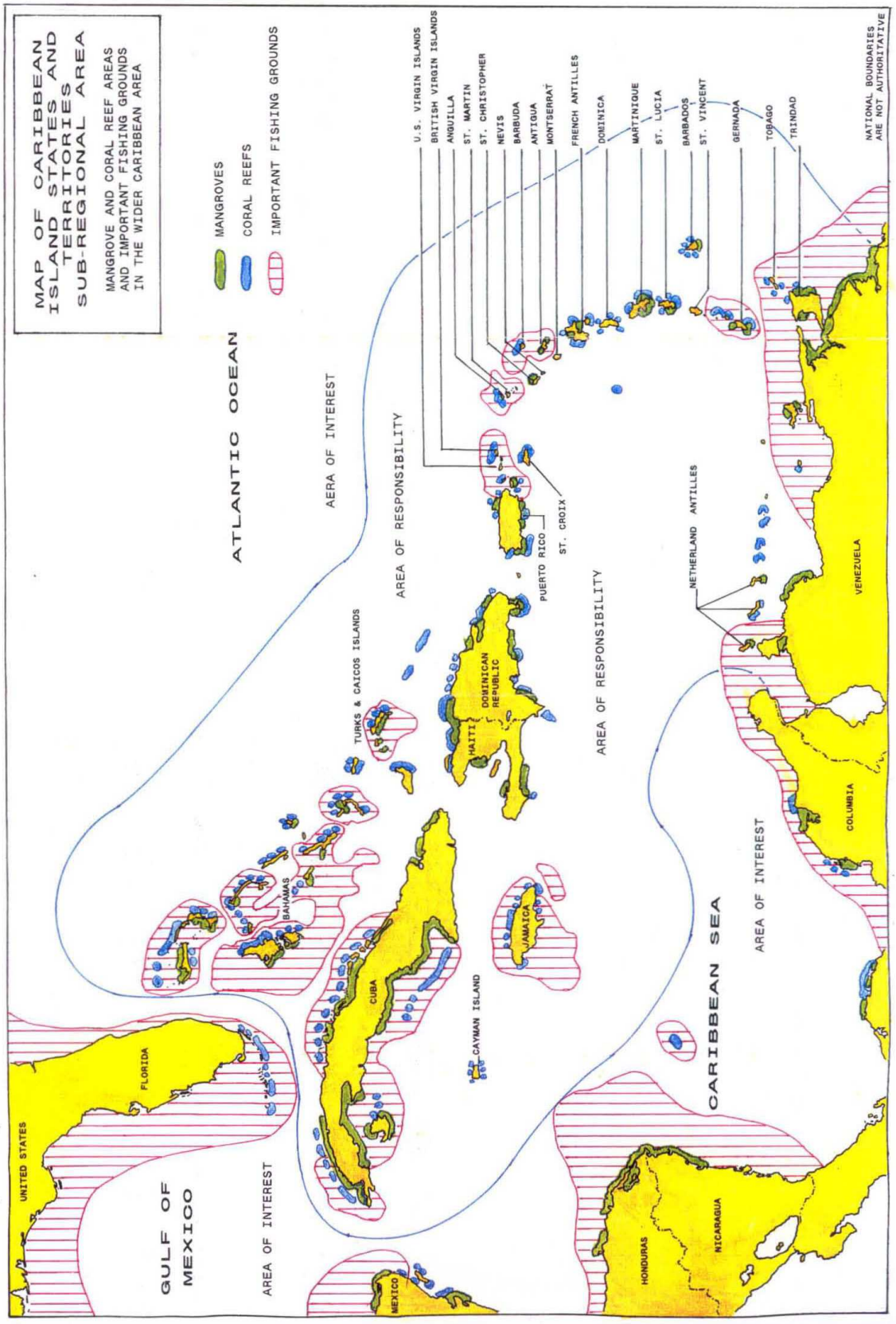
1.5.9 "On-Scene Commander (or Coordinator)" (OSC) means the official appointed and charged with coordination and direction of the national pollution control efforts at the scene of an oil spill incident. Where pre-designated, the OSC is listed in each of the National Appendices to this Plan by the appropriate Island State or Territory.

1.5.10 "Oil Spill Incident" means a discharge or a significant threat of a discharge of oil, however caused, of a magnitude that requires emergency action or other immediate response for the purpose of minimizing its effects or eliminating the threat.

1.5.11 "Secretariat" means the International Maritime Organization Regional Marine Pollution Emergency, Information, and Training Center - Wider Caribbean (RAC/REMPEITC-Caribe), Seru Mahuma z/n, Willemstad, Curaçao.

1.5.12 "Related Interests" means the interests of an Island State or Territory directly affected or threatened including:

1. maritime, coastal, port or estuarine activities;
2. the historical and tourist appeal of the area in questions, including water sports and recreation;
3. the health of the coastal population; and,
4. fishing activities and the conservation of natural resources.


MAP OF CARIBBEAN ISLAND STATES AND TERRITORIES SUB-REGIONAL AREA
MANGROVE AND CORAL REEF AREAS AND IMPORTANT FISHING GROUNDS IN THE WIDER CARIBBEAN AREA
MANGROVES
CORAL REEFS
IMPORTANT FISHING GROUNDS
ATLANTIC OCEAN
AERA OF INTEREST
AREA OF RESPONSIBILITY
AREA OF RESPONSIBILITY
AREA OF INTEREST
AREA OF INTEREST
CARIBBEAN SEA
GULF OF MEXICO
U.S. VIRGIN ISLANDS
BRITISH VIRGIN ISLANDS
ANGUILLA
ST. MARTIN
ST. CHRISTOPHER
NEVIS
BARBUDA
ANTIGUA
MONTSERRAT
FRENCH ANTILLES
DOMINICA
MARTINIQUE
ST. LUCIA
BARBADOS
ST. VINCENT
GERNADA
TOBAGO
TRINDAD
NATIONAL BOUNDARIES ARE NOT AUTHORITATIVE
PUERTO RICO
ST. CROIX
NETHERLAND ANTILLES
VENEZUELA
COLUMBIA
TURKS & CAICOS ISLANDS
HAITI
DOMINICAN REPUBLIC
BAHAMAS
CUBA
JAMAICA
CAYMAN ISLAND
FLORIDA
UNITED STATES
MEXICO
HONDURAS
NICARAGUA

CHAPTER 2. ORGANIZATIONAL PLAN

2.1 National Organization Plans

2.1.1 One of the essential prerequisites to sub-regional contingency planning is that all of the participating Island States and Territories develop and implement national oil spill contingency plans. While each national plan may differ, all should contain a number of common basic elements to ensure maximum benefit from participation in this Caribbean Plan:

1. designation of the competent national authority responsible for oil spill matters;
2. description of the national oil spill response organization;
3. identification of the likely sources of oil spills, vulnerable resources at risk and priorities for protection;
4. identification of existing resources, if any, strategies for combating spills, and the size of spill which can be dealt with at the national level;
5. identification of logistic support facilities available within the country;
6. identification of storage facilities for recovered oil and disposal methods;
7. communication capabilities for responding to an oil pollution incident; and,
8. a dispersant policy for territorial waters in the National area of responsibility.

2.2 Secretariat

2.2.1 The Secretariat for administration of the Caribbean Plan is RAC/REMPEITC-Caribe, Curacao.

2.2.2 The Secretariat will not have an operational role during an oil spill when the Caribbean Plan is activated. The Island State or Territory who is affected by the spill will control the operational activities in accordance with its own National Contingency Plan. Requests for international assistance envisioned by the Caribbean Plan will be initiated by the affected State's or Territory's Focal Point Agency during the mobilization phase by direct contact with the Focal Point Agency of the assisting States or Territories. The Secretariat can assist in facilitating the cooperation of foreign government agencies by offering to a requesting State or Territory the name of the Focal Point Agency (“Entitled Authority” under the OPRC 90) in a foreign government

from whom assistance can be requested. In the interim, while normal procedures of protocol are undertaken, the Secretariat may provide an informal link to quickly gain needed information. For example, a requesting State or Territory may want to acquire pertinent satellite photographs of affected spill areas or need a computer generated spill trajectory. One source of this information would be through the U.S. National Oceanic and Atmospheric Administration (NOAA). While a requesting government is seeking formal cooperation through the U.S. State Department, the Secretariat could contact the Regional NOAA Scientific Support Coordinator directly to obtain preliminary information.

2.2.3 The Secretariat will be responsible for the ongoing administration of the Caribbean Plan. As changes, deletions or amendments occur to the Plan and its Annexes, the Secretariat will be the central administrative body responsible for keeping current the copies held by the Official Holders of Record of the Caribbean Plan. The Secretariat will receive and distribute changes to the Official Holders of Record of the Plan (normally the Lead Agency in each Island State or Territory). Each change will be distributed only by the Secretariat and will carry a sequential numerical change number. It is anticipated that duplicate copies of the Plan will be made, but the Secretariat will not be responsible for maintenance of copies of the Plan held by persons other than Official Holders of Record.

2.3 Official Holder of Record

2.3.1 The Focal Point Agency of each Island State or Territory will designate the Internal Holders of Record within its State or Territory. The Focal Point Agency will be responsible for distributing changes to the Caribbean Plan when received. It is envisioned that the number of Official Holders of Record within the region will not exceed 68. There is no prohibition against additional copies of the Caribbean Plan being reproduced should the need arise; however, the agency that reproduces the copies will be responsible for keeping the unofficial copies current by copying and distributing changes as they are received by the designated Official Holder of Record.

2.3.2 The Caribbean Plan may be downloaded at the REMPEITC'S website at:
http://cep.unep.org/racrempeitc/oprc-plans/regional-oprc-plans/caribbean-island-oprc-plan

Or hardcopy requests with the allocation as follows;

COUNTRY	COPIES
Anguilla	2
Antigua and Barbuda	2
Aruba	2
Bahamas	2
Barbados	2
British Virgin Islands	2
Cayman Islands	2
Cuba	2
Curacao	2
Dominica	2
Dominican Republic	2
France	1
French Antilles (Martinique, Guadeloupe, Navy)	3
Grenada	2
Haiti	2
Jamaica	2
Montserrat	2
Netherlands	4
Puerto Rico	2
St. Kitts & Nevis	2
St. Lucia	2
St. Maarten	2
St. Vincent & Grenadines	2
Suriname	2
Trinidad & Tobago	2
Turks & Caicos	2
U.K.	1
U.S. (State Dept & USCG)	2
U.S. Virgin Islands	2
Venezuela	2

ORGANIZATION	COPIES
Caribbean Disaster Emergency Response Agency (CDERA)	1
Caribbean Regional Response Team (US-CRRT)	1
Clean Caribbean & Americas	1
IMO Headquarters	1
MSRC	1
RAC/REMPEITC-Carib (master)	1
UNEP / RCU CAR	1

2.4 Focal Point Agency

2.4.1 The Focal Point Agency is designated in the National Oil Spill Contingency Plan of each Island State or Territory and for the purposes of the Caribbean Plan will be the agency that initiates and receives oil spill information directly from Focal Point Agencies of other member Island States or Territories. The Focal Point Agency is responsible for notification of member Island States and Territories in the event a major spill occurs. The State or Territory that is nearest to the spill, or receives first notification of a spill incident, will assume responsibility of notification to other member States or Territories.

2.4.2 Unless otherwise designated, the national authority entitled to act on behalf the state to request assistance or to decide to end the assistance requested will be the Focal Point Agency.

2.4.3 Notification routing will be direct between Island State's and Territory's Spill Notification Point or National Operational Contact (MARPOL). Internal dissemination of information will follow the protocol routing within the government and will be the responsibility of each Spill Notification Point or National Operational Contact (MARPOL) for proper routing utilizing the CARIBPOLREP format.

2.5 Lead Agency

2.5.1 The Lead Agency is the Competent National Authority with responsibility for oil pollution preparedness and response. Under the Oil Spill Protocol, the Lead Agency would be the organization identified in the national laws and regulations as responsible for the operational procedures relating to the prevention oil spill incidents and to the means of reducing and combating harmful effects of oil spills. The Lead Agency and the Response Agency may be the same agency on many Island States or Territories.

2.5.2 The Lead Agency is listed as an alternate contact point within each Island State or Territory. Protocol for the Caribbean Plan is for communications to be between Focal Point Agencies only. However, in the event communications can not be established directly between Focal Point Agencies, routing should be directed to the Lead Agency, requesting that the Focal Point Agency establish communication.

2.5.3 If, at the discretion of the Focal Point Agency, direct communications with a Lead Agency is authorized, then subsequent messages may be routed directly to the Lead Agency. The alternate routing system, if authorized, will be on a case-by-case basis.

2.6 Response Agency

2.6.1 Each Island State's or Territory's Response Agency will be the organization that normally responds to an oil spill during time of emergency. The duties and responsibilities of the Response Agency will be defined in each Island State's or Territory's National Contingency Plan. In some Island States or Territories the Response Agency will also be the Lead Agency.

2.7 On-Scene Commander (OSC)

2.7.1 Each Island State or Territory, in accordance with its National contingency Plan, will assign a qualified person to act as an On-Scene Commander (or On-Scene Coordinator) for each oil spill incident. The OSC will follow the duties and lines of authority as defined in each country's National Oil Spill Contingency Plan.

2.7.2 In case an oil spill occurs near the boundary of two Island States or Territories and spreads into the territorial waters of a neighboring Island State or Territory, each State or Territory will have an OSC responsible for cleanup activities in its own area of responsibility. Because of logistics, geographic location or other circumstances, it may be in the best interest of all parties for one State or Territory to relinquish its OSC authority to the other State or Territory. The decision to centralize the responsibilities of one or more OSC's will be made only after receiving the concurrence of the Focal Point Agencies of all involved State's or Territory's. The agreement to centralize the OSC authority will be only for the duration of the immediate emergency and can be rescinded by any Focal Point Agency at any time.

2.8 Rapid Response Agreement

2.8.1 A marine disaster resulting in a major oil spill may occur near a common territorial border. Because of geographic location, one Island State or Territory may be in a better position to respond than the State or Territory in whose waters the casualty actually occurred. In the interest of reducing the devastating affects of a major oil spill which occurs in close proximity to a State's or Territory's territorial borders, a rapid response agreement of equal right of access is considered an important function of the Caribbean Plan.

2.8.2 The responding State or Territory will give to the Focal Agency of the affected State or Territory, timely notification of its interest in proceeding across territorial borders. The affected State or Territory will respond to the notification by granting or denying authorization.

2.8.3 The response team, upon receiving permission and entering the territorial waters of an adjacent State or Territory, will abide by all the policies and procedures as defined in the affected State's or Territory's National Oil Spill Contingency Plan.

2.8.4 During the time the response team is working at the spill site, the affected State's or Territory's Focal Point Agency will be kept informed by the response team's Lead Agency of the progress of the spill abatement activities.

2.8.5 Upon arrival of the affected State's or Territory's On-Scene Commander, the responding State's or Territory's team will either continue to work under the direction of the affected State's or Territory's OSC or return to its own State's or Territory's waters, depending on the circumstances of the spill. When the affected State's or Territory's OSC arrives on scene, he will assume the reporting responsibility for the clean-up activities.

2.8.6 In the event that OSC responsibilities change hands, the original OSC should be retained in some advisory capacity on the staff of the new OSC to enhance response continuity.

2.9 Spill Notification Point

2.9.1 Each Island State or Territory is required under Article 5 of the Oil Spill Protocol to establish appropriate procedures to ensure that information regarding oil spill incidents is reported as rapidly as possible. To facilitate this process REMPEITC's website has an updated list of Spill Notification Points for each of the members. http://cep.unep.org/racrempeitc

2.10 National Operation Contact (under MARPOL)

2.10.1 National Operational Contact Points under MARPOL are included in Annex B of the Plan. This information enables compliance with Regulation 26 of Annex 1 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating there to (MARPOL 73/78) which, inter alia, requires that the ship board oil pollution emergency plans contain a list of Authorities or person to be contacted in event of an oil pollution incident. Further, the Guidelines for the Development of Shipboard Oil Pollution Emergency Plans, published by the IMO, requires that the shipboard oil pollution emergency plans should include, as an appendix, the list of agencies or officials of administration responsible for receiving and processing reports as developed and updated by the Organization incompliance with Article 8 (Reports on incidents involving harmful substances) and protocol I (provisions concerning Reports on Incidents involving Harmful substances) of MARPOL 73/78. Requirements for oil pollution emergency plans and relevant oil pollution reporting procedures are also contained in

Articles 3 and 4 respectfully of the International Convention on Oil Pollution and Preparedness, Response and Cooperation (OPRC) 1990. In some cases the National Operational Contact Point is different from the Spill Notification Point for an Island State or Territory as some states have different authorities responsible for these international Conventions.

CHAPTER 3. INITIATING ASSISTANCE

3.1 Spill Surveillance

3.1.1 If an oil spill occurs, the Lead Agency of the affected Island State or Territory should arrange for surveillance of the oil slick and, by use of meteorological and hydrographical data, predict its probable movement. The result of such observations and predictions should be transmitted to other Focal Point Agencies of Island States or Territories which may be affected by the spilled oil until it no longer threatens any Island State or Territory in the area covered by the Caribbean Plan.

3.2 Vessel Reporting

3.2.1 Masters or other persons in charge of passing vessels shall report without delay any sightings of oil on the surface of the water to the nearest coastal Island State or Territory as required by Article 4, Oil Pollution Reporting Procedures, Section (10) (a) of the International Convention on Oil Pollution Preparedness Response and Co-operation, 1990 (OPRC) and Article 8 of MARPOL.

