ROPME SEA AREA

Regional Contingency Plan to Combat Pollution of the Sea

By

Hazardous and Noxious Substances (HNS)

(ChemPlan)

2011

ROPME Sea Area Hazardous, Noxious Substance Contingency Plan

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In March 2000, the International Maritime Organization adopted the Protocol on Preparedness, Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances (OPRC-HNS Protocol). Some of RSA Member States are a party to this Protocol, however the remaining RSA Member States are in a process to become a party to this Protocol in accordance with the ROPME Council Decision.

The primary objectives of the OPRC-HNS Protocol are to facilitate Regional and International cooperation and mutual assistance in preparing for and responding to major chemical pollution incidents, and to encourage countries at National and Regional level to develop and maintain an adequate capability to deal with pollution emergencies.

The Regional Marine Chemical Spill Contingency Plan (ChemPlan) has been developed in response to the obligations set out in article 4 of the OPRC-HNS Protocol. ChemPlan is hereby authorised for this purpose by the Marine Emergency Mutual Aid Centre (MEMAC).

2011

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Abbreviations and Acronyms

1. Introduction

The incidents involving spills of HNS in ROPME Sea Area, the obligation set out in International OPRC- HNS Protocol and the Fifteenth ROPME Council Meeting Decision 15- iii, iv and v, led to the development of a Regional capability to ensure that RSA would be prepared to respond to ship-sourced pollution incidents from HNS. This document relates to the chemical spill component of The Regional Contingency Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances.

1.1 Background

The Regional Plan brings together the combined resources of the RSA Member states, State and the industries to provide a level of preparedness to the threat posed to the marine environment by oil and chemical spills.

The Regional Plan sets out a clear definition of the responsibilities of the major participants, the RSA Member States and industry. This is provided in a set of arrangements by way of a Regional Agreement, which also details such matters as divisions of responsibilities, contingency planning, access to Regional equipment, and the management and control of financial affairs. (Appendix1).

Based on these arrangements the prescribed role of the ROPME Member States, through the Marine Emergency Mutual Aid Centre (MEMAC), is one of coordination and provision of technical advice, logistic, maintenance support, materials and equipment and training.

The regional Marine Chemical Spill Contingency Plan (ChemPlan) outlines how the combined resources of the RSA States, the chemical, plastics, petroleum, and shipping industries may be activated to respond to the threat posed to RSA, its people and its marine environment, by spillages of bulk or packaged dangerous goods and chemical spills from vessels. It prescribes procedures and provides information required to implement the chemical spill response provisions of the Regional Plan and relevant State’s contingency plans.

Under the terms of the Regional Agreement, MEMAC is responsible for maintaining ChemPlan. The Plan follows the general procedures of the Regional Marine Oil Spill Contingency Plan taking account of the land-based chemical and hazardous materials response capabilities of industry and government authorities.

1.2 Threat

Worldwide, about 200 million tonnes of dangerous goods and hazardous materials are transported by sea each year. Most are carried in deep-sea and regional trade.

Coastal shipping carries about 50%. A wide variety of dangerous goods and chemical and other noxious or hazardous substances are shipped to, from and around RSA in specialised chemical tankers, in bulk chemical tanks carried in other vessels, or in packaged form as container or loose cargo consignments. These chemicals can enter the marine environment as a result of accidental or deliberate releases. Accidental releases can occur as a result of natural disasters, human error or due to technical and mechanical faults in chemical transfer and storage equipment.

Intentional releases could include the dumping of chemical wastes, acts of war, terrorism or sabotage. Incidents involving vessel groundings, collisions, fire, explosion, cargo reaction etc. could also cause chemical spills from vessels involved.

1.3 Aim of the Plan

The aim of ChemPlan is to outline the Regional arrangements and operational information and guideline for responding to chemical spills in the RSA marine environment, with the aim of protecting public health and the marine environment from chemical pollution or, where this is not possible, to minimise its effects.