3.3 Aerial Surveillance

3.3.1 Surveillance at sea can be carried out using fixed wing aircraft or helicopter. Aerial surveillance allows the movement and extent of the oil slick to be plotted in order that appropriate response action may be taken by the Lead Agency. Surveillance flights to evaluate or assist in combating spill incidents may require the over flight of the territorial waters of another Island State or Territory. In order to optimize the use of aerial resources, each Lead Agency should make advance arrangements with neighboring Islands, Governments for the rapid granting of permission for over flights and for the use of their airport facilities. Such arrangements should be included in national contingency plans whenever possible.

3.3.2 Aerial surveillance is an essential capability if early visual confirmation of an oil spill and subsequent up-dating of slick movement and behavior is required.

3.3.3 While dedicated sophisticated aircraft fitted with airborne remote-sensing equipment do provide a high-assurance of oil slick information, much can be done, especially in the generally good weather conditions prevailing in the area, by the use of non-dedicated commercial aircraft, using visual look-outs who have been trained to look for oil.

3.3.4 Such aircraft on random patrol also provide useful deterrence to illegal oil discharges from passing ships.

3.3.5 Where dedicated aircraft are not available, the use of commercial aircraft employing visual detection is recommended. Their operations fall into two phases:

3.4 Initial Detection

3.4.1 All transiting commercial aircraft should be required to keep a look out for oil and personnel should be trained for such observations. Sighting reports should be passed immediately to air traffic control who should have clear instructions to pass the reports to the appropriate national spill notification point.

3.5 Incident Surveillance

3.5.1 Chartered aircraft will probably have to be used to maintain up-to-date slick information as well as possibly to provide air direction of surface vessels involved in dispersant spraying operations. Pilots/observers of these aircraft also require basic training in oil slick recognition and in reporting procedures to national authorities.

3.5.2 Aerial surveillance should also be carried out to determine the overall extent of shoreline pollution, but this should be backed up by visiting the affected shoreline. Continuous surveillance of the affected shoreline may be required during some phases of the operation.

3.6 Procedure for Requesting Assistance

3.6.1 If assistance from other Caribbean Island States or Territories is required, the National Focal Point Agency of the affected State or Territory shall request assistance directly from the National Focal Point Agency of one or more Island States or Territories. The request shall specify what type of assistance is required (see Chapter IV), detailing the type of equipment and the number of operating personnel. The responding State or Territory's Focal Point Agency will respond to the requesting State or Territory, detailing what assistance is available. If assistance is not available, the responding country shall notify the requesting country as soon as possible.

3.6.2 Direct, prompt notification between Focal Point Agencies is the key to the success of the Caribbean Plan. If rapid flow of information between Focal Point Agencies is disrupted, then the value of a cooperative assistance plan between Island States & Territories is defeated.

3.7 Contact Information (Focal Points) for the Island States or Territories

3.7.1 REMPEITC's website (http://cep.unep.org/racrempeitc) contains updated contact information for each of the members of the plan including the Focal Point Agency, Lead Agency, Spill Notification Point, Response Agency and National Operational Contact Point.

Additional information can also be accessed through the ITOPF website (www.itopf.com), which contains response profiles of countries in the region.

3.8 Secretariat for the Caribbean Plan

INTERNATIONAL MARITIME ORGANIZATION
REGIONAL MARINE POLLUTION EMERGENCY INFORMATION AND TRAINING CENTER (WIDER CARIBBEAN) – REMPEITC-Caribe
SERU MAHUMA Z/N, AVIATION & METEOROLOGY BUILDING
CURACAO
TEL: (599-9) 868-4612 / 868-3409
FAX: (599-9) 868-4996
Email: rempeitc@cep.unep.org

3.9 Exchange of Information

3.9.1 Each participating Island State and Territory shall keep current, and submit to the Secretariat, information relating to the implementation of the Oil Spill Protocol in accordance with Article 4.

3.9.2 Focal Point Agencies should provide information including the identity of authorities responsible for implementation of the Oil Spill Protocol and this Plan. Other information that should be included includes oil spill equipment which may be made available to other countries on request;

3.9.3 Information on Personnel with Expertise in Various Disciplines in Oil Spill response;

3.9.4 Information on Laws, orders, decrees and institutions relating to Oil Spill response;

3.9.5 Information on Operational procedures and activities relating to the prevention of oil spills, specifically National Oil Spill Response Plans, Training, and exercises of those plans;

3.9.6 Information on Emergency Response Materials;

3.9.7 Information on International Cooperation in movement of equipment and personnel (customs and immigration laws to facilitate oil spill response); and

3.9.8 Information on Mutual Assistance agreements.

CHAPTER 4. POLLUTION REPORTING SYSTEM (CARIBPOLREP)

4.1 Dissemination of Information on Oil Spill Incidents

4.1.1 An Island State or Territory first receiving a report of an oil spill incident should immediately inform neighboring Island States and Territories that the incident may affect their related interests, giving as much detail as possible about the incident. In the event that a spill has occurred, that information should include date, time, position, type and amount of oil spilled, the prevailing and forecast weather conditions, proposed actions and recommendations. As the situation develops, information to these Island States or Territories must be updated continuously, and a regular synopsis provided to keep them informed. The procedures for such reports and communications are described in this chapter of the Plan. Transmission of such reports should not be delayed if complete information is not immediately available.

4.1.2 Available meteorological and hydrographical data should be analyzed to give rough early predictions of general spill movement. More sophisticated spill movement prediction methods may be subsequently used. However, visual observation of any spill is essential and the responsible authority under the appropriate National Contingency Plan should use those resources already identified, such as charter, military or commercial aircraft for surveillance. It is essential that the results of such observation and prediction be transmitted to other States and Territories which may be affected by the spilled oil until it no longer threatens any Island States and Territories in the area covered by the Plan.

4.1.3 Participating Island States and Territories should make every effort to transmit information that may aid in establishing liability for pollution removal costs, damages, and related fines and penalties, to requesting national authorities from other participating Island States and Territories that are, or may have been, affected by an oil spill incident.

4.1.4 The initial report of an oil spill to a Spill Notification Point may be received from a variety of sources and may require confirmation by the Lead Agency that receives the report. After confirmation, the Lead Agency will draft a POLREP, message to all the Lead Agencies of the other Island States or Territory's Caribbean Plan Regional Organization which may have an interest in the spill. If overflights or surface vessel observations determine that one or more States or Territories could be affected by the

movement of the oil on the surface of the water, then speed of drift and direction shall be calculated and reported along with all other pertinent information.

4.2 Message Routing Procedure (CARIBPOLREP)

4.2.1 After receipt of the initial report of an oil spill incident the Lead Agency may require conformation of the spill sighting. After the spill has been confirmed the Lead Agency, utilizing the Caribbean Oil and Hazardous Material Spill Alerting Mechanism will prepare a CARIBPOLREP message to notify neighboring Island States and Territories that may be effected by the spill.

4.2.2 The CARIBPOLREP message will be sent directly to neighboring islands and to REMPEITC-Caribe, (Tel (+5999) 868-4612 or 868-3409, Fax (+5999) 868-4996 / email: rempeitc@cep.unep.org . – 24 hour notification through the Dutch Caribbean Coast Guard and Aruba (5999-463-7700 / email: rcc.curacao@gmail.com or rcc.curacao@rnnavy.mindef.nl)

4.2.3 Once the initial CARIBPOLREP message has been sent subsequent messages will be routed through the established routing network until the spill emergency has been concluded.

4.3 CARIBPOLREP Format

4.3.1 The following is a summarized list of the composition of the CARIBPOLREP message.

4.3.2 HEADING

1. Date time group:
2. From:
3. To:
4. Copy:
5. Subject:

4.3.3 SITUATION

1. Date and Time.
2. Position.
3. Incident.
4. Outflow.
5. Characteristics of Pollution.
6. Source and Cause of Pollution.
7. Wind direction and speed.
8. Current or tide.

9. Sea state and visibility.
10. Drift of pollution.
11. Forecast.
12. Source of Report

4.3.4 ACTION TAKEN

1. Implementation of National Contingency Plan.
2. Incident surveillance.
3. Photographs or samples.
4. Names of other states informed.

4.3.5 FUTURE PLANS

Various types of information such as anticipated changes of command; reducing information exchange to encompass only relevant, affected parties; etc.

4.3.6 ASSISTANCE REQUESTED

1. Source of assistance.
2. Estimated cost.
3. Prearrangement for delivery.
4. Assistance to where and how.
5. Other states requested.
6. Names and passport numbers of persons.
7. Description of equipment.
8. ETA and arrival information.
9. Place of embarkation.
10. Place of disembarkation.

4.3.7 If the CARIBPOLREP is used in exercises, the text is to be introduced with the word EXERCISE and finished with this word three times. Each of the subsequent reports which deal with the exercise is to be introduced and finished with the word EXERCISE as well.

4.4 CARIBPOLREP EXPLANATION

	REMARKS
4.4.1 **HEADING**	
1. Date time group:	The day of the month as well as the time of day of

		the message.
	2. From:	Lead Agency of the Island State or Territory that is initiating the message.
	3. To:	Focal Point Agency of other Island States of Territories that may be affected by the spill. Initiating Lead Agencies shall pass information directly to other Island States of Territories that may be affected by the spill.
	4. Copy:	Regional Marine Pollution Emergency, Information and Training Center Wider Caribbean (REMPEITC-Caribe), Willemstad, Curaçao, requesting the REMPEITC-Caribe pass the message to other Island States or Territories to ensure notification.
	5. Subject:	CARIBPOLREP, sequential number of the report and the name of the vessel on facility involved in the spill incident.
4.4.2	**SITUATION**	
	1. Date and time:	Date and time of the incident.
	2. Position:	Lead Agency of the Island State or Territory that is initiating the message.
	3. Incident:	The nature of the incident should be stated here, such as BLOWOUT, TANKER GROUNDING, TANKER COLLISION, OIL SLICK, etc.
	4. Outflow:	The nature of the pollution, such as CRUDE OIL, CHLORINE, DINITROL, PHENOL, etc., as well as the total quantity in tons of the outflow and/or the flow rate, as well as the risk of further outflow. If there is no pollution but a pollution threat, the words NOT YET followed by the substance, for example, NOT YET FUEL OIL, should be stated.
	5. Characteristics of Pollution:	Gives type of pollution, e.g., type of oil with viscosity and pour point, packaged or bulk chemicals, sewage. For chemicals, give proper name or United Nations number, if known. For all, give also appearance, e.g., liquid, floating solid, liquid oil, semi-liquid sludge, tarry lumps, weathered oil, discoloration of sea, visible vapor. Any markings on drums, containers, etc., should be given.

6. Source and Cause of Pollution:	e.g., from vessel or other undertaking. If from vessel, say whether as a result of a deliberate discharge or casualty. If the latter, give brief description. Where possible, give name, type, size, call sign, nationality and port of registration of polluting vessel. If vessel is proceeding on its way, give course, speed and destination.
7. Wind Direction and Speed:	Indicates wind direction and speed in degrees and MPH or meters per second (m/s), specify which. The direction always indicated from where the wind is blowing.
8. Tides and Direction of Current:	Indicates current direction and speed in degrees and knots and tenths of knots. The direction always indicates the direction in which the current is flowing.
9. Sea State and Visibility:	Sea state indicated as wave height in meters. Visibility is in nautical miles.
10. Drift of Pollution:	Indicates drift course and speed of pollution in degrees and knots and tenths of knots. In case of air pollution, (gas cloud), drift speed is indicated in meters per second (m/s).
11. Forecast:	e.g., arrival on beach with estimated timing. Results of mathematical models, or computer trajectory modeling.
12. Reporting Source:	Indicates who has reported the incident. If a ship, ship on Scene name, homeport, flag and call sign must be given. Ships on scene can also be indicated under this item by name, home port, flag and call sign, especially if polluter cannot be identified and the spill is considered to be of recent origin.

4.4.3 **ACTION TAKEN**

1. Implementation of National Contingency Plan:	Indicate if National Contingency Plan has been activated. If appropriate, give name of Lead/ Response Agency and On-Scene-Commander.
2. Incident Surveillance:	Indicate type of spill surveillance such as aerial or vessel. Number of over flights per day, etc.
3. Photographs or Samples:	Indicates if photographs or samples from the

		pollution have been taken. Contact numbers of the sampling authority should be given.
	4. Names of Other States Informed:	Lead agency initiating message concerning the spill incident should name the other Island States that have been notified directly. It is important to have timely, state to state notification with a copy to REMPEITC-Caribe to follow-up. List Island States to whom the alert has been addressed.

4.4.4 **FUTURE PLANS**

	1. Future Plans:	Describe the action contemplated in response to the discharge or threat of discharge.

4.4.5 **ASSISTANCE REQUESTED**

	1. Source of Assistance:	Name of Lead Agency and name of Island State or and the type of assistance required in form of: specified equipment with trained personnel complete strike teams personnel with special expertise with indication of Island State or Territory requested.
	2. Estimated Cost:	Requirements for cost information to requesting Island State or Territory of delivered assistance.
	3. Prearrangement Delivery of Assistance	Information concerning customs clearance, access to territorial waters, etc. in the requesting Island or Territory.
	4. Assistance to Where and How	Information concerning the delivery of the assistance, e.g., rendezvous at sea with information on frequencies to be used, call sign and name of on scene commander of the requesting Island State or Territory or land-based authorities with telephone number, fax, telex number, or email and contact person.
	5. Other States Requested:	Only used if not covered by 4.4.5.1 if further assistance is later needed by other Island States or Territories.
	6. Personnel Names, Passport info:	Names of persons responding from an assisting Island State including their passport numbers. This information is necessary to facilitate rapid entry into the requesting Island State or Territory.
	7. Description of Equipment:	A brief description of the equipment including serial

	and model numbers. Also included a list of any component parts that are being shipped with the equipment.
8. ETA and Arrival Information:	Time and place of arrival of equipment and of personnel should be given to accommodate clearance with customs and immigration officials in the requesting Island State or Territory.
9. Place of Embarkation:	The responding Island State should include the airport or seaport where responding personnel are deporting from. The information should give flight names and numbers and/or vessel names.
10. Place of Disembarkation:	The responding Island State should give the airport or seaport where responding personnel will be arriving at in the requesting country.
11. Spare:	Any relevant information pertaining to the spill should be included such as results of field inspections or surveys. Statements of ship's personnel. Vessel and cargo owners and if the owners are members of a co-operative association, etc.

4.5 EXAMPLE: CARIBPOLREP MESSAGE NO. 1

(Heading)

Date Time Group:	181100GMT
From:	Lead Agency Grenada
To:	Lead agency St Vincent, Trinidad/Tobago, St. Lucia
Copy:	REMPEITC-Caribe, Curaçao

(Subject)

CARIBPOLREP No 1:	M.T. West Passage

(Situation)

Tankship M.V. West Passage on fire and in danger of sinking

Date and Time:	Fire reported 180745GMT
Position:	Vessel at 12º-30'N 61º-15'W
Incident:	Engine room fire spreading to cargo tanks. Some crude oil reported to be leaking. Risk of loss of vessel and entire cargo of 156,000 tons. Oil is forming a slick to the west.
Source of Pollution:	Ruptured cargo tanks - 3 starboard, 3 center and 3 port.
Wind Direction/Speed:	Wind is from 090 degrees (East) at 10 miles per hour.

Current: Current is towards 270 degrees (West) at approximately 1 Knot.

Sea State & Visibility: Wave height 3 feet (1 m) and visibility is 10 miles.

(Action Taken)

Air sea rescue units enroute.

Crew still aboard the vessel.

Grenada Lead Agency activating National Contingency Plan and has commenced aerial surveillance.

Name of Other States and Territories Informed: Informed all other Caribbean Plan members for information alert only at this time.

4.6 EXAMPLE: CARIBPOLREP MESSAGE NO. 2

(Heading)

Date Time Group: 181645GMT

From: Lead Agency Grenada

To: Trinidad/Tobago Lead Agency for Action

Copy: REMPEITC-Caribe, Curaçao

(Subject)

CARIBPOLREP No 2: M.T. West Passage leaking oil.

(Situation)

Tankship M.V. West Passage on fire, leaking oil, and in danger of sinking.

Date and Time: Fire reported 180745 GMT

Position: Vessel now dead in the water at 12□-30'N 61□-15'W.

Incident: Vessel sustained engine from fire which spread to cargo tanks and is out of control. Crew has abandoned vessel and air sea rescue units on scene. Vessel contains 156,000 tons of Arabian crude. Oil slick observed from aerial observations to be spreading west northwest. Slick 1/2 mile (1000 m) wide and 8 miles (13 km) long

Wind Direction/Speed: Wind is from 140 degrees at 15 mph (7 m/s)

Current: Current is towards 270□ at approximately 1 knots.

Sea State & Visibility: Wave height 4 feet (1.3 m) and visibility is 10 miles (16 km)

Request Assistance: Request vessel dispersant spray equipment and available dispersant chemicals. Inform the Grenada Lead Agency of the quantity and type available. Request dispersant spray operating personnel to accompany equipment.

Estimate Cost: If known, cost of rental rate for dispersant spray equipment, dispersant spray chemicals by the drum and daily charges for operating personnel.

Assistance to Where/How: Assistance needed at mobilization area at the Port of St. George, Grenada as soon as possible. Please arrange air transportation equipment and operating personnel.

(Action Taken)

Grenada Response Agency assuming on scene responsibility for pollution abatement in Grenada's EEZ. Chemical dispersant response to oil at sea initiated.

Name of Other States Informed: Vincent, Trinidad/Tobago, St. Lucia for information.

CHAPTER 5. EQUIPMENT AVAILABLE CARIBBEAN SUB-REGION

5.1 Equipment Location and Ownership

5.1.1 Limited quantities of pollution abatement equipment available in the Caribbean area is, for the most part, located in Aruba (Valero Refinery N.V.), Bonaire (BOPEC), Curaçao (ISLA), Puerto Rico, St. Croix (under the MSRC organization), St. Eustatius (Statia Terminals), Trinidad & Tobago, and Venezuela. Additional equipment is available to the Caribbean area, on short notice, through a number of U.S. Commercial contractors. Clean Caribbean and Americas (CCA) has stockpiled equipment in Fort Lauderdale, Florida for members' use, and under certain conditions, non-members' use.

5.1.2 The Caribbean Plan envisions that each Island State or Territory should have the capability to effectively respond to an oil spills resulting from oil industry and shipping operations within its territory. This capability requires that appropriate equipment is procured, or identified from within industry's resources, and that training and exercises be established for response techniques and management.

5.1.3 The Caribbean Plan is a Tiered Plan in that each Island State or Territory is expected to have a minimal response capability and activation of the Caribbean Plan will occur when a spill of persistent oil causes unexpected privation.

5.1.4 In developing a plan of action capable of inter-country response to a major oil spill and in keeping with the objectives of the Caribbean Plan, the location of the pollution abatement equipment within the sub-regional area is identified. However, the identification of equipment will be limited to that equipment which is of sufficient size and capacity to be considered of value for inter-country movement. It must also be kept in mind that the equipment located at various oil terminals, depots, and port areas was purchased and is maintained for the protection of the harbors and oceans where it is located. During a time of emergency, some equipment, after mutual agreement between owners of the equipment and the Lead Agency, may be made available for inter-country movement.

5.1.5 Information on the location of oil spill response equipment and materials will be collated by the Secretariat. This information will be updated on an biannual basis or at other times that significant changes to the availability of such resources in individual lsland States or Territories take place.

5.2 Chemical Dispersant Equipment

5.2.1 There are a number of commercial and government vessels throughout the sub-region that are suitable for chemical dispersant spraying; however, there appears to be limited dispersant spray systems and stockpiles of dispersant chemicals available. To enhance the capability of dispersion of persistent oil on open oceans, before oil reaches public or environmentally sensitive areas, each Island State or Territory should complete a policy for a course of action for the use of dispersant chemicals within its respective territorial waters (EEZ). The policy developed should be defined in the National Contingency Plan and if appropriate, spray equipment and dispersant chemicals should be strategically stockpiled.

5.3 Equipment Limitation

5.3.1 It should be recognized that the availability of equipment and materials listed cannot be guaranteed and that the inclusion of such resources on these lists should not be construed as an obligation to make them available. No provision has been made for the depletion of equipment at a given site, as the decision to maintain part or all of the listed equipment is a management decision to be made by the authority responsible for the protection of the facility where the equipment is located.

CHAPTER 6. CARIBBEAN PLAN FOR MOBILIZATION OF PERSONNEL AND EQUIPMENT

6.1 Procedure for Inter-country Movement of Personnel and Equipment

6.1.1 If after an assessment of the oil spill casualty by the affected Island State or Territory, it is decided that assistance is required from a neighboring State or Territory, a CARIBPOLREP message shall be issued. The responding State or Territory will respond with an acknowledgement that equipment and operating personnel can or cannot be provided.

6.2 Personnel

6.2.1 To expedite the entry of emergency personnel into the requesting State or Territory, the acknowledgement message to the requesting State or Territory shall list all personnel by name and pertinent passport information. The message shall also include the mode of transportation such as flight numbers, vessel name, port of entry and estimated time of arrival. The requesting State or Territory, upon receipt of the information, shall make all arrangements for entry of the emergency responding personnel with the National Immigration Department. Arriving personnel will report to the On-Scene Commander and, until released, shall follow his directions and strategies. Each member State or Territory shall have designated personnel who can be spared to assist the other member States or Territories in case of emergency situations. Passports and other travel documents of these designated personnel shall be kept up-to-date and ready at all times. Information on Personnel with expertise or training in various disciplines of oil spill response and prevention should be provided to the Secretariat in accordance with article 9(d) of the Oil Spill Protocol to the Cartagena Convention.

6.3 Equipment

6.3.1 The requesting Island State or Territory shall itemize the equipment that it desires to be transferred to the spill site or port of entry by referencing the type, name, size, etc., from the information available in the Equipment Section of the Caribbean Plan. The responding State or

Territory will contact the owner of the equipment and determine the availability of the equipment and so advise the requesting State or Territory.

6.3.2 When the equipment has been assembled for shipment, the responding State or Territory will notify the requesting State or Territory of the mode of transportation and the estimated time of arrival at the spill site or port of entry. Ownership of all equipment will be clearly identified by labels indicating owners name and address.

6.3.3 The requesting State or Territory, upon receipt of the information that the equipment is ready for shipment, shall notify the national customs department for entry of the equipment without assessment, duty payments or unnecessary delays.

6.3.4 When the requesting country has finished with the equipment, it will clean each piece of equipment and make any necessary repairs to ensure that the equipment is returned to the responding country in good working order. The equipment will be inventoried against the shipping documents, noting any missing or excessively damaged equipment. After the equipment has been returned, the Lead agency will arrange for the equipment to be returned to the owner. The owner will make a final inspection of the equipment and promptly notify the Lead Agency of any discrepancies.

CHAPTER 7. FINANCIAL PROCEDURE FOR MOVEMENT OF PERSONNEL AND EQUIPMENT

7.1 Personnel

7.1.1 The Caribbean Plan envisions the movement of specialized personnel between member States or Territories who are trained to operate pollution abatement equipment. These personnel may be qualified as skimmer operators, dispersant equipment operators, flight crews for dispersant spraying aircraft or as operators for other technical equipment. The Caribbean Plan does not envision the inter-country movement of unskilled personnel but, in the event a need arises for a labor force to be moved inter-country, they can be mobilized under the Caribbean Plan. Unless special arrangements are made between the Lead Agencies during the time of mobilization concerning the funding associated with the movement of personnel, the following procedures will be adhered to.

7.1.2 After an agreement is reached between the Focal Point Agencies as to the number and qualifications of the personnel needed to assist the requesting State or Territory, the responding State or Territory will purchase round trip airfare tickets to the requesting State or Territory for the responding personnel. Wages for the assisting personnel will be paid by the responding State or Territory for the duration of the time the personnel are away from their home State or Territory or place of normal employment.

7.1.3 All living expenses for the responding personnel will be paid by the requesting State or Territory who will be responsible for subsistence and quarters for the responding personnel (paid at the applicable United Nations Daily Subsistence Allowance). Unless otherwise agreed between the Focal Point Agencies of the requesting and responding States or Territories, the normal length of stay for personnel working away from their home country will not exceed 60 days.

7.1.4 When the responding personnel return to their normal place of employment, the responding Lead Agency will prepare an invoice for services rendered in keeping with its published price list. The invoice will include the transportation cost associated with mobilization and demobilization of the responding personnel. All personnel will be listed on a Daily Work report which will indicate job title, hours worked, hourly rate, and other incurred expenses.

7.1.5 The Focal Point Agency of the responding State or Territory will submit the invoice for personnel services to the Focal Point Agency of the requesting State or Territory, who will make prompt payment. The requesting State or Territory will, in turn, include the paid invoice from the responding State or Territory in the final invoice, which will be submitted to the spiller or his insurance carrier for reimbursement.

7.1.6 In the event any personnel are injured or become ill, the requesting State or Territory will be responsible for all the expenses incurred while in its jurisdiction and for other expenditures involved in the repatriation of injured or ill personnel.

7.2 Equipment

7.2.1 The Caribbean Plan envisions the inter-country movement of specialized equipment which may be located at various sites within member States or Territories. After a request has been received from the Focal Point Agency of the requesting State or Territory and agreed to by the Focal Point Agency of the responding State or Territory, the responding State or Territory will make all arrangements for the transportation of the pollution abatement equipment to a place of disembarkation. When all of the equipment has arrived at the mobilization areas, the responding State or Territory will arrange for further air or sea transportation of the equipment to the spill site or other agreed upon destination. All equipment will be clearly identified as to the owner and storage location, as equipment may become commingled with equipment from a number of sources.

7.2.2 The Lead Agency of the responding State or Territory will prepare an invoice for use of the equipment, including all mobilization and demobilization cost. Rental rates for the equipment will be shown on a Daily Work Report which will correspond with the published price list as shown in the National Contingency Plan. Any missing or severely damaged equipment will be listed on the invoice. The complete invoice for the use of the pollution abatement equipment will be forwarded to the Focal Point Agency of the requesting State or Territory, who will make prompt payment to the responding State or Territory. The Lead Agency of the requesting State or Territory will include the paid invoice from the responding State or Territory in the final invoice, which will be submitted to the spiller or his insurance carrier for reimbursement.

7.3 Obligation to Pay for Services Rendered

7.3.1 In all cases, unless other arrangements have been agreed to, the requesting State or Territory is obligated to pay the responding State or Territory for their cost of mobilization and demobilization of personnel and equipment, including the wages for responding personnel and the rental rate for the equipment requested.

CHAPTER 8. INTERVENTION AND COST RECOVERY

8.1 Interests Related to the Ship; The Shipowner

General rights and obligations

8.1.1 There may be a great diversity of ownership or possessory interests in a ship. The main ones which an Island State or Territory are likely to encounter in a marine pollution emergency are the shipowner, bareboat charterer, manager or operator. The role of the shipowner is discussed here. The term "shipowner" is used, although in some cases a ship may be owned by more than one entity in equal or unequal shares. In such cases, there is usually an agreement between the different owners that one of them will take operational decisions on behalf of all of them, and joint ownership only becomes of particular interest when recovery of damages is sought.

8.1.2 Unless there is a bareboat charterer or manager of the ship, the shipowner is normally the entity responsible for the operation of the ship, and the master will be the agent of the shipowner for that purpose, at least until direct contact is established between the Island State or Territory and the shipowner.

8.1.3 The interests in the ship are protected under international law to a considerable extent. Not only is there freedom of navigation on the high seas, but ships are entitled to the right of innocent passage through territorial seas. These rights of the ship are, however, affected when a marine pollution emergency occurs which threatens or actually causes damage to an Island State or Territory or its territorial sea, so that the State or Territory may, in accordance with international law and its own internal law, take steps which interfere with those freedoms.

8.1.4 The first concern of the shipowner in a marine pollution emergency will be to see that the ship and all the life thereon is preserved, and that as much as possible of the cargo which he has contractually undertaken to deliver to the destination named in the bill of lading is so delivered. He is therefore concerned to protect both his proprietary interest in the ship, and his contractual obligations concerning the cargo. If the ship is aground, he will want to arrange for it to resume its voyage as soon as practicable, and this will rightly be the primary focus of his

immediate concern, rather than the effect upon the sea or coast of polluting substances which may have escaped or may be threatening to escape. Because he may be liable to pay compensation for pollution caused, the shipowner can be expected, however, either through the master or directly from his office, to liaise with all others who are directly concerned with the ships emergency.

In addition to the general rights and obligations concerning the operation of the ship, the shipowner may have certain specific obligations concerning; (1) a document to be developed and carried on board for oil pollution preparedness and response; (2) notification of the marine pollution emergency to the nearest Island State or Territory; (3) pollution response and clean-up; and (4) compensation.

Shipboard Oil Pollution Emergency Plan

One of the salient documents required to be developed and carried on board for oil pollution preparedness and response is a Shipboard Oil Pollution Emergency Plan. Since 4 April 1993, every oil tanker of 150 gross tonnage and above and every ship other than a tanker of 400 gross tonnage and above have had to carry on board such a Plan approved by the flag State. In the case of ships built before 4 April 1993, this requirement shall apply from 4 April 1995 (regulation 26 of Annex 1 of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73178), and article 3 of the International Convention on 0il Pollution Preparedness, Response and Co-operation, 1990 (OPRC 1990), which entered into force on 13 May 1995). Such a Plan shall be in accordance with the Guidelines for the development of Shipboard 0il Pollution Emergency Plans developed by IMO. The Plan shall consist of:

1. the procedure to be followed by the master or other persons to report an oil pollution incident;
2. the list of authorities or persons to be contacted In the event of an oil pollution incident; and
3. a detailed description of the action to be taken immediately by persons on board to reduce or control the discharge of oil following the incident

The International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code) which went into force on 1 July 1998 by amendments to the International Convention for the Safety of Life at Sea, 1974 (SOLAS 1974), also requires “emergency preparedness", i.e., "the Company should establish procedures to identify, describe and respond to potential emergency shipboard situations". In the ISM Code, the Company means "the owner of the ship or

any other organization or person such as the manager, or the bareboat charterer, who has assumed the responsibility for operation of the ship from the shipowner and who, on assuming such responsibility, has agreed to take over all duties and responsibility imposed by the Code" (Regulation XI/1 of SOLAS 1974 and paragraph 1.1.2 of the ISM Code).

Please refer to more detailed information further in this chapter. Also refer to Chapter IX of SOLAS 1974 and the ISM Code.

8.2 Notification

8.2.1 Most shipowners are obliged by an applicable regulation (under the law of the flag State or an Island State or Territory, either or both of which may derive from international conventions to which these States are Party) to notify the nearest State or Territory of the marine pollution emergency which has arisen. Normally this obligation will fall upon the master of the ship, but if the ship has been abandoned, or if the master's report is incomplete, then the obligation on the shipowner to make a report may arise. The obligation to report, which parties to MARPOL 73/78 undertake to implement in their internal law for ships registered in their territory is contained in Protocol I to that Convention. (Article 4 of OPRC 90 has a similar effect.)

8.3 Pollution Response and Clean-Up

8.3.1 The ability of a shipowner to take pollution response and clean-up measures, or to contribute to the efforts of others in this regard, will vary enormously from shipowner to shipowner. Obligations under the International Convention on Salvage, 1989 may also apply if a salvage contract is entered into. Under Article 8(2) of the Convention the owner will be under a duty to the salvor to cooperate fully with him during the course of the salvage operations and, in so doing, to exercise care to prevent or minimize damage to the environment.

8.3.2 Under most insurance contracts, and indeed under the general principles of many systems of insurance law, even though he is insured the shipowner must act as a prudent person without insurance, and therefore he must within his capabilities so act as to minimize his potential liabilities. The clause in the insurance contract which enshrines this principle is often called the "sue and labor" clause. The principle is simple: a shipowner should not be allowed to so act that the liabilities which the insurer has underwritten will be increased, if an alternative course of action is open to him. Therefore Island States and Territories should find the shipowner very cooperative in any efforts the State or Territory wants to make which would have the effect of reducing the shipowner's ultimate potential liability, although in the past there have been some cases where this has not been so. Often, disagreement arises over whether a proposed action

will indeed have that effect, with the shipowner and the State or Territory taking directly opposed views. In any event, whatever response and clean-up assistance the shipowner himself is able to muster, he will normally have behind him the resources of his liability underwriter (usually a P & I Club) and the technical advice and services which they have access to. In practice, the liability underwriter is usually very closely involved.

8.3.3 The duties under all three of these contracts, if they apply, are owed to different people - the first, to the liability underwriter; the second to the underwriter. None are owed to the Island State or Territory, although the State or Territory may well become involved in the owner's implementation of them.

8.4 Compensation for (oil) pollution damage

8.4.1 The laws relating to compensation for oil pollution damage and the cost of taking preventive measures is a highly technical one and a summary of all the relevant provisions and principles is beyond the scope of this document. However, the State or Territory and others need to bear in mind the question of cost recovery when deciding what measures to take in a marine pollution emergency. It should be noted that the discussion in this part of the document concerns, for most part, liability and compensation regimes derived from international conventions.

8.4.2 The international system of liability and compensation created by conventions is unique in the field of environmental pollution. Of particular importance is the fact that the regime applies regardless of whenever or not the tanker (ship) causing the spill was at fault. Claimants can therefore receive compensation promptly, without the need for length and costly legislation. This also ensures that Government authorities can take action to prevent or minimize pollution damage in the knowledge that, as long as their actions are reasonable for the circumstances, the cost they incur will normally be reimbursed. Further details on the international conventions on liability and compensation are provided hereafter (based on publications of IOPC and ITOPF).

8.5 The Civil Liability and Fund Conventions

The international compensation regime for damage caused by spills of persistent oil from laden tankers was based initially on two IMO Conventions - the 1969 International Convention on Civil Liability for Oil Pollution Damage (1969 CLC) and the 1971 International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (1971 Fund Convention). This 'old' regime was amended in 1992 by two Protocols, which increased the compensation limits and broadened the scope of the original Conventions. In October 2000 agreement was reached on increasing the limits of the 1992 CLC and Fund Convention by a little

over 50% with effect from 1st November 2003. In May 2003 a Supplementary ('third tier') Fund was established at the IMO through a new Protocol that will increase the amount of compensation in States that ratify it to about US$1,160 million (including the amounts paid under the 1992 CLC and Fund Convention).

The 1969 CLC entered into force in 1975 and lays down the principle of strict liability (i.e. liability even in the absence of fault) for tanker owners and creates a system of compulsory liability insurance. Claims for compensation for oil pollution damage (including clean-up costs) may be brought against the owner of the tanker which caused the damage or directly against the owner's P&I insurer. The tanker owner is normally entitled to limit his liability to an amount which is linked to the tonnage of the tanker causing the pollution.

The 1971 Fund Convention provided for the payment of supplementary compensation to those who could not obtain full compensation for oil pollution damage under the 1969 CLC. The International Oil Pollution Compensation Fund (1971 IOPC Fund) was set up for the purpose of administering the regime of compensation created by the Fund Convention when it entered into force in 1978. By becoming Party to the 1971 Fund Convention, a country became a Member of the 1971 IOPC Fund. Payments of compensation and the administrative expenses of the 1971 IOPC Fund were financed by contributions levied on companies in Fund Convention countries that received crude oil and heavy fuel oil after sea transport.