1.4 Scope of the Plan

ChemPlan coordinates the provision of National, Regional and international support for responding to marine chemical spills that have the potential to impact on any of RSA Member States interests, including those of a health, environmental, resource or economic nature. General responsibilities for the response to chemical spills are outlined in the Regional Emergency Protocol (MEMAC) and given in more detail in

ChemPlan relates primarily to incidents involving the release and or spilling of chemicals from ship's bulk chemical cargoes, container chemical tanks or packaged chemicals, and as a result of the loss or potential loss of these or other dangerous goods overboard at sea. Responsibility for packaged substances that have been washed ashore or for spillages and releases from shore facilities generally resides with the relevant RSA States authority.

ChemPlan outlines combined government and industry arrangements designed to allow a rapid and Regional cooperative response to a marine chemical spill occurring within the area defined by this Plan. This Plan complements other Government and industry contingency plans prepared at National, port and facility levels. Matters of detail are contained in local, site-specific, contingency plans. ChemPlan coordinates the provision of national, regional and international support.

1.5 Purpose of the plan

The purpose of this Plan is to establish a mechanism for mutual assistance, under which the Competent National Authorities of the Kingdom of Bahrain, The Statee of Iraq, The Islamic Republic of Iran, The State of Kuwait, The Sultanate of Oman, The State of Qatar, The Kingdom of Saudi Arabia and the United Arab Emirates will co-operate in order to co-ordinate and integrate their response to marine pollution incidents.

1.6 Geographical Area

The geographical area covered by ChemPlan includes all RSA Member States, the coasts internal waters, territorial sea exclusive economic zone and related interests of one or more of these countries, including those offshore islands and territories, where a chemical spill has the potential to impact on RSA Member States interests, or to incidents exceeding the available response capacity of each of these countries individually.

The area is bounded in the south by the following rhumb lines: from Ras Dharbat Ali (l6° 39' N, 53 03' 30" 16° 00'N, 53° 25' E; thence through the following positions: 17° 00' N,

56 30' E and 20° 30' N, 60° 00' E to Ras Al-Fasteh (25° 04' N, 61° 25' E) as detailed in Figure 2 .

1.7 Oil Spill Incidents

Procedures for dealing with the responses to marine oil spills are outlined in the Regional Marine Oil Spill Contingency Plan.

1.8 Legislation

1.8.1 International Conventions

All of the RSA Member States have been a member of the International Maritime Organization (IMO) since its inception in 1948, and were active in developing IMO Conventions that specifically address pollution from ships. These conventions are implemented in RSA States by each country and specific Decree and legislation were issued for this purpose.

1.8.2 Kuwait Convention

The governing agreement for the ROPME Sea Area is The Kuwait Regional Convention for Co-operation on the Protection of the Marine Environment from Pollution 1978. This, together with its Protocol, provides the legal framework for actions concerning regional co-operation in combating accidental marine pollution. These legal instruments oblige the Contracting States to initiate, both individually and jointly, the actions required in order to effectively prepare for and respond to marine pollution incidents.

1.8.3 Protocol

The Protocol Concerning Regional Co-operation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency also established the Marine Emergency Mutual Aid Centre (MEMAC) to implement the requirements of the protocol and also to fulfill additional functions necessary for initiating operations to combat pollution by oil and other harmful substances on a regional level, when authorized by the Council.

1.8.4 Jurisdiction

It is recognized by the RSA Member States that a mechanism was required to enable all RSA Member States to become a party to key international maritime conventions with the need for the legislation in every RSA States jurisdiction in order to give effect and to be in compliance with the provision of the Conventions. With the accession to the United Nations Convention on the Law of the Sea (UNCLOS), the RSA member States jurisdiction extends to the EEZ, and the Territorial Sea extends to twelve (12) nautical miles (nm) from the coastline.

2. Preparedness

2.1 Plan Support

As outlined in part 1.1, the Regional Plan is underpinned by the Regional agreement under umbrella of MEMAC. This Agreement aims to:

• provide a basis for continued RSA Member States commitment and support for the Regional Plan;
• provide a stable reference point whereby those unfamiliar with the Plan can readily ascertain the obligations placed on their organisation; and
• be used to set out agreed minimum activities, allowing participants' performance against those minimums to be more readily assessed.