In 1992, a Diplomatic Conference adopted two Protocols amending the 1969 CLC and 1971 Fund Convention, which became the 1992 CLC and 1992 Fund Convention. These 1992 Conventions, which provide higher limits of compensation and a wider scope of application than the original Conventions, entered into force on 30th May 1996. As in the case of the original Conventions, the tanker owner and P&I insurer are liable for the payment of compensation under the 1992 CLC, and oil receivers in countries that are party to the 1992 Fund Convention are liable for the payment of supplementary compensation through the 1992 IOPC Fund. As more States ratified or acceded to the 1992 Conventions, the original Conventions rapidly lost significance and the 1971 Fund Convention was terminated altogether on 24th May 2002.

On 3 March 2005 a third tier of compensation was established by means of a Supplementary Fund under a Protocol adopted in 2003. The Supplementary Fund provides additional compensation over and above that available under the 1992 Fund Convention for pollution damage in the States that become Parties to the Protocol. As a result, the total amount available for compensation for each incident for pollution damage in the States which become Members of the Supplementary Fund is 750 million SDR (US$1 095 million), including the amounts payable

under the 1992 Civil Liability Convention and the 1992 Fund Convention, 203 million SDR (US$296 million).

The Supplementary Fund only pays compensation for pollution damage for incidents which occur after the Protocol has entered into force for the State concerned.

Membership of the Supplementary Fund is optional and any State which is a Member of the 1992 Fund may join the Supplementary Fund.

Annual contributions to the Supplementary Fund will be made in respect of each Member State by any person who, in any calendar year, has received total quantities of oil exceeding 150,000 tons after sea transport in ports and terminal installations in that State.

However, the contribution system for the Supplementary Fund differs from that of the 1992 Fund in that, for the purpose of paying contributions, at least 1 million tons of contributing oil will be deemed to have been received each year in each Member State.

Example:

Maximum amounts of compensation available under the Conventions (expressed in US$ millions – rates as at January 2005)

TANKER'S GROSS TONNAGE	1969 CLC	1992 CLC (post-Nov 2003)	1992 FUND (post-Nov 2003)	Supplementary FUND
5,000	1.0	7.0	313.7	1158.9
25,000	5.2	26.4	313.7	1158.9
50,000	10.3	43.8	313.7	1158.9
100,000	20.5	99.6	313.7	1158.9
140,000	21.6	138.7	313.7	1158.9

Note: The limits of liability under the various regimes are based on specified units of account (Special Drawing Right - SDR). The value of an SDR in terms of a national currency varies. For the purpose of this composition all the limits are expressed in US dollars, based on a rate of exchange of 1 SDR=US $ 1.54 (January 2005). The maximum amount of compensation potentially available under each of the various regimes is, in many cases, inclusive of amounts that would be payable under another regime. For example, the maximum amount of compensation available under the 1992 Fund Convention is inclusive of compensation payable by the tanker owner under the 1992 CLC. The maximum amounts listed above should therefore not be aggregated when determining the total amount of compensation which may be available in a specific incident.

Observation:

The advantages for a State or Territory being Party to the 1992 Civil Liability Convention and the 1992 Fund Convention can be summarized as follows. If a pollution incident occurs involving a tanker, compensation is available to governments or other authorities which have incurred costs for clean-up operations or preventive measures and to private bodies or individuals who have suffered damage as a result of the pollution. For example, fishermen whose nets have become polluted are entitled to compensation, and compensation for loss of income is payable to fishermen and to hoteliers at seaside resorts. This is independent of the flag of the tanker, the ownership of the oil or the place where the incident occurred, provided that the damage is suffered within a State Party.

As mentioned above, the 1969 Civil Liability Convention and the 1971 Fund Convention have been denounced by a number of States, and the 1971 Fund Convention ceased to be in force on 24 May 2002. Moreover, the 1992 Civil Liability Convention and the 1992 Fund Convention provide a wider scope of application on several points and much higher limits of compensation than the Conventions in their original versions. For these reasons, it is recommended that States or Territories which have not already done so should accede to the 1992 Protocols to the Civil Liability Convention and the Fund Convention (and not to the 1969 and 1971 Conventions) and thereby become Parties to the Conventions as amended by the Protocols (the 1992 Conventions). The 1992 Conventions would enter into force for the State in question 12 months after the deposit of its instrument(s) of accession.

States or Territories which are already Parties to the 1969 Civil Liability Convention are advised to denounce that Convention at the same time as they deposit their instruments in respect of the 1992 Protocols, so that the denunciation of that Convention would take effect on the same day as the 1992 Protocols enter into force for that State or Territory.

As regards the Supplementary Fund Protocol, a State or Territory will have to consider whether, in the light of its particular situation, ratification of the Protocol is in the interests of that State.

Contacts:

For more detailed information on the Conventions and specific knowledge regarding the compensation system, claims and assistance see:

www.iopcfund.org or www.itopf.com

Or contact the;

International Oil Pollution Compensation Fund

Portland House
Bressenden Place
London SW1E 5PN
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International Tanker Owners Pollution Federation

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Tel: +44 (0)20 7566 6999
Tel: +44 (0)870 428 6901
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Email: central@itopf.com

8.6 Oil spill compensation in States which have not ratified the international Conventions

Some countries which have not ratified the international compensation Conventions will have their own domestic legislation for compensating those affected by oil spills from tankers. Some of these may be highly specific, such as the Oil Pollution Act of 1990 in the USA, whereas other countries may rely on broader laws originally developed for other purposes.

8.7 Bunker Spills Convention

Recognition of the problems that can be caused by spills of heavy bunker fuel from non-tankers led to the adoption of the International Convention on Civil Liability for Bunker Oil Pollution Damage at a Diplomatic Conference in March 2001.

This IMO Convention seeks to ensure that adequate compensation is promptly available to persons who are required to clean up or who suffer damage as a result of spills of ships' bunker oil, who would not otherwise be compensated under the 1992 CLC. Although strict liability under the Bunker Spills Convention extends beyond the registered owner to the bareboat charterer, manager and operator of the ship, the Convention only requires the registered owner of ships greater than 1,000 GT to maintain insurance or other financial security. The level of cover must be equal to the limits of liability under the applicable national or international limitation regime, but in no case exceeding the amount calculated in accordance with the Convention on Limitation of Liability for Maritime Claims, 1976, as amended.

8.8 HNS Convention

The International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious substances by Sea (HNS Convention) was adopted by the

IMO in May 1996. It aims to ensure adequate, prompt and effective compensation for damage that may result from shipping accidents involving hazardous and noxious substances.

The Convention entitles claimants to compensation for loss or damage to persons, property and the environment caused by incidents involving cargoes of oil, gases and chemicals, plus other substances which are hazardous in packaged form. Pollution damage caused by persistent oils already covered by the CLC and Fund Convention is excluded, as is damage caused by radioactive materials and coal.

The HNS Convention is modeled on the CLC and Fund Convention. Thus, the shipowner (and his P&I insurer) is strictly liable to pay the first tier of compensation whereas the second tier comes from a fund levied on cargo receivers in all Contracting States on a post-event basis.

Shipowner liability ranges from SDR 10 million (about US$ 15 million) for ships up to 2,000 GT, rising linearly through SDR 82 million (about US$ 126 million) for ships of 50,000 GT, to a maximum of SDR 100 million (about US$ 154 million) for ships over 100,000 GT. It is compulsory for all ships over 200 GT to have insurance to cover the relevant amount.

An HNS Fund (which will most likely be administered by the secretariat of the 1992 IOPC Fund) provides compensation up to a total of SDR 250 million (US$ 385 million), inclusive of shipowner liability but irrespective of ship size. The HNS Fund will comprise four separate accounts for oil, LPG, LNG and a general account for other HNS substances such as bulk solids and chemicals. Each separate account will meet claims attributable to the relevant cargo without cross subsidization and will be funded in proportion to total receipts of relevant cargoes in Contributing States.

The HNS Convention will enter into force 18 months after ratification by 12 flag States, including four States each representing 2 million GT and Port States importing an annual aggregate of 40 million tons of chemicals and other solid bulk materials which are hazardous in packaged form.

8.9 Other International Maritime Conventions

Other Conventions with relevance to marine pollution include the International Convention for the Prevention of Pollution from Ships, 1973, as amended by the Protocol of 1978 ("MARPOL") and the International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990 ("OPRC 90").

8.10 The Liability Underwriter

8.10.1 The third party liabilities of the shipowner, and of any bareboat charterer, manager or operator of the ship, will be insured by any prudent entity, and in the case of the shipowner's liability under the Liability Convention, it must be insured by virtue of the Convention's compulsory insurance provisions if the ship carries more than 2,000 tons of oil in bulk as cargo. This insurance is in most cases provided by a Protection and Indemnity Association which cover over 90% of the world's ocean-going shipping. These associations are commonly referred to as P & I Clubs, The word Club being used because the insurance they provide is arranged on a mutual basis. Same account of the structure of P & I Clubs is relevant here, as this helps to account for the particular character of these organizations, which affects the way they are able to interact with Island States and Territories in a marine pollution emergency.

Examples of coverage offered by a P &I Club are:

1. personal injury to or injury or loss of life of crew members and passengers, and loss of their effects;
2. one fourth of collision liability;
3. excess collision liability, including payments In excess of the limit of the hull policies and items of claim excluded from policies such as oil pollution, dock damage. wreak removal and loss of life, personal injury and illness;
4. oil pollution liabilities;
5. other claims for damage to property, including damage to other ships and their cargos without collision, and dock damage;
6. towage contract liabilities;
7. removal of the wreak of an entered ship; and
8. liabilities for loss or damage to cargo and other property on board an entered ship.

It should be borne in mind that a P & I Club covers only the shipowner's legal liabilities in the sense of damage or compensation which the owner is legally obliged to pay to others, together with certain other losses, costs and expenses which are specified in the terms of the insurance given to shipowners.

8.10.2 A P & I Club is an association of shipowners and others with similar interests in ships - it excludes time and voyage charterers, for instance. The association is managed either by a board or by a separate organization such as a partnership, in each case appointed by the members. The association insures its members against their third party liabilities on terms specified in the P & I Club's Rules, and it raises the funds to enable it to do so by calling up the necessary sums from its members. After taking a certain measure of the risk itself, a Club will

usually arrange reinsurance, first by a pooling arrangement with other P & I Clubs for a certain amount, and then on the open market. The largest group of P & I Clubs is the International Group of P & I Clubs. Once a claim exceeds the limit of reinsurance, the individual Club in which the member concerned is entered will reassume the risk itself, or may further pool it with other P & I Clubs. The availability of coverage for Oil pollution risks varies from year to year according to what the reinsurance market will bear. For example, for the year to 20th February 1999, the basic limit was $US 500 million, although extra cover was also available. However, it should be recognized that such sums will rarely be available to the claimants since a shipowner will normally be able to limit his liability to some lesser amount in accordance with the applicable Liability Convention.

8.10.3 Because the insurance offered has always related to liabilities, P & I Clubs have traditionally had a strong legal expertise amongst their management, and many of those with whom a State or Territory would have to deal in the case of a marine pollution emergency will not only be qualified lawyers, but they will have had experience of handling pollution claims in many parts of the world. By contrast, the officials of the State or Territory may be dealing with a marine pollution emergency for the very first time.

8.10.4 The main job of the liability underwriter in a marine pollution emergency is to handle all claims against their members and to pay the valid ones. Under the terms of the insurance, the underwriter will normally have the right to take over the handling of all claims above a certain amount, and because of this the underwriter will usually get involved in decisions which affect the eventual size of a claim right from the beginning, even before any formal claim is raised. For this and for other reasons, in a marine pollution emergency the State or Territory may find that very early on the most important person he is dealing with on the shipowning interests side is not the shipowner himself, but his liability underwriter and its representatives (and the applicable IOPC Fund, if potentially involved). In the text, which follows, the liability underwriter is assumed to be a P & I Club, since P & I Clubs account for the vast majority of all shipowners pollution liability insurance world-wide.

8.10.5 The first thing the P & I Club might do is to put up financial security to ensure the release of the ship, where the ship has been arrested. This is commonly done either by the claimant accepting a letter of guarantee from the P & I Club itself, or by the P & I Club arranging such a letter of guarantee or bond with a local bank. The shipowner may need help with removing the crew from the ship, or with repatriating them, or the master or other officers may need help with local officials who are holding them against the payment of a possible fine. The P & I Clubs

have legal and other representatives in many ports all over the world, and either directly or through them they are able to provide such assistance.

8.10.6 In an oil pollution case the P & I Clubs (as well as the IOPC Funds) have a very close relationship with The International Tanker Owners Pollution Federation Limited (ITOPF). ITOPF will be called in by the shipowner or his P & I Club in almost every case of oil pollution of any size, so that it would have more experience in the practical aspects of response and clean-up, and in deciding upon the reasonableness of action taken. The ITOPF representative on-site is also likely to be representing the technical aspects of the applicable IOPC Fund, if they too are involved. They are therefore able to advise all parties likely to be involved in payment and compensation on the type and extent of oil pollution which has occurred, what effect it is likely to have under different scenarios and what needs to be done to minimize or prevent any adverse impacts. This advice is also available to the State or Territory and in many cases the State or Territory has sought ITOPF's advice and assistance on the pollution response and clean-up.

8.10.7 Where the pollution is of other type, the P & I Club will still often use ITOPF as its technical advisers, or it may seek assistance from other sources. Sometimes the entity most familiar with the polluting substance is the cargo owner since it is often he who deals with it on a day-to-day basis. Sometimes an industry body or the manufacturer of the polluting substance is able to provide technical help.

8.10.8 The P & I Club will also be involved in the decision concerning a possible lightering of the ship, since the owners of the lightering vessel will usually demand a complete indemnity from the shipowner against any liabilities which they may incur as a result of undertaking the lightering, and the shipowner will want to ensure that his P & I Club will be insuring his liability under that indemnity. If the ship is a wreck and needs to be removed, then again the P & I Club will be involved since wreck removal is one of the risks that they insure.

8.10.9 When the time comes for claims to be presented to the shipowner or others responsible, it will normally be the P & I Club who is the entity with which the claimant will have to deal with. In fact, under the Liability Conventions there are provisions for oil pollution damage claims to be brought directly against the liability underwriter. Not only will the P & I Club negotiate claims with the claimant (directly or through local lawyers or agents), but also if legal proceedings are commenced, it will usually be the P & I Club that takes the decisions concerning how the claim is defended. In all claims, the P & I Clubs aim to provide a service to their members, and part of that service is to ensure that only provable, valid claims are actually paid. Claims, which are unreasonable or cannot be supported by evidence, will normally be vigorously resisted with all the considerable expertise of the Club. Conversely, well-presented valid claims are normally

paid as soon as possible. In the case of pollution claims, the P & I Clubs will cooperate closely with the relevant IOPC Funds when they are involved.

8.11 The Master

8.11.1 The master is the officer aboard ship in charge of the ship's operation. He is, therefore, responsible for the safety of ship, cargo, and all personnel aboard, and he will take such action to achieve this if an emergency situation occurs. He will give priority to saving lives. His responsibility and authority are further described in the International Safety Management (ISM) Code and the International Convention for the Safety of Life at Sea (SOLAS).

The master is usually the person responsible for making the notifications to the nearest coastal State of the incident giving rise to the marine pollution emergency.

8.11.2 Regulation 26 of Annex I of MARPOL 73/78 requires that every oil tanker of 150 tons gross tonnage and above and every other ship other than an oil tanker of 400 tons gross tonnage and above shall carry onboard a shipboard oil pollution emergency plan approved by the Flag State. Regulation 26 also requires that the plan be in accordance with guidelines developed by IMO and should consist at least of: the procedure to be followed by the master or other persons having charge of the ship to report an oil pollution incident; the list of authorities to be contacted in the event of an oil pollution incident; a detailed description of the action to be taken immediately by persons onboard to reduce or control the discharge of oil following an incident; and the procedures and point of contact on the ship for coordinating shipboard activities with national and local authorities in combating the pollution.

8.11.3 The master is in most, if not all, systems of law the agent of the shipowner in the navigation and shipboard management of the ship. Where the cargo is in danger, he is usually also deemed the agent of the cargo owner insofar as any action to save the cargo is taken. States or Territories may therefore deal with the master in confidence in that his word will be that of the shipowner and cargo owner insofar as the security of ship and cargo are concerned, when their owners are themselves not in contact with the State or Territory.

8.11.4 Now that telecommunications are sophisticated, in a marine pollution emergency a master will often be in direct contact with his shipowner's office once the emergency has arisen, so that in fact the shore-side management may become involved in the decisions which are apparently being made by the master alone; in this way the discharge of his responsibilities may be shared.

8.12 Other Private Interests

8.12.1 The ship may be owned by one entity, such as a bank or other financial institution, and leased or bareboat chartered, to another entity. This is a common method of financing, whereby the shipping company which wants to use the ship has the possession of it, but the bare legal ownership resides in the institution which puts up the money for its purchase. The relationship between the shipowner and the lessee or bareboat charterer is governed by a contract of lease or bareboat charter. For our purposes there is no significant difference, so we shall refer to 'the bareboat charterer' per below.

8.12.2 It is the bareboat charterer who has the possession of the whole ship, and it is therefore he who is responsible for the commercial and operational management of the ship, and not the shipowner. Thus, where this type of arrangement is in operation, the master will not be the agent of the shipowner but the agent of the bareboat charterer, and the latter will, with some exceptions, fulfill all the roles and functions, so that for most purposes one can read 'bareboat charterer' for 'shipowner'.

8.12.3 The notable exception concerns the liability of the shipowner under the Liability Conventions, which cannot be directly assumed by any other person. Another possible exception concerns the International Convention on Salvage, 1989, which places an obligation on the owner to cooperate with a salvor and in so doing to exercise due care to prevent or minimize damage to the environment. The Convention does not define 'owner', and so it is left to each State Party to define it in its own legislation. Such legislation may or may not provide that a bareboat charterer shall be in the same position as an owner in this respect.

8.12.4 Another common arrangement which may complicate the picture still further on the side of the interest in the ship is for there to be ship managers or operators appointed to run the day-to-day, non- commercial side of the ship's operation. Managers would normally be responsible for providing the officers and crew and ensuring the ship is maintained and insured. Operators have a similar, but lesser role. In each case the shipowner (or bareboat charterer, as the case may be) retains the commercial control of the ship and takes the commercial risks and benefits of its operation, deciding whether to trade it for his own account, or to charter it out. Where there is a manager or operator (who employs the master), the master will still be the agent of the shipowner or bareboat charterer (as the case may be) for purposes of dealing with the operation of the ship and for salvage purposes. However, the master will additionally represent his employer, and his act or neglect may make his employer liable for compensation. Managers and operators usually enjoy the same rights to limit their liability as shipowners and bareboat charterers.

8.13 The Flag State

8.13.1 The major role of the flag State takes place before the marine pollution emergency, for it is the flag State which is responsible for enacting and enforcing all design and equipment standards, all safety standards, and all crew certification and training; for issuing certificates provided for by international conventions; for setting minimum staffing levels and standards relating to the prevention of collisions and the prevention of pollution, and for exercising jurisdiction and control over the ship while she is on the high seas. However, there are obligations on a flag State after a marine casualty has occurred.

8.13.2 Under Article 12 of MARPOL 73/78, the flag State is obliged to discover the facts of a casualty in which one of its ships has been involved if the casualty has produced a major deleterious effect upon the marine environment, so that it can determine whether any change in the regulatory regime is necessary. In addition, most States with sizeable fleets have made provision for holding a marine enquiry when there is serious loss of life, and under Regulation 1/21 of SOLAS 1974, a flag State must hold such an enquiry when it judges that such an investigation may assist in determining what charges in the SOLAS 1974 regulations might be desirable. Apart from SOLAS 1974 as modified by the Protocol of 1978 relating thereto (1978 SOLAS Protocol), the International Convention on Load Lines, 1996 (LL 1996), and MARPOL 73/78, no other international conventions currently in force make extensive provisions for the holding of marine enquiries.

8.13.3 Under Article 94(7) of the United Nations Convention on the Law of the Sea, 1982 (UNCLOS), which entered into force on 16 November, 1994, the flag State is under a more extensive duty to hold a marine inquiry, including where there has been serious damage to ships or installations of another State or to the marine environment, and the other State involved shall cooperate in such an inquiry.

8.13.4 Under Article 5(3) of MARPOL 73/78, the flag State is entitled to receive notification if any other State party denies the ship entry to its ports or offshore terminals or takes any action against the ship for the reason that it does not comply with MARPOL 73/78.

8.13.5 Under Article 6 of MARPOL 73/78, the flag State must cooperate with other Parties in the detection of violations and the enforcement of the provisions of the Convention. If presented with evidence of a violation, the flag State must investigate the matter and, if satisfied that there is sufficient available evidence for proceedings to be brought for a violation, it must instigate such proceedings. Similar, but less detailed, provisions exist in Regulation 1/19 of SOLAS 1974 as modified by the 1978 Protocol, Article 21 of LL 1996 and Article X of the International Convention

on Standards of Training and Watchkeeping for Seafarers 1978 (STCW 1978). Where a State or Territory does present a flag State with evidence of a violation, it can always contact the flag State to see what is the outcome of the investigation which the flag State conducts, and to offer to assist in every way with the presentation of oral or written evidence at any subsequent legal proceeding which the flag State may bring.

8.13.6 SOLAS 1974 was amended in May, 1994 at a SOLAS Conference to add a new Chapter IX to the Convention which is designed to make mandatory the ISM Code, which was adopted by IMO in November 1993 by Assembly resolution A.741(18). The ISM Code takes into account that the most important means of preventing maritime casualties and pollution of the sea from ships is to design, construct, equip and maintain ships and to operate them with properly trained crews in compliance with international conventions and standards relating to maritime safety and pollution prevention. The Code provides an international standard for the safe management and operation of ships and for pollution prevention. The amendments entered into force on 1st of July 1998.

8.13.7 The new Chapter IX of SOLAS, 1974 applies to ships, regardless of the date of construction, as follows:

1. passenger ships including passenger high-speed craft, not later than 1st of July 1998;
2. oil tankers, chemical tankers, gas carriers, bulk carriers and cargo high-speed craft of 500 gross tonnage and upwards, not later than 1st of July 1998; and
3. other cargo ships and mobile offshore drilling units of 500 gross tonnage and upwards, not later than 1st of July 2002.

8.14 Interests Related to the Cargo: The Cargo Owner

8.14.1 The owner of the cargo at the time of the marine pollution emergency will not necessarily be either the shipper or the consignee, for the ownership may have changed hands once or more than once since the ship sailed. Initially, therefore, it may not be easy to establish who owns the cargo, although the chain of enquiry will start with the shipper named in the Bill of Lading, a copy of which will be retained on board by the master. Bulk cargoes tend to be owned by a single entity, or perhaps by a few different entities. Packaged Cargoes, on the other hand, are more likely to be owned by a greater variety of different entities.

8.14.2 The individual cargo owner involved in an incident is not normally liable to compensate any person suffering pollution damage, and certainly there is no international legal regime which

makes provision for the liability of the cargo owner for such damage. However, companies in States party to the 1971 and 1992 Fund Convention that receive crude Oil or fuel Oil after sea transport are collectively required to contribute to compensation paid by the 1971 or 1992 IOPC Fund.

8.14.3 Once the cargo owner becomes aware of the marine pollution emergency, his interest will lie mainly in ensuring that as much as possible of his cargo is actually delivered to the port of destination. This is the task which has been delegated to the shipowner, and under the Bill of Lading or other contract governing the carriage of the cargo by sea (such as a charter party), this responsibility will remain with the shipowner throughout the marine pollution emergency unless and until the shipowner abandons the voyage. For this reason the cargo owner does not normally feature much in the 'dramatis personae' of a marine pollution emergency.

8.14.4 The cargo owner's interest extends also to a liability to contribute in general average and salvage: in respect of both of these liabilities, he will normally be insured by the cargo underwriter. Since the cargo owner (or the cargo underwriter using the right of subrogation) will look primarily to the shipowner for compensation for any loss or contamination of the cargo, it can be readily appreciated that the interests of the shipowner and cargo owner are somewhat in tension.

8.14.5 The cargo owner's knowledge of the nature of the cargo will vary enormously according to the type of entity concerned. If the cargo owner is an end-user of the type of cargo involved, he may very well have technical people on his staff that is familiar with the behavioral characteristics of the cargo, which is almost invariably the source of the marine pollution emergency (the main exception being the escape of marine fuel oil or marine diesel used as bunkers). Therefore the cargo owner may be someone to whom the State or Territory or even the shipowner may turn for advice about the cargo and how to handle it in the emergency. If the cargo owner is a trading company that does not use the cargo itself, such technical expertise is less likely to be available from that source and it may have to be sought from the manufacturer of the cargo, or from an industry body. One particular aspect where cargo owners have become involved in the marine pollution emergency concerns the lightering of the stricken ship. It is not uncommon for the cargo owner - particularly an end-user -to assist in the identification of a suitable lightering ship to be hired for the job. It should also be noted that several countries in Europe and North America have developed data bases which provide the user with information on hazard identification and assessment of many of the chemicals transported by sea.

8.14.6 Under Article 8(2) of the 1989 International Convention on Salvage, if a salvage contract to which that Convention applies is entered into, the owner of any property in danger -

including the cargo owner and the owner of freight at risk - is under a duty to the salvor to cooperate fully with him during the salvage operations and, in so doing, to exercise care to prevent or minimize damage to the environment.

8.15 Interests Rendering Assistance: Professional Salvor

8.15.1 The majority of professional salvors are members of the International Salvage Union (ISU). This organization represents some 43 companies based in 32 different countries around the world. The salvage companies have tugs and other salvage equipment at a number of different ports and areas throughout the world and some of the companies have salvage tugs stationed at various strategic locations. Some salvage tugs are being maintained at salvage stations in certain coastal States as a result of arrangements made between their owners and other commercial interests or the authorities in those States. When a salvage company is engaged to assist a marine casualty they will be able to bring specialist expertise to the task which is unique to the marine industry. Their business is not without risks, and frequently the skills and efforts of salvage officers have saved ships and their cargoes from extreme situations. Some companies have the ability to mobilize equipment, either from their own resources or from elsewhere, together with expert personnel at very short notice.

8.15.2 The number of salvage tugs in operation has significantly decreased in recent years, and those that remain are frequently engaged in ocean towage of rigs, barges, etc., on commercial terms. However, salvage of casualties is still normally undertaken on traditional "no cure - no pay" terms, whereby, if successful, the tug owner / salvage company will earn a reward based upon a number of factors, including the risks from which the property was saved, the time occupied in the services, the dangers to the salvor's property and personnel, the value of the salvaged property, the skills shown by the salvors and the expenses incurred by them in rendering the services. The 1910 Salvage Convention enshrines these principles and forms the basis of salvage law of the States Party thereto. When the 1989 Salvage Convention entered into force on 14 July 1996, it replaced the 1910 Salvage Convention, thereby introducing substantial changes to the salvage industry

8.15.3 On a traditional no cure - no pay basis, if no property is saved, the salvor receives no reward for his efforts. This basis of working obviously carries with it considerable financial risk and a salvor therefore expects to be rewarded far more generously than normal commercial terms. Indeed, the 1989 Salvage Convention stipulates that "the reward shall be fixed with a view to encouraging salvage operations, taking into account the following criteria without regard to the order in which they are presented..." (see paragraphs l(a) to 0) of Article 13 of the 1989 Salvage

Convention). Statistical data collected and published by ISU have shown that the revenue from over 2,000 salvage services carried out between 1978 and 1992 under no cure - no pay terms has averaged just over 6% of the property values salved. To achieve any such average there are obviously awards at either end of the scale; however, on a traditional no cure - no pay basis, the award cannot exceed the value of the property salved.

8.15.4 Salvage services rendered under other forms of commercial contract, i.e., "Daily Rate" or "Lump Sum", do not call for elaboration here. Professional salvors will not normally work on such a basis for normal salvage services. If a non-salvage commercial contract is utilized, there will have been negotiation between the parties, who may include the coastal State. No special limiting considerations are therefore relevant to a marine pollution emergency in such a case. Salvage services rendered under no cure - no pay terms do, however, give rise to important considerations for the handling of a marine pollution emergency.

8.15.5 The contract that salvors will normally offer to the master and/or owners of a ship involved in a marine casualty will be the current version of Lloyd's Standard Form of Salvage Agreement (LOF 1995). This form, reproduced in Appendix 3, was issued by Lloyd's following the enactment of the 1989 Salvage Convention into English law on 1 January 1995. The services to be provided to the casualty are set out in Clause l (a) of LOF 1995, namely.

The Contractor (salvor) shall use his best endeavors:

1. to salve the [*ship to be* named] and/or her cargo freight bunkers stores and any other property thereon and take them to [*place to be* named] or to such other place as may hereafter be agreed either place to be deemed a place of safety or if no such place is named or agreed to a place of safety and
2. while performing the salvage services to prevent or minimize damage to the environment

The Agreement is governed under Clause 1(g) by English law and provides for arbitration in London before one of the panel of Lloyd's salvage agitators who are all lawyers experienced in marine salvage claims.

8.15.6 LOF 1995 extends an obligation upon the Contractor originally contained in the 1980 edition of Lloyd's Form which was "to prevent the escape of oil form the ship and/or her cargo bunkers and stores". For the first time the Contractor is bound to prevent or minimize damage to the environment. The 1989 Salvage Convention defines "damage to the environment" as "substantial physical damage to human health or to marine life or resources in coastal or inland waters or areas adjacent thereto, caused by pollution, contamination, fire, explosion or similar

major incidents" (see Article l(d) of the 1989 Salvage Convention). In reality, salvors have always made considerable efforts during any salvage operations to avoid pollution and to co-operate with national and/or local authorities.

It is important to recall that a salvage agreement, be it LOF 1995 or some other form of agreement, is normally entered into between the salvage company and the master of the ship involved in a casualty as agent for the owners of the ship, cargo, bunkers and stores. The coastal State is not a party, and usually is not involved in the negotiations. Salvage is a voluntary arrangement and cannot be imposed on unwilling parties. A coastal State wishing to place a ship under a duty to accept salvage services may, in certain cases, do so under its law, but implementing this, if one or both parties is unwilling, may prove to be difficult

8.16 Others Rendering Assistance

8.16.1 On occasions, professional salvors may need to engage the services of other companies to assist them in the provisions of salvage services to the casualty. It will be appreciated that no company can expect to have all the ships, other floating plant, equipment and personnel immediately available at the site of a casualty. This may range from the provision of tugs or anti-pollution ships through to lightering ships. These units could be entitled to a salvage award in their own right. However, where a professional salvor has been engaged, he can be expected to organize such assistance on terms which will not lead to a proliferation of salvage claims. This may involve utilizing, for example, the International Salvage Union (ISU) Sub-Contract Award Sharing Agreement, or other daily rate or lump sum terms.

8.17 Coastal interests: Intervention. Response. and Clean-Up

8.17.1 The different roles of the Island States or Territory's various competent authorities will be defined in its constitution and in its National Contingency Plan. These plans vary from State to State, and the considerations that should be taken into account in preparing them should include those contained in this document. Elaboration of the process of drawing up such a plan is covered by other documents, such as Section II of the IMO Manual on Oil Pollution. Therefore, here the roles and functions of the various competent authorities of a State or Territory will be discussed as if there was but one, national authority to deal with the marine pollution emergency, and this will simply be referred to as 'The Coastal State'.

8.17.2 Within OPRC 1990, salient features are stipulated in Article 6 (National and regional systems for preparedness and response) and Article 7 (International co-operation in pollution response). Specifically, under Article 6, each shall:

1. establish a national system for responding promptly and effectively to oil pollution incidents which has, as a minimum, developed a national contingency plan and designated national authorities and operational focal points responsible for oil pollution preparedness and response, reporting and handling requests for assistance;
2. within its capabilities either individually or through bilateral or multilateral co-operation and, as appropriate, In co-operation with the oil and shipping industries and other relevant entities. establish a minimum level of pre-positioned oil spill response equipment, proportionate to the risk involved, and programmes for its use, and
3. commit to co-operate and render assistance to Parties that request assistance to deal with oil pollution incidents subject to capability and availability of relevant resources.

8.17.3 When faced with the marine pollution emergency, the coastal State must look both to its international rights and duties, and to its national position. Insofar as the laws are concerned, all States and Territories have a general duty under customary international law to warn other States or Territories of a marine pollution threat of which it becomes aware and which is likely to affect them, and this is reinforced by Article 8(3) of MARPOL 73/78, which requires States and Territories to notify the flag State and any other State or Territory which may be affected. Principle 21 of the 1972 Declaration of the United Nations Conference on the Human Environment went so far as to say that:

"States have, in accordance with the Charter of the United Nations and the principles of international law... the responsibility to ensure that activities within their jurisdiction and control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction".

(Article 194 (2) of the Law of the Sea Convention 1982 is to similar effect, and Article 198 contains a specific obligation to notify other States which the coastal State deems likely to be affected). Therefore, once a marine pollution emergency is actually within the jurisdiction and control of a coastal State, the coastal State must consider the likely effect on other States and take the appropriate action, which at the bare minimum is to notify those likely to be affected and keep them informed.

8.17.4 Such general obligations may have been given greater precision in an inter-governmental regional agreement which commits the groups of States or Territories who are party thereto to cooperate in responding to major incidents of marine pollution which are likely to affect more than one State or Territory. If a coastal State is a party to one of these, then its provisions should be implemented. Under such an agreement, a coastal State is usually under a

duty to report marine pollution incidents to neighboring States or Territories that may be affected, to avoid or reduce the effects of pollution, and to monitor the situation. Other parties to the agreement are usually obliged to use their best endeavors to respond to requests for assistance which may be made by the coastal State affected and to cooperate in pollution response action. Any regional mutual aid centre that may have been established pursuant to the Convention will be able to assist States parties in the task of implementing the Convention in the actual marine pollution emergency, primarily by providing technical advice and liaising with other sources of assistance. There may also be a list of equipment stockpiles established by oil companies or groups of countries that a coastal State may be able to use.

8.17.5 Bearing this in mind, then, the coastal State will focus its attention on its own response to the marine pollution emergency. One question that may arise is the extent to which the coastal State may take action against the wishes of the master or other parties who have interests in the ship or cargo. Ideally, the coastal State will have considered the international law position on intervention in conjunction with the preparation of its contingency plan before the marine pollution emergency arises, and have enacted legislation or made other satisfactory provision for the taking of appropriate steps when an emergency arises.

8.17.6 A detailed analysis of the international law "right to intervene" is outside the scope of this document, but mention should be made of the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties 1969 and the 1973 Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil ("the Intervention Conventions"), which give greater precision to rights existing under customary international law. Both of these deal only with rights to intervene on the High Seas, and do not cover the position in territorial waters (the position in internal waters being a matter purely for the domestic law of the coastal State). Under customary international law, however, the position in territorial waters is similar to that adopted in the Intervention Conventions.