The MEMAC ensures that the Regional approach to preparedness and response to oil and chemical spills in the marine environment is continued and strengthened. It provides a mechanism to ensure decision making under the Regional Plan is cooperative and that the obligations of all parties are met. The MEMAC also outlines a management structure for the Regional Plan that covers all elements of this Plan and Regional Marine Oil Spill Contingency Plan. The management structure consists of:

2.1.1 Regional Organisation for the Protection of Marine Environment (ROPME)

Regional Organisation for the Protection of Marine Environment (ROPME), Is the Ministerial body responsible for All Marine Environment issues in RSA.

2.1.2 Marine Emergency Mutual Aide Centre (MEMAC)

Is the Regional Plan Responsible for all Marine Emergency issues in RSA, and as the managing agency for the Regional Plan, MEMAC is responsible for maintaining ChemPlan. MEMAC's responsibilities also include acting as both Statutory and Combat Agencies for entire RSA waters. During incidents in RSA member States waters MEMAC provides support to each State Combat Agencies, as required.

2.1.3 Regional Plan Steering Committee (RPSC)

Under the Regional Plan Steering Committee (RPSC) has been established to provide advice on the strategic policymaking and funding direction for the Regional Plan.

2.1.4 Regional Plan HNS Spill Officer (RPSO)

Under the Regional Plan RPSO is established to support the overall operational aspects of the Regional Plan. Oil Spill Response Offices further support RPSO on the following issues:

- Regional Marine Oil Spill Contingency Plan,
- HNS spill response equipment and training,
- fixed wing aerial dispersant spraying and;
- contingency plan audits;

2.1.5 RSA Member States Responsibilities

Under the Plan, a Competent Authority in each RSA States is responsible for coordinating the local administration and operation of the National Plan. This may be done in consultation with a National HNS Spill Officer and with due consideration to the relevant State emergency management arrangements.

2.1.6 Regional Plan Key Contacts

Contact details for key National Plan personnel are provided in Appendix 3.

2.2 Division of Responsibility

2.2.1 Statutory/Combat Responsibilities

The Regional Plan defines authorities with responsibility for combating chemical spills within harbours, onshore, in the territorial seas, and on the offshores around RSA. This includes responsibilities of Statutory and Combat Agencies. It should be noted that in some cases the Statutory and Combat Agencies will be the same entity. Responsibilities for responding to spills within harbours, onshore, in the territorial seas, and on the offshore within RSA shared between RSA Member States, Port Authorities, and the chemical industry.

2.2.2 Statutory Agencies

In accordance with the Regional protocol, responsibility for overseeing response action for chemical spills, other than those from offshore petroleum operations, is as follows:

• Within the three (3) nm coastal waters and in foreshore areas - the RSA Member State designated Statutory Agency;

• Outside the three (3) nm coastal waters – RSA Member States with the Cooperation of MEMAC as the RSA Statutory Agency.

• The Statutory Agency is responsible for the institution of prosecutions and the recovery of cleanup costs on the behalf of all RSA Member States.

2.2.3 Combat Agencies

Combat Agencies have the operational responsibility to take action to respond to a chemical or other hazardous or noxious substance in the marine environment in accordance with the relevant contingency plan.

Combat Agencies for responding to chemical spills in various locations are as follows:

At chemical terminals The relevant chemical company or terminal operator under industry arrangements, such as the Plastics and Chemicals Industries. If the response is beyond chemical company or terminal resources, the Statutory Agency (National Competent Authority) will respond with assistance from other National Plan stakeholders as required. Statutory Agencies should enter into pre-designated response arrangements with chemical terminal operators that clearly specify the agreed division of responsibilities and terms and conditions for transferring control.

In ports (other than at the port operator or responsible State authority as Terminals within a port) specified in the relevant contingency plan, with response assistance from other National Plan stakeholders as required.

Terminals (within a port)

Within the three nm The responsible State Statutory Agency (National Competent Authority) with response assistance from other National Plan stakeholders as required.

Beyond the three nm The National Competent Authority with the close cooperation of MEMAC, with response assistance from other National Plan stakeholders and RSA Member States as required. In incidents close to shore when chemicals are likely to impact the foreshore, and also other RSA Member States via MEMAC and also other RSA Member States which their coastline are likely to impact, will be the MEMAC with the cooperation of those RSA States which their coastline are impact, while National Competent Authority assumes responsibility for ship operational matters, e.g. containing the spill within the ship, organising salvage, etc.