8.17.7 These conventions permit the coastal State to intervene on the high seas against the wishes of the ship and cargo to the extent necessary to prevent, mitigate or eliminate grave and imminent danger to the coastline or related interests from pollution or threat of pollution of the sea, following upon a maritime casualty, which may reasonable be expected to result in major harmful consequences. The measures taken must be proportionate to the damage actual or threatened, and if they exceed this the coastal State must pay compensation to those who have suffered thereby. Also, the right to intervene must be preceded by due consultation with States or persons whose interests are affected, except in cases of extreme urgency.

8.17.8 The related interests in protection of which intervention is possible include tourism, fishing and other marine resources and wildlife, so that intervention under these Conventions is possible on purely environmental grounds. IMO may be able to give recommendations on experts who could be called upon for consultation in such an emergency.

8.17.9 One of the possible options for intervention that a coastal State has is to require salvage services to be accepted or provided, or even to undertake them itself. There are certain practical problems in implementing such an imposed requirement where the parties are unwilling. However, Articles 5 and 9 of the International Convention on Salvage, 1989 recognize that States and Territories may wish to control or provide such services themselves by providing that nothing in the Convention shall affect provisions which the coastal State may have made in this respect (although salvers carrying out such services under the control of a public authority are still entitled to avail themselves of the Convention's rights and remedies).

8.17.10 In fact it is relatively unusual that the coastal State will need to exercise its rights to intervene or to control salvage operations. The coastal State has an absolute right in international law to deny a ship entry to any of its ports or offshore installations, and very often this is the only thing the coastal State will want to do that causes disagreement. In most cases, co-operation between the master and the coastal State achieves all that is necessary, and the coastal State's task of coordinating and arranging all the pollution response and clean-up actions under its contingency plan is not hindered by the ship or cargo interests.

8.17.11 Under the International Convention on Salvage, 1989, States Party to the Convention have to take into account the need for cooperation between salvers and others when regulating or deciding upon salvage matters such as admittance to ports of vessels in distress or the provision of facilities to salvers, so that operations to save life or property in danger, as well as preventing damage to the environment, are taken into account (article 11).

8.17.12 The other main role of the coastal State comes in seeking to recover compensation for pollution damage, and possibly, coordinating the efforts of its citizens in the same task.

8.17.13 After a marine pollution emergency is over, a marine inquiry is often held. Co-operation between flag States in the holding of marine inquiries has already been mentioned under chapter 8.14 the Flag State.

8.17.14 One administrative aspect of "port State" which is of interest to a coastal State is worthy of discussion in this chapter. A number of IMO conventions contain provisions for port State control inspections, but previously these have been limited primarily to certification and the

physical condition of the ship and its equipment. However, new Regulation 8A of Annex 1 of MARPOL 73/78, which entered into force on 3 March 1996, makes it possible for ships to be inspected when in the ports of other Parties to MARPOL 73/78 to ensure that crews are able to carry out essential shipboard procedures relating to marine pollution prevention. The procedures for the control of operational requirements relating to the safety of ships and pollution prevention are contained In IMO Assembly resolution A787(19).

8.17.15 Extending port State control to operational requirements is seen as an important way of improving the efficiency with which international safety and anti-pollution treaties are implemented.

CHAPTER 9. ASSISTANCE FROM FOREIGN GOVERNMENTS OR COMMERCIAL RESPONSE TEAMS

9.1 Sources of Foreign Government Assistance

9.1.1 There are a number of foreign governments that offer worldwide assistance in combating major oil spills. These foreign government agencies have trained personnel and specialized equipment that can be airlifted to a spill site on short notice.

9.1.2 If after assessment of the oil spill casualty by the affected Island State or Territory it is decided that assistance is required from the government of a State outside the Convention Area (from international or private-sector organizations), it is strongly recommended that the financial arrangements for such assistance are agreed in advance.

9.1.3 When the assisting personnel arrive, they will be under the operational control of the National On-Scene Commander of the affected State or Territory. At the conclusion of the clean-up activities, the commercial company or foreign government agency will submit a bill for services rendered which will be included in the final invoice to the spiller.

9.2 Oil Industry Co-Operative Response Organizations

9.2.1 The Marine Spill Response Corporation (MSRC) was created as an oil spill response organization in 1990. MSRC is a private, independent, tax-exempt, not-for-profit corporation dedicated to the cleanup and mitigation of oil spills in United States coastal, tidal and certain other waters. MSRC has established a program to use its best efforts to contain and clean up such oil spills.

9.2.2 MSRC is headquartered in Herndon, VA with four Regional Response Centers located throughout the U.S. The Regional Response Center for the Southern region is located in Lake Charles, LA and will primarily be responsible for U.S. waters in the Gulf of Mexico and U.S. waters surrounding the U.S. Virgin Islands and Puerto Rico. MSRC's four Regional Response Centers will be the locations for warehousing, receiving, storing, delivering and expediting

supplies, equipment and materials related to MSRC's spill response activities. In addition, the facilities will serve as training centers for spill response personnel. The centers also will operate as spill response communications and command posts. Each center will employ approximately 55 persons full-time in spill response, supplemented as needed during a spill by personnel from MSRC's other regions and headquarters, and other needed contractors. There are three pre-staging areas in Puerto Rico and one in St Croix.

9.2.3 MSRC became operational in 1993 to meet the oil spill response requirements of the Oil Pollution Act of 1990 (OPA-90).

9.2.4 MSRC has made a significant investment in oil spill response operations and equipment. MSRC receives its operating funds from the Marine Preservation Association (MPA). MPA is an independent, not-for-profit corporation whose members include oil companies, shippers and receivers of oil, insurers and others who pay dues based upon the amount of oil they handle in U.S. waters. However, MPA does not have operational management of MSRC. Members of MPA enter into contracts with MSRC for response services that MPA members may cite in their OPA-90 required spill response plans.

9.2.5 MSRC will maintain a contractual relationship with members of MPA and the USCG. Only MPA members may cite MSRC's contracted services, manpower, and equipment in response plans required under OPA-90. The expenses incurred by MSRC in responding to a spill will be recovered directly from the spiller or the USCG.

9.2.6 MSRC's Response Role. The primary purpose of MSRC is to provide a best effort response to spills of oil in U.S. offshore and tidal waters, including bays and harbors. Responses outside the U.S. are on a case-by-case basis. For large spills (over 1,200 barrels at risk) the customer must be a member of MPA or the USCG must guarantee payment.

9.2.7 For additional information contact:

MARINE SPILL RESPONSE CORPORATION
Marketing and Customer Service Manager
220 Spring Street, Suite 500
Herndon, Virginia 20170
Tel: (703) 326-5617
Fax: (703) 326-5660

9.3 Clean Caribbean and Americas (CCA)

9.3.1 The Clean Caribbean and Americas (CCA) is an oil spill equipment cooperative funded by 40 member/associate member companies (January 2008) that operate petroleum facilities or

transport persistent oils in and through the Caribbean basin. The CCA is not an oil spill response organization in that it has no role in an oil spill other than providing equipment. The CCA acquires, maintains, and trains member personnel on a stockpile of oil spill response equipment, materials and chemicals. The CCA stockpile is warehoused in Fort Lauderdale, Florida, USA and is principally intended to be air shipped to the airport nearest the spill site. The CCA's purpose is to provide stockpiles of readily available equipment, materials and chemicals unique to and required in oil spill clean-up operations. Equipment, materials, and chemicals that are readily available on the commercial market are for the most part not included in the stockpile.

9.3.2 The CCA does not act collectively in response to an individual member's spill. It is the responsibility of each member to develop its own contingency plans and manage a potential spill. The CCA assumes no responsibility for an oil spill clean-up operation. A full-time staff in Fort Lauderdale maintains a 24-hour call-out system and "mobilizes" stockpile items requested by the member. Equipment is then transported to the Fort Lauderdale airport or seaport. It is the member's responsibility to arrange and transport equipment to the spill site. Members are required to purchase equipment and materials released from the CCA stockpile and insure them for the duration of their use. The CCA hold first buy-back option on the equipment as a means of replenishing the stockpile, providing the equipment is returned in as good a condition as when released.

9.3.3 Non-members may not list CCA equipment and materials in their contingency plans. However, under certain circumstances, CCA equipment may be made available to non-members. In all cases, non-members must request CCA equipment, and CCA equipment will only be made available, through the U.S. Government or U.S. Coast Guard. Equipment would be released by the CCA to the U.S. Government or U.S. Coast Guard for transfer to the non-member. Non-members will be required to meet all the financial and other terms and conditions as members.

9.3.4 Any organization considering requesting CCA equipment or materials should provide the CCA Staff the earliest notification possible, even if diplomatic/government requests are still in progress. Contact information is as follows:

Clean Caribbean and Americas
2381 Stirling Road
Fort Lauderdale, Florida 33312
USA
Tel: (954) 983-9880 (24 hr)
Fax: (954) 987-3001
Email: staff@cleancarbbean.org
Web Site: www.cleancaribbean.org

9.4 Oil Spill Response Limited (OSRL) Southampton, United Kingdom

9.4.1 Oil Spill Response Limited (OSRL) operates to provide an oil spill response capability to oil industry members. OSRL resources comprise equipment and over 100 expert personnel to respond to all types of oil spills, either at sea or on land. They operate an L 382G Hercules aircraft that can be used to either deploy equipment or to provide a platform for the operation of large-scale aerial dispersant spraying systems.

9.4.2 OSRL resources can be made available to non-members subject to certain conditions and subject to the entity calling accepting the terms and conditions under which they would respond. It is recommended Island States obtain copies of these conditions in advance to facilitate a rapid exchange of faxes as soon as possible after call out.

9.4.3 OSRL also can provide training and consultancy services either in their facilities in Southampton or on location.

9.4.4 OSRL can be contacted on a 24 hour basis by:

Telephone:	+ 44 2380 331551
and by Fax:	+ 44 2380 331972
Email:	osrl@osrl.co.uk
Web Site	www.osrlearl.com

CHAPTER 10. USE OF DISPERSANTS, IN-SITU BURNING AND BIOREMEDIATION TECHNIQUES

10.1 Background

10.1.1 Once oil is on the surface of the water the primary objective should be to minimize the overall environmental impact of the spill. Several response countermeasures and tools exist: mechanical recovery, use of dispersant, natural dispersion (passive monitoring), in-situ burning, and in the event of a shoreline impact, beach clean-up operations and bioremediation must be evaluated. Often, several countermeasures can be applied simultaneously. Each response countermeasure or tool involves environmental and operational trade-offs. Decision makers must evaluate those trade-offs when deciding on the overall response strategies that will result in the least environmental impact.

10.1.2 The first wide-scale use of chemicals to disperse oil spilled at sea dates back to the grounding of the Torrey Canyon off the coast of England in 1967. The chemicals used were degreasing agents and detergents consisting of up to 60% aromatic hydrocarbon solvents which had been developed for cleaning oil residues from tanker compartments and bilges. The improper application and use of these harsh chemicals on beaches resulted in extensive mortality of inter-tidal organisms, an effect attributed to the toxicity of the first generation dispersants. The Torrey Canyon incident generated considerable controversy with regard to the toxic effects of dispersants, a controversy that persists to the present. However, in the years since the Torrey Canyon incident, many advances have been made in dispersant formulations, resulting in today's low-toxicity concentrate dispersants. There have been numerous successful applications of modern dispersants, which have achieved desired objectives without damage to sensitive ecosystems.

10.2 Use of dispersant in the island states or territories

10.2.1 Dispersants are not the only course of action to be considered in a major oil spill, but at the same time, the use of dispersants may enhance the recovery of an affected area by accelerating the natural dispersion of oil whether on the surface of the sea or via subsurface application at an uncontrolled well head. Chemical dispersion can shorten the overall response time to an oil spill, thus reducing the

chances that the oil will move further on the water surface and thereby protecting sensitive areas. Rapid dispersion of oil can prevent the oil from reaching shorelines, which are difficult to clean and where the greatest environmental damage caused by oil spills occurs. In any event, the decision to use or not to use dispersants should be made with the objective of realizing the greatest Net Environmental Benefit.

10.2.2 The decision to use dispersants in the Exclusive Economic Zone of an Island State or Territory will be with the OSC as authorized by the Lead Agency for the State or Territory where the spill occurs. The decision to use dispersants will be based on the national policy as defined in the National Contingency Plan and a Net Environmental Benefit Analysis (NEBA) which is used to evaluate the decision to use oil spill dispersants. The concept is that the total benefit of applying dispersants is evaluated compared to the potential damage that would occur if they were not applied. NEBA is more of a concept than a developed tool.

10.2.3 The "Window of Opportunity" for use of dispersants is narrow based on the age of the spilt oil, viscosity, and weather conditions to name but a few. Failure to make a timely decision regarding dispersant application is in actuality a decision not to use dispersants, and in some instances may place some natural resources at an increased and unnecessary risk. The use of dispersants should be studied and pre-approved long in advance of the time of an emergency. Consideration of the type of dispersants available, the seasonal use as it relates to the fishing and tourist industry, as well as the potential "down wind" effect must be considered in the use plan. The National policy adopted should be based on a full understanding of dispersants action and the most up-to-date methods of application. In addition, the National Contingency Plan should list those dispersant products that are approved for use within the area of responsibility of the Island State or Territory. Many countries throughout the region have tested commercially available dispersants for efficiency, toxicity, and biodegradability and this information can be shared where individual testing by each Island State or Territory is impractical.

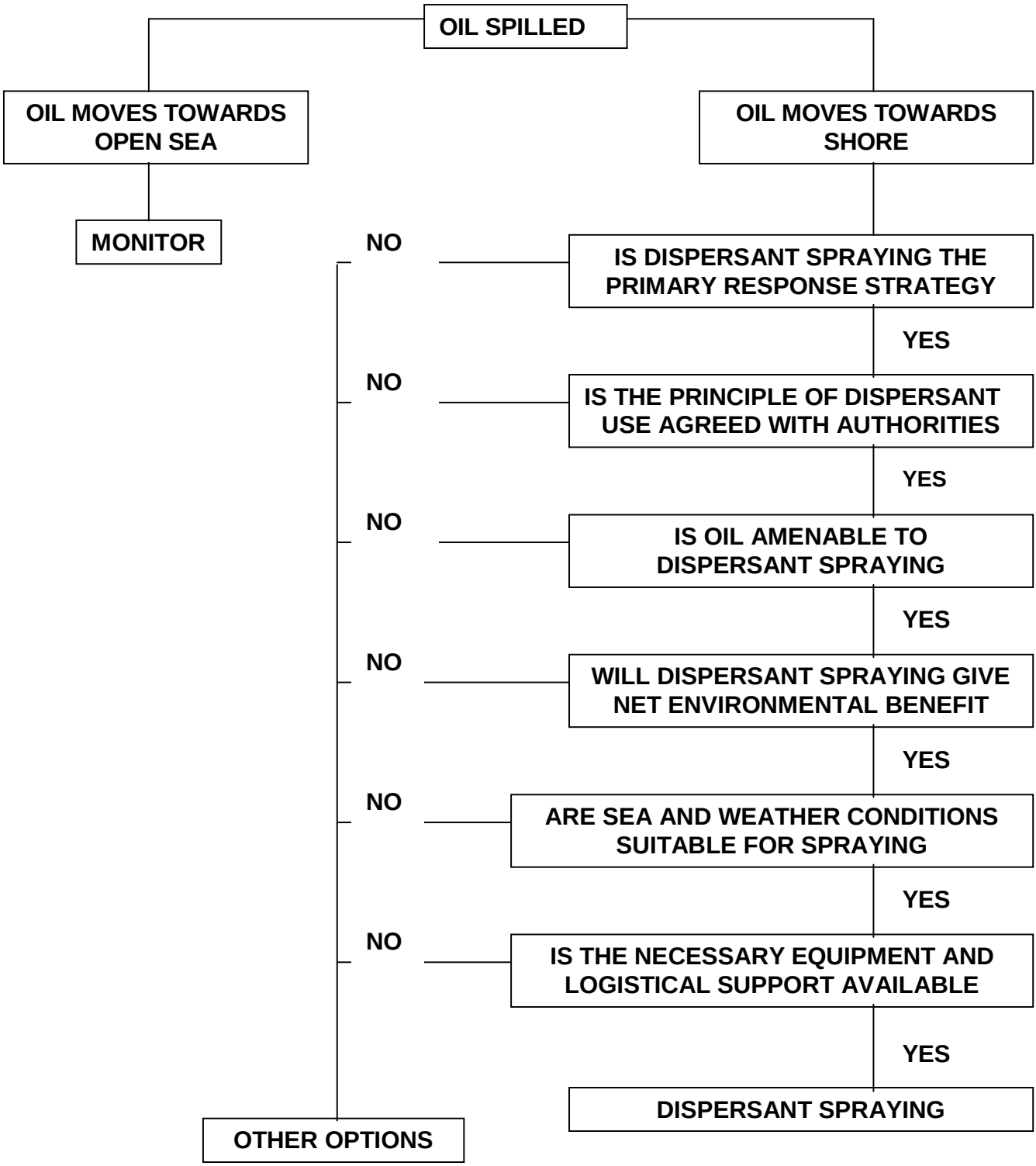
10.2.4 In general, the advantages and disadvantages of dispersant use can be summarized as follows:

1. Dispersants are an effective method of dealing with large volumes of oil in a short time;
2. Dispersants are an effective method of dealing with a continuous discharge from an uncontrolled well head;
3. Dispersants aid in accelerating the natural degradation processes;
4. Potential damage to marine fowl is reduced as oil is removed from the water surface;
5. The dispersed oil droplets are not driven by the wind, thus reducing the speed of slick movement;
6. Dispersed oil tends not to wet sediments, beach sand, etc.;

7. Formation of tar balls and mousse is reduced as chemically dispersed oil tends not to coalesce;
8. The concentration of dispersed oil per unit volume of water will decrease rapidly;
9. The window of opportunity for the use of dispersants is limited;
10. Dispersant use results in the introduction of additional low-toxicity substances into the marine environment; and,
11. If an oil spill is treated with dispersants the effectiveness of oleophilic skimmers will be reduced.