Regardless of which agency has lead responsibility, other RSA Member States shall assist as far as is practical, in accordance with requests from the Combat Agency.

In circumstances where the incident has exceeded, or is likely to exceed, the effective response capacity of the Combat Agency, or the response is not being conducted effectively, the MEMAC may assume control of the response.

A response by a MEMAC and/or RSA Member States Agency does not in any way indicate an admission of liability for the source of the spill or for acceptance of the costs of a spill. Liability for a spill is to be determined by due legal proceedings.

2.3 Cross Border Spills

In those incidents close to any RSA State borders, it is essential that high-level consultation and cooperation between the two Statutory Agencies and MEMAC occur, with an objective to ensure a clear delineation of responsibility for the response.

2.4 Response Policy

The primary aims of a chemical spill response are to:

• protect human health and safety;

• minimise environmental impacts; and

• restore the environment, as near as is practicable, to pre-spill conditions.

The environmental impact of a chemical spill can be minimised by good management and planning, and by the response actions put into effect by the responsible agency. Such actions will largely depend on several factors:

• The type of chemical(s) involved;

• The size of the spill;
• The location of the spill;
• Prevailing sea and weather conditions at the spill site; and
• The environmental sensitivity of the coastline/site impacted.

2.5 Levels of Response

Under Regional Plan arrangements marine pollution incidents involving chemicals and the response they require are categorised into “Levels”. The concept of a leveled response links the credible spill scenarios to attainable scales of response and, by linking joint arrangements, enables escalation from one level of response to another, should the need arise. It is a practical method of planning a marine pollution response in terms of required resources and likely environmental impact. Regional ChemPlan’s three levels of response are based on the following graduated spill scenarios:

Level 1 - Potential Emergency Condition - small spill/incident

A minor chemical incident that only requires response within the boundaries of the berth; vessel or small geographical area, no impact or problems are anticipated outside the operations area. National Statutory and Combat Agencies will generally be able to respond to and clean up a spill with local resources however such incident should be reported to MEMAC as far as practicable. When additional resources are required, these will generally be available from the chemical industry, local port authority or by using National Plan resources or from adjacent industry operators.

Level 2 - Limited Emergency Condition - a medium or significant spill/incident

A significant chemical incident that can be responded to within the boundaries of the berth, vessel or geographical area; but which may have a serious impact on human life and/or the environment. The Combat Agency will initiate a response and simultaneously notify the National Competent authority and MEMAC. National resources may need to

be supplemented by other intra-state or interstate resources. The National Competent Authority will facilitate provision of interstate resources.

Level 3 - Full Emergency Condition- a major spill/incident

A major chemical incident that will pose a very serious impact on human life and/or affect the environment significantly and other RSA States interest, it requires the activation of support resources up to national, Regional or international level.

The National Competent Authority with the cooperation of MEMAC may require regional and International assistance. For catastrophic spills, resources from overseas may also be required. These can be sought by the MEMAC, and, in the case of incidents involving chemical tankers, in consultation with industry.

2.6 CHEMICAL RISK ASSESSMENT

A chemical risk assessment of RSA waters has been conducted by MEMAC ; as a result a risk profile has been derived allowing for the identification of the most likely locations that an oil /chemical spill may occur within RSA waters. The risk possibilities for chemical spills and chemical releases include:

- Collision
- Grounding
- Transfer spill and equipment failure
- Structural failure
- Severe weather events.

In order to create the risk profile MEMAC developed the two reports that describe the risk of pollution in RSA waters.

Firstly; the 2009 Marine Environment High Risk Areas (MEHRA's) project report, which include the RSA Sensitive Area a t risk, this will include:

- Environmentally sensitive areas
  - Mangrove swamps
  - Salt marsh

  - Muddy shores
  - Turtle nesting sites
  - Dugong areas
  - Fisheries especially spawning areas and shell fisheries
  - Bird nesting and feeding areas
- Socio-economic sensitivity
  - Desalination plants
  - Power station water intakes
  - Other industrial water intakes
  - Mariculture facilities
  - Tourist facilities
  - Tourist beaches

Secondly; the Risk Analysis report 2010 with regard to Regional Environmental master Plan and MERCU project, further refine the Risk profile of RSA waters. The study focused on the risks to the marine environment due to spills/releases of Oil and bulk Noxious and Liquid Substances (NLS). A risk index was calculated based on Oil and chemical tanker movements.