These are some of the important points to consider during a discussion of environmental and operational trade-offs involved in the use of dispersants. Also, at this time there is still much on-going discussion regarding dispersant use so the following “Dispersant Spraying Decision Tree” should be considered a guideline.

DISPERSANT SPRAYING DECISION TREE



10.3 General dispersant policy for islands states and territories

10.3.1 The Caribbean Plan envisions that each Island State or Territory will develop its own policy pertaining to the use of dispersants in its Exclusive Economic Zone (EEZ). The dispersant policy adopted by the State or Territory will be part of its National Contingency Plan.

10.3.2 Scientific studies over the past several years have shown that the new generations of dispersants, in themselves, exhibit low toxicity even at application concentrations ten times those prescribed. Studies have also shown that the concentration of dispersed oil in the water column drops off significantly at depths below three meters, and, given reasonable flushing, dispersed oil does not remain in the area of application for any significant length of time as it is distributed and diluted by the currents. More or less aggressive use of dispersants may be warranted. Each Island State and Territory is encouraged to establish guidelines based on its own environmental considerations and circumstances within its own territorial seas.

10.3.3 It is the position of the Island States and Territories that use of dispersants using the following parameters will cause no significant environmental harm from such use. It is the policy of the Island States and Territories that when combating spilled oil within its territorial seas the OSC as authorized by the Lead Agency may use dispersants without prior notifications to other Island States and Territories under the following parameters:

1. The area of application is not less than one nautical mile from any shoreline, nor closer than three nautical miles up-current from important marine fisheries or coral reef ecosystems which are less than 20 feet from the water's surface;
2. The water depth should exceed 30 feet in the area in which the dispersant will be applied;
3. The method of application is one recommended by the dispersant manufacturer;
4. The rate of application is as recommended by the dispersant manufacturer;
5. The dispersant is approved by the Island State or territory and exhibits low toxicity; and,
6. The Lead Agency will notify potentially affected downstream Island States and/or Territories whenever dispersant use is intended to be conducted beyond its territorial seas.

10.3.4 In the event the OSC determines that the use of dispersants is necessary and if it is apparent that, downstream Island States and/or Territories may be affected, then concurrence for

such use must be obtained from the potentially affected Island States and Territories outside the parameters of section 10.3.3.

10.3.5 Response operations, including the application of dispersants, will not be conducted in the EEZ of another Island State or Territory without prior concurrence of the Lead Agency of that Island State and/or Territory.

10.3.6 During a dispersant operation the OSC should determine the effectiveness of the dispersant application by on-scene observation and/or by scientific monitoring. Application of dispersants should be discontinued if proven to be ineffective, there is a change in the spill trajectory, time is longer than the pre-calculated "Window of Opportunity", deteriorating weather conditions for aircraft or vessel operations, lack of wave energy to assist in the dispersion, or any interferences to safe operations.

10.3.7 To establish an updated list of dispersants stockpiled in the region, each Island State or Territory will submit to the Focal Point Agency (IMO Regional Consultant) the quantity, size of storage containers, brand name, type, and location of storage. (Example: 12 - 55 Gallon plastic drums of XYZ dispersant at Port ABC). The updated information will be submitted on an EQUIPMENT/DISPERSANT LOCATION page for insertion in Chapter V of the Caribbean Plan.

10.4 Application of dispersant

10.4.1 The best combination of dispersants and application (whether on the surface or sub-sea) method must be selected for the specific situation. On the open sea they can be applied from surface vessels and from aircraft. It is very important to use proven equipment which has been properly calibrated and to follow the instructions/guidance of the suppliers of the spray equipment and dispersant manufacturer.

10.4.2 Spraying operations should be started as soon as possible after it has been decided that dispersant use will form part of the spill response strategy. The dispersant must be applied to the oil slick(s) before they become too thin and before the oil weathers excessively. When applying dispersants, the best tactic is to apply the dispersant to the thickest portions of the oil slick. This is difficult to determine, but is generally done by visual observations from trained personnel in a spotter aircraft. Many oils will form stable water-in-oil emulsions (chocolate mousse) of which the viscosity will be higher than that of the original oil. The extent of emulsification and the stability of the emulsion will depend upon the type of oil, sea state, and temperature. The viscosity also increases because of the evaporation of lower molecular weight hydrocarbons. Both processes may have taken place to a considerable extent within hours after

the spill and thus dispersant effectiveness may be reduced if application is delayed. After oil has emulsified into a stable mousse it is very difficult to disperse. Treatment with dispersants should, therefore, start before the mousse formation or extensive weathering has taken place.

10.4.3 Supplying an adequate quantity of dispersant to deal with a large spill can often be a major logistics problem. Spill response managers should include in their contingency plans an inventory of approved dispersants and should be aware of how this supply of dispersants can be augmented and mobilized from additional sources. Even if the dispersant supply appears adequate to treat the spilled oil, the OSC and spill response managers should be prepared to use a combination of response countermeasures and techniques.

10.5 Operational use and application of dispersant

10.5.1 In general, dispersants are applied either by surface vessels equipped with dispersant spray booms and support equipment (pumps, hoses, dispersant storage drum/tank(s)) or by aircraft (fixed-wing or helicopter) using specially designed spray equipment and systems. In general, dispersants are only minimally effective when applied by means of fire monitors, unless the monitor is modified with new single-point application nozzles which can provide a relatively good distribution of correctly sized droplets. Proper use of dispersants requires the appropriate dosage in terms of amount of dispersant per unit area, such as gallons per acre, liters per hectare, for the estimated thickness of the oil to be treated. The dosage is extremely variable and depends on the type of dispersant, type of oil, slick thickness, temperature, viscosity, and other characteristics of the spilled oil. In the past, an initial dispersant–to-oil ratio of 1:15 to 1:25 was used. Recent field tests have shown that some dispersants are still effective at ratios of 1:40 to 1:50. The actual flow rates to achieve the desired dispersant dosage are a function of the vessel/aircraft speed, the pump capacity, the dilution rate, and the effective swath width covered.

10.5.2 Vessel Application. Most vessel dispersant spray systems in response inventories utilize an eduction pump system that dilutes a dispersant concentrate with seawater before being sprayed on the surface through multiple-nozzle spray booms. Mounting spray booms ahead of the vessel's bow wave and wake assist in proper application of the dispersant to the oil. Vessel spray and pump system flow rates must be periodically calibrated to assure the desired dosage. Despite improvements in vessel spraying equipment, the technique will always have some limitations, due to the low treatment rates and inherent difficulties of locating oil slicks from a vessel.

10.5.3 Aerial Application. In contrast, aerial spraying offers the advantages of rapid response, good surveillance, high treatment rates, optimum use of dispersant, and better evaluation of

dispersant treatment. Aerial spraying has been used successfully on numerous occasions and has advantages over surface spraying in that aircraft can travel to the scene of a spill much more rapidly than can surface vessels. In addition, large fixed-wing, aircraft have the ability to apply greater quantities of dispersant more rapidly than surface vessels. Helicopters have the advantage of speed of response but are more limited in range and in volume of dispersant that can be carried in comparison with large fixed-wing aircraft. Concentrate dispersants are applied undiluted at low altitude (50-100 feet) with the recommended dosage per unit area remaining the same.

10.5.4 Absolutely critical to any dispersant operation (especially aerial applications) is the inclusion of a dedicated airborne observer aircraft with an experienced dispersant expert who can direct the spraying operation and visually determine the effectiveness of the dispersant application.

Reference:

1. "IMO/UNEP Guidelines on Oil Spill Dispersant Application including Environmental Considerations", 1995 edition, International Maritime Organization, London.
2. “Manual on Oil Pollution: Section IV Combating Oil Spills, 2005 edition, International Maritime Organization, London.
3. “Guideline for the Use of Dispersants on Oil Spills”, 2007, ARPEL (Regional Association of Oil and Natural Gas Companies in Latin America and the Caribbean).
4. “Oil Spill Dispersants: Efficacy and Effects”, 2005, National Academy Press, Washington.

10.6 In situ burning

10.6.1 In-situ burning is recognized as a viable alternative to mechanical methods for cleaning up oil spills on water and in nearshore areas, wetlands, and other land areas. When performed properly and under the right conditions, in-situ burning can rapidly reduce the volume of spilled oil and eliminate the need to collect, store, transport and dispose of recovered oil. There are limitations on its effectiveness as presented below. There are also health concerns from the resultant smoke and particulate matter; however, recent studies indicate these health concerns may be negligible except immediately (< 1 km) downwind of the burning oil. As a general precaution, in-situ burning should be avoided directly upwind of heavily populated areas and a recommended safe distance downwind of a burn site is in the range of 1 – 5 km, depending on meteorological conditions.

10.6.2 It is the policy of the Island States and Territories that there is no objection to the use of in-situ burning as a response tool when the burn will not be closer than 12 miles from any adjacent Island State or Territory. Should the OSC desire to use in-situ burning at lesser distances from adjacent Island States or Territories, prior concurrence must be obtained from the Lead Agency of said Island States and/or Territories. In-situ burning shall not be undertaken without due consideration for the safety of response personnel and the public.

10.7 Technical information on in situ burning

10.7.1 Recent research indicates that controlled in-situ burning of spilled oil can be a practical means of removing substantial amounts of oil from the water surface under the right conditions. Considerations in use of in-situ burning include:

1. Thickness of the oil
2. Weathering prior to ignition
3. Oil emulsification
4. Ignition
5. Maintenance of burning
6. Smoke which is produced
7. The environmental consequences of burning
8. Collection and disposal of the residue and
9. Wind and sea conditions.

10.7.2 If in-situ burning is successful, it may be possible to remove over 90% of the oil from the water surface. Heavy oils require longer heating times and a hotter flame to ignite than lighter oils. The heavier oils burn at a lower rate and at only about a 70% efficiency.

10.7.3 Thickness of the oil needs to be a minimum of 3mm thickness for ignition. The “prime rule” of in-situ burning is that oils will ignite if they are at least 2 to 3 mm (0.08 to 0.12 inches) thick. Fire-resistant booms for containment while burning are commercially available and can be used where the oil is not more than 3mm thick.

10.7.4 Weathering of the oil can make it difficult to ignite. The greater the percentage of volatile compounds in the oil, the more easily it will ignite and continue to burn.

10.7.5 Oil emulsification will have an affect on the success of an in-situ burn. Unstable oil emulsions (black in color and less than one order more viscous than the original oil) can be

ignited and will sustain burning because the emulsion is quickly broken down during the burning process. Stable oil emulsions (reddish brown color and normally three orders more viscous than the original oil) are difficult or nearly impossible to ignite because of the energy required to vaporize the oil in the emulsion.

10.7.6 Igniters which are commercially available include:

1. The Helitorch a helicopter-borne device for dispensing globules of burning, gelled fuel onto the oil surface
2. Hand-held igniters meant to be thrown into the oil slick from a vessel or a helicopter
3. Simple ignition methods such as oil-soaked rags, paper or sorbent have been used on actual spills and during tests.

10.7.7 Maintenance of burning. Oil vapors will continue to burn after ignition until it is about 1mm in thickness, after which it will self-extinguish.

10.7.8 Smoke which is produced will likely be less than 10% by weight of the oil which is burned. The majority of the smoke particles vary greatly in size with those of less than 10 microns in size giving rise to health concerns. Observation and mathematical modeling indicate that the smoke will rise rapidly owing to heat and rapidly become diluted.

10.7.9 The environmental effects of burning appear to be minor or negligible beyond 1 kilometer down wind from the burn pool. A typical crude oil burn [500 m^2 (5000 ft^2)] would not exceed health limits for emissions beyond about 500 m (1/3 mile) from the fire. Respirable particulates (PM-10) are emissions of primary concern. Polynuclear aromatic hydrocarbons (PAHs) are the secondary concern and volatile organic compounds (VOCs) are third. VOCs are greater from evaporating oil slicks than from burning oil slicks. Highly toxic dioxins/dibenzofurans are not generated by oil fires. Heating of the water surface appears to be limited to the first few centimeters at most. Research has shown that in-situ burning of oil does not release any more oil components or combustion by-products into the water column than are present if the oil is left unburned on the water surface. The residue from burning is a highly viscous, tar-like material (primarily composed of oil with little removed other than some of the more volatile materials) and generally floats on the water surface. Sinking is very rare and has been recorded in only 2 of about 200 burns worldwide.

10.7.10 A decision to recover the residue mechanically or leave it to breakdown biologically depends on the total volume of the residue, whether the residue is dense enough to sink, and where it is expected to go if left alone. Collection of the burn residue can be effected by use of

nets or other mechanical devices from a vessel with a low freeboard that provides easy access to the water surface.

10.7.11 Weather conditions such as wind speed, gusts, shifts in wind direction, wave height and geometry, and water currents can all jeopardize the safety and effectiveness of a burn operation. The limits of wind and sea conditions to successfully ignite oil and burn safely are at wind speeds of less than 40 knots and waves less than 1 m (3 feet). High sea states make it difficult to contain oil and the waves can contribute to emulsification of the oil.

10.7.12 All burn operations must be conducted with safety in mind. Provisions must be made for good communications and backup measures. Burns should be monitored by aircraft whenever possible to provide early warning of heavy oil concentrations and other vital information such as movement of the smoke plume and problems with boom tows and other equipment. Burn crews need to be trained in methods of escape, how to control unwanted fires, and how to extinguish an on-going burn.

Reference:

1. "Manual on Oil Pollution: Section IV Combating Oil Spills, 2005 edition, International Maritime Organization, London.
2. "A Guide to In-situ Burning of Oil Spills on Water, Shore, and Land", 2006, ARPEL (Regional Association of Oil and Natural Gas Companies in Latin America and the Caribbean).
3. "In-situ Burning: A Cleanup Technique for Oil Spills on Water", 2007, ARPEL (Regional Association of Oil and Natural Gas Companies in Latin America and the Caribbean).

10.8 Bioremediation treatment

10.8.1 At present, bioremediation is not considered a viable response technique for spilt oil at sea. As such, bioremediation should be an issue for the individual Island States and Territories National Contingency Plan for shoreline application. The following paragraphs provide general background information. States and Territories are encouraged to share the results of any studies and decisions.

10.8.2 Bioremediation treatment for spills may be divided into the following three general categories:

1. FERTILIZATION, the stimulation of indigenous micro-organisms through the addition of nutrients;
2. SEEDING, the introduction of special assemblages of naturally occurring oil-degrading micro-organisms; and
3. GENETIC ENGINEERING, the introduction of genetically-engineered microbes (GEM's) with special oil degrading properties.

10.8.3 FERTILIZATION has been the most rigorously tested bioremediation method and is viewed by many researchers as the most promising one for responding to most types of marine spills. Scientific studies suggest that biodegradation rates in most marine environments are constrained by lack of nutrients rather than by the absence of oil-degrading microbes. However, experience indicates that this may be a long-term process and in cases of coral reefs in the vicinity, adding nutrients to the environment for a prolonged time is not advisable.

10.8.4 SEEDING techniques may be beneficial in areas where native organisms grow slowly or are unable to break down a particular hydrocarbon. However, in most cases, seeding is not needed nor recommended.

10.8.5 GENETIC ENGINEERING will probably not be used for marine or shoreline spill clean-up in the near future as the wide availability of natural occurring micro-organisms will likely deter consideration of GEM's. In addition, greater research and development needs, regulatory hurdles, and public perception problems will remain obstacles to the near-term use of GEM's, even if they should prove useful for degrading some recalcitrant components of petroleum.

10.8.6 The US Office of Technology Assessment (OTA) has studied bioremediation techniques for oil spill clean-up and reports that more than 70 microbial genera are known to include organisms that can degrade petroleum components; these organisms are distributed worldwide in all marine ecosystems. Research has shown that no single species of a micro-organism is capable of degrading all components of oil, and that some types of hydrocarbons such as asphaltenes degrade very slowly. The studies have shown that no crude oil is subject to complete biodegradation and claims that all of a light oil or more than 50% of a heavy oil can be biodegraded in days or weeks are highly suspect. Marine environments are dynamic, open systems and many variables exist to compound the difficulties of applying bioremediation techniques.

10.8.7 Despite the encouraging results of some limited field studies, the ultimate importance of bioremediation relative to other oil spill response technologies remains uncertain. Mechanical clean-up methods and use of dispersants are likely to remain the primary spill response

techniques. Bioremediation may be a promising clean-up technique in certain non-emergency situations such as the clean-up of lightly or moderately oiled beaches. In addition, bioremediation may be a promising clean-up alternative for some sensitive ecosystems, such as salt marshes, where the use of mechanical clean-up techniques might do more harm than good. In such situations, bioremediation may provide a less intrusive approach than conventional clean-up methods.

10.8.8 In the event of a major spill affecting an Island State or Territory, the Lead Agency will possibly be approached by vendors of bioremediation products. A careful and discretionary evaluation will be necessary to ensure that the bioremediation solutions offered are appropriate for the spill conditions at hand.

10.8.9 The US Environmental Protection Agency's (EPA) Bioremediation Action Committee and the National Environmental Technology Applications Corp (NETAC) are currently developing protocols for evaluating the efficiency and toxicity of bioremediation agents in a variety of settings. Until such detailed information is available, spill On-Scene Commanders (OSC) will probably continue to prefer more traditional clean-up methods. For additional information on the subject contact: Superintendent of Documents, Government Printing Office, Washington, DC 20402-9325; Tel. (202) 783-3238 and request a copy of the report entitled "Bioremediation for Marine Oil Spills" (Stock No. 052-003-01240-5).

CHAPTER 11. RISK AREAS IN THE CARIBBEAN SUB-REGION

11.1 Waterborne Oil Trade in the Caribbean Sub-Region

11.1.1 The transport of petroleum products by tank vessel has increased during the past 20 years and will probably continue to expand in the years to come. The increased trade in petroleum and its products has also increased the chances of mishaps occurring in transportation, loading or off-loading these commodities. Accidents, fires, and explosions, mishandling of equipment and materials and tanker damage are among the major cause of spills in shipping crude and refined oil. In addition, natural disasters such as hurricanes, earthquakes and volcanic eruptions pose a threat to shore facilities which in turn can create a marine spill incident.

11.1.2 Within the Caribbean, unobstructed, deep, yet restricted waterways occur between Islands and major submerged or shallow formations. "Straits of least width" refer to these charted passages and are traversed on many of the standard shortest sea routes followed by ships traveling through the region. While other passages exist, eleven straits are of interest to the Caribbean Plan.

11.2 Straits of Least Width in the Wider Caribbean Region

11.2.1 **Anegada Passage** (18□ 38' N, 63□ 39' W), sometimes referred to as Sombrero Passage. Located in the northern extremity of the Leeward Islands between Sombrero and Anegada Island.

11.2.2 **Caicos Passage** (22□ 00' N, 72□ 30' W), lies between Mayaguana and the Caicos Islands and continues to the southeast between these islands and Little Inagua Island.

11.2.3 **Crooked Island Passage** (22□ 55' N, 74□ 34' W), lies between Long Island and Crooked Island.

11.2.4 **Galleon's Passage** (10□ 55' N, 60□ 50' W), lies between Trinidad and Tobago.

11.2.5 **Mona Passage** (18□ 30' N, 67□ 45' W), lies between the eastern tip of Hispaniola and Puerto Rico.

11.2.6 **Northeast Providence Channel** (25□ 40' N, 77□ 09' W), lies between Little and Great Bahama Banks.

11.2.7 **Old Bahama Channel** (22□ 30' N, 77□ 50' W), lies between Great Bahama Bank and the north coast of Cuba.

11.2.8 **St. Vincent Passage** (13□ 35' N, 61□ 05' W), lies between St. Vincent and St. Lucia.

11.2.9 **Straits of Florida** (25□ 30' N, 79□ 50' W), the body of water which lies adjacent to the Florida coast on the north and west, the north coast of Cuba and Cay Sal Bank on the south, and Great Bahama and Little Bahama Bank on the east.

11.2.10 **Yucatan Channel** (21□ 45' N, 85□ 50' W), lies between the Yucatan Peninsula and the western tip of Cuba.

11.2.11 **Windward Passage** (20□ 00' N, 73□ 45' W), lies between the eastern tip of Cuba and Hispaniola.

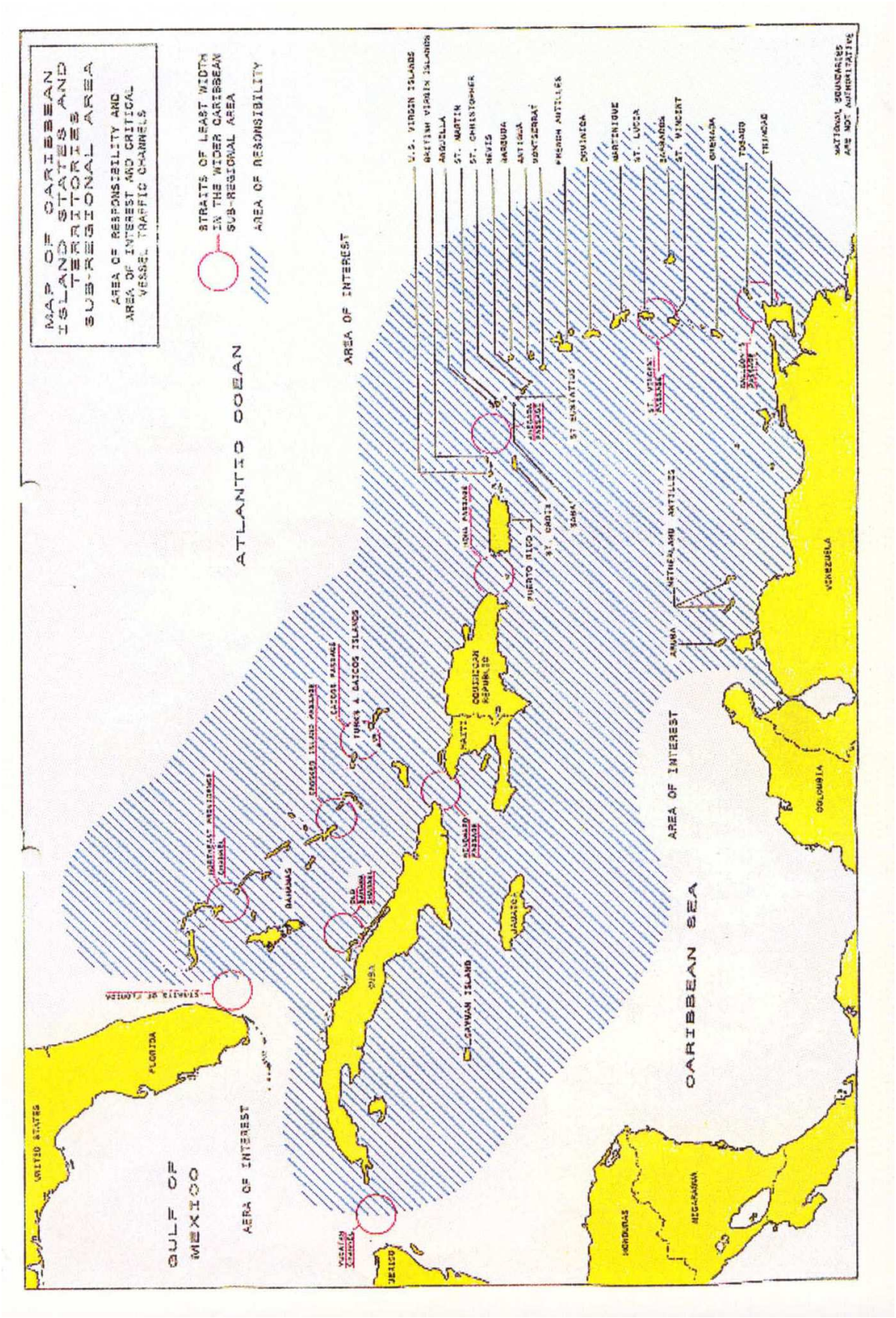
11.2.12 These eleven straits appear to be strategically located passages likely to be crossed by petroleum and petroleum product tankers bound into and out of the Wider Caribbean region. To the extent that these straits constitute "choke points," traffic may accumulate and accidents resulting in oil spills may occur. Therefore, determining frequency of transits through these straits is essential to identifying areas of potential risk for cargo laden tankers navigating through the Wider Caribbean region.

11.3 Sea Lanes in the Wider Caribbean Region

11.3.1 Sea lanes in the Wider Caribbean region are not simply main arteries through which all shipping flows, but a complex lattice-work of a large number of routes and combinations of routes. Generally, the safest and most direct route will be followed when planning a vessel's itinerary, however, the master of the vessel is responsible for the safety of the ship and this consideration is of paramount concern when the vessels course is decided upon. In a complex waterway system such as the Wider Caribbean these considerations can result in almost limitless routes.

11.3.2 It is possible, however, to identify in general the routes over which the majority of petroleum and petroleum products move. The U.S. is the major importer of crude petroleum in the Caribbean region, and this fact alone establishes most of the vessel routes.

11.3.3 In addition to the below map, REPEITC-Caribe as an GIS map of the WCR on a website for use by states to see the types of vessel traffic traveling in the region. http://www.caribbeanmaritimetraffic.org/


MAP OF CARIBBEAN
ISLAND STATES AND
TERRITORIES
SUB-REGIONAL AREA
AREA OF RESPONSIBILITY AND
AREA OF INTEREST AND CRITICAL
VESSEL TRAFFIC CHANNELS
STRAITS OF LEAST WIDTH
IN THE WIDER CARIBBEAN
SUB-REGIONAL AREA
AREA OF RESPONSIBILITY
ATLANTIC OCEAN
AREA OF INTEREST
GULF OF
MEXICO
AREA OF INTEREST
CARIBBEAN SEA
AREA OF INTEREST
U.S. VIRGIN ISLANDS
BRITISH VIRGIN ISLANDS
ANGUILLA
ST. MARTIN
ST. CHRISTOPHER
NEVIS
BARBUDA
ANTIGUA
MONTSERRAT
FRENCH ANTILLES
DOMINICA
MARTINIQUE
ST. LUCIA
BARBADOS
ST. VINCENT
GRENADA
TOBAGO
TRINIDAD
NETHERLAND ANTILLES
ARUBA
VENEZUELA
COLOMBIA
PANAMA
COSTA RICA
NICARAGUA
HONDURAS
MEXICO
YUCATAN
CHANNEL
CAYMAN ISLAND
JAMAICA
HAITI
DOMINICAN
REPUBLIC
PUERTO RICO
ST. CROIX
TURKS & CAICOS ISLANDS
BAHAMAS
FLORIDA
UNITED STATES
NATIONAL BOUNDARIES
ARE NOT AUTHORITATIVE

11.4 Routes To and From the Middle East

11.4.1 Crude petroleum from the Middle East follows the most direct route from the Cape of Good Hope through Galleon's Passage (between Trinidad and Tobago), then south of Jamaica to take advantage of the Antilles current, through the Yucatan Channel and then direct to the U.S. Gulf Coast ports. The return route would go north of Jamaica to avoid the west-flowing Antilles Current. An alternate to this route from the Middle East would be via the St. Lucia Channel, thence through Mona Passage, the old Bahama Channel, and the Straits of Florida. This latter route is frequently avoided during the hurricane season, since it places a vessel in restricted waters over most of its route, an impediment should storm evasion be required. These routes are convenient to most of the major transshipping facilities in the Caribbean: St. Lucia, Trinidad & Tobago, St. Eustatius, Aruba, Bonaire, Curacao, and Little Cayman.

11.4.2 A third route from the Middle East proceeds past Sombrero Island at the entrance to Anegada Passage, thence north of the Virgin Islands, Puerto Rico, Hispaniola, through the Old Bahama Channel and the Straits of Florida. This latter route is also the most direct from West Africa and North Africa. From Sombrero Island, an alternate route is to the entrance to Northeast Providence Channel (sometimes called Hole-in-the-Wall), which provides access to Freeport and South Riding Point, the Bahamas' major oil refining and transshipping facilities. The foregoing route also provides access to the U.S. Gulf Coast by way of the Straits of Florida.

11.5 Routes To and From the North Sea

11.5.1 North Sea crude oil can come over routes which utilize Anegada Passage, Mona Passage, Mayaguana Passage, Northeast Providence Channel, and the northern entrance to the Straits of Florida, of which the latter two provide the most direct access to U.S. Gulf Coast ports.

11.6 Routes To and From Trinidad

11.6.1 In addition to the direct route south of Jamaica and through the Yucatan Channel, Trinidad crude oil and products come through Virgin and Mona Passages direct to U.S. East Coast ports.

11.7 Routes To and From Venezuela

1.7.1 Routes from Venezuela, a major exporter of crude petroleum and petroleum products, proceed to Aruba, Bonaire, and Curacao, principal refiners and transshippers, to the east coast of South America, via Galleon's Passage, to the Mediterranean via Anegada Passage, and to northern Europe and Canada via the Mona Passage. Routes also extend from Venezuela to Puerto Rico, which has large export refineries, and through the Mona and Windward Passages to the U.S. East Coast. Other major routes from Venezuela

extend south of Jamaica, through the Yucatan Channel, to U.S. Gulf Coast ports, and west to Colombia, Panama, the Panama Canal, and Costa Rica.

11.8 Routes To and From Mexico

11.8.1 Mexico, the largest exporter of crude petroleum in the Caribbean region, is also a major exporter of petroleum products. Although there is an oil port on the Pacific coast of Mexico, the bulk of Mexico's exports are handled through its Gulf of Mexico ports. Principal routes extend from the Mexican oil terminals in the Bay of Campeche to U.S. Gulf Coast ports, and through the Straits of Florida to the U.S. East Coast, Canadian, northern European, and Mediterranean ports. An alternative to these latter two routes utilizes the Old Bahama Channel.

11.8.2 Mexico's petroleum and petroleum products move to the south through the Yucatan Channel to Central American ports in Belize, Guatemala, Honduras, Costa Rica, Panama, and through the Panama Canal to El Salvador and Nicaragua. A major route from Mexico extends from the Yucatan Channel, north of Jamaica, through Galleon's Passage to ports on the east coast of South America.

11.9 The Trans-Panama Pipeline

11.9.1 With the opening of the Trans-Alaska Pipeline in 1977, a large amount of Alaskan crude petroleum began entering the Caribbean via the Panama Canal. Since the large crude carriers were unable to use the Panama Canal, transshipment to smaller tankers was necessary on the Pacific side. To improve the efficiency of this operation, the Republic of Panama joined with two American companies in constructing the Trans-Panama Pipeline, with a capacity of 700,000 bbls/day, which became operational in 1982. The opening of the pipeline made little change in vessel routes; however, it did increase the capacity of the vessel petroleum trade routes between the Pacific and the Atlantic via the Isthmus of Panama.

11.9.2 The primary routes of the Alaskan crude petroleum are from Chiriqui Grande, the Atlantic terminus of the Trans-Panama Pipeline (about 100 miles west of the Panama Canal), east to Puerto Rico and the Virgin Islands, and north through the Yucatan Channel to the U.S. Gulf Coast, and thence via the Straits of Florida to U.S. East Coast ports. U.S. Federal statute prohibits Alaskan crude from being exported and, therefore, the routes followed by this petroleum are well-defined.

11.10 Frequency of Transits by Size of Cargo-Laden Tankers Through The Straits of Least Width

11.10.1 The transits of the Straits of Least Width are dependent upon the volume of crude petroleum and petroleum products which is transported over the sea lanes in the wider Caribbean region. The trend of U.S. imports, the major market in the wider Caribbean region, has been increasing over the past several years. If

this present trend continues, the traffic in the straits will increase accordingly. The heaviest increase would probably be in the Yucatan Channel and the Straits of Florida since the U.S. Gulf Coast has a higher concentration of refineries than the U.S. East Coast. The steadily growing Mexican oil production adds to this increase. Similarly, if U.S. oil imports return to their previous decline, and considering the projected decline in production in Colombian, Venezuelan, the Trinidad crude, an accompanying reduction in tanker traffic density can be expected.

11.11 Caribbean Area Contingency Planning

11.11.1 Although the risk information contained in this chapter is of importance to the function of the Caribbean Plan the information is even more vital to the Lead Agencies of the individual Island States and Territories. The evaluation of each State or Territory risk is paramount to the planning pre-planning phase of the National Contingency Plan. Those Island States or Territories that border on the eleven identified straits of least width need to evaluate their response capability in the event of a major marine oil spill incident that could impact their shores.

Reference: U.S. Dept. of Transportation, United States Coast Guard Office of Marine Environment and Systems, Washington, DC 20593. Publication CG-W-10-84 entitled Waterborne Trade of Petroleum and Petroleum Products in the Wider Caribbean Region.

CHAPTER 12. SENSITIVE AREAS IN THE CARIBBEAN SUB-REGION

12.1 Sensitive Areas of Island States and Territories

12.1.1 The seas bordering the Islands of the Caribbean are known world-wide for their pristine beauty. The tourist industry in the Island States and Territories relies on clean seas and beaches to sustain tourism which is an important part of the economy of the region. In addition, the seas in the sub-region are richly endowed with a wealth of tropical species of flora and fauna. Proliferation of fisheries and wild life resources is of great concern to all the Island States and Territories of the Wider Caribbean area.

12.1.2 Detailed coastal sensitivity mapping is a function of each Island State or Territory and coastal sensitivity maps should be included in each of the respective National Contingency Plans annexed to the Caribbean Plan. For a variety of reasons, some stretches of coastline and coastal waters will be considered more sensitive than others when oil pollution threatens.

12.1.3 In planning response to oil spills, knowledge of coastal sensitivities in the threatened area will enable the best use to be made of available clean-up resources, particularly when it is found impossible to protect the entire coastline, and priorities have to be decided. It should be kept in mind that very rarely, if ever, can all of the sensitive areas of a given shoreline be protected, even with timely response efforts by the On-Scene Commander. In many spills it may not prove possible to prevent oil from coming ashore and, in some circumstances, it might be advantageous to deflect the oil to a chosen place onshore.

12.2 Planned Sensitive Area Response

12.2.1 For the purposes of the Caribbean Plan, limited information concerning sensitive shorelines is illustrated. The National Contingency Plan should identify all sensitive areas reflecting different national interests: environmental (mangrove, coral etc.); commercial (tourist areas, marinas, etc); and industrial (desalination plants, aquaculture, refineries, etc.). Supporting maps and other data should identify protection and response strategies relating to these sensitive areas. The Response Agency, in concert with the National Fisheries Department, should identify areas where dispersants can, cannot or might not be used. The On-Scene Commander will then have advance information for choosing a course of action when fishing grounds are threatened. In contemplating response activities offshore, the use of dispersants will be a viable consideration and the use of preplanned sensitivity maps will reduce the risk of disagreement and indecision when faced with difficult decisions during an oil spill emergency.

Reference: Data Atlas, Planning a Marine Conservation Strategy for the Caribbean Region prepared by the International Union for Conservation of Nature and Natural Resources.