MARPOL Annex II (noxious liquid substances carried in bulk)

The Annex II *Regulations for the control of pollution by noxious liquid substances in bulk* includes a new four-category categorization system for noxious and liquid substances. The revised annex entered into force on 1 January 2007. The new categories are:

• **Category X**: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a major hazard to either marine resources or human health and, therefore, justify the prohibition of the discharge into the marine environment;

• **Category Y**: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a hazard to either marine

resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify a limitation on the quality and quantity of the discharge into the marine environment;

• **Category Z**: Noxious Liquid Substances which, if discharged into the sea from tank cleaning or deballasting operations, are deemed to present a minor hazard to either marine resources or human health and therefore justify less stringent restrictions on the quality and quantity of the discharge into the marine environment; and

• **Other Substances**: substances which have been evaluated and found to fall outside Category X, Y or Z because they are considered to present no harm to marine resources, human health, amenities or other legitimate uses of the sea when discharged into the sea from tank cleaning of deballasting operations.
The discharge of bilge or ballast water or other residues or mixtures containing these substances are not subject to any requirements of MARPOL Annex II.

2.7 Response Planning

Under the Regional Emergency Protocol, MEMAC are primarily responsible for ensuring that contingency plans are developed at National and Regional levels, and that these plans complement adjacent plans. MEMAC will provide advice and support to National Competent Authority during pollution incidents. Appendix 5 is a Checklist for the Development of National Chemical Spill Contingency Plans. Although changes may be required to meet individual National emergency planning, legislation and administrative requirements, this checklist has been found to be generally applicable. The primary marine pollution response structure and responsibilities that need to be addressed in the planning process include:

• The Regional Steering Committee, usually through a National Steering Committee (NSC), will provide management, operational, technical and environmental advice and support to the Combat Agency as required. This may include support for the management of the response;

• During major incidents, the overall response strategy will be formulated by a nominated HNS Marine Pollution Controller (MPC), and implemented by an Incident Controller (IC), and section officers to form the Incident Management Team (IMT) as well as Regional HNS Spill Officer.

During lesser incidents, the IC will be responsible for overall response strategy. The IC will keep the Statutory Agency informed of progress with the response;

• The Statutory Agency, will provide suitably experienced staff to assist the MPC and IC to initiate and conduct response action;

• Preparation and maintenance of National contingency plans that complement this Plan are the responsibility of the relevant RSA State.

2.8 Establishment of Response Organisations

Regional response organisations must be designed and established by the MEMAC. Where Regional Steering committees are established to support the MEMAC, it is recommended that the membership include senior representatives of the relevant National Competent Authority. Regional Steering Committees should also be able to invite wider participation to ensure that all interests are represented and their resources and services are considered.

2.8.1 Response Organisation Structure

The response to any pollution incident will be controlled using an Incident Control System, which although known as an Oil Spill Response Incident Control System (OSRICS), will be used to manage a marine chemical spill response. OSRICS (Appendix 4) is based on an incident control system used in a wide range of emergency response activities to provide a standardised organisational structure that is flexible yet provides compatibility between agencies and events while ensuring accountability and standardised records. The system clearly defines roles and responsibilities and provides interoperability between RSA Member States. OSRICS also allows for the greater ability to escalate or downsize the response as required. OSRICS lists four major functions under which it is possible to group the tasks that need to be undertaken during a marine pollution response - Planning, Operations, Logistics, and Finance and Administration.

These form the main elements of the organisational structure under OSRICS and are designated as sections in the structure. Responsibility for carrying out the tasks is delegated to a section officer who reports to the IC forming an IMT. Units staffed by people with appropriate skills and experience to deal with particular tasks may be created within the sections.

The number of staff required to fill positions in the OSRICS structure can be varied according to the size and complexity of the incident and the number of staff available. In a major incident all positions may be filled, but in a lesser incident one person may fill a number of positions. In a very small incident, it may only be necessary to appoint an IC who will be able to carry out all management functions. MEMAC should ensure that persons with appropriate experience and skills are identified so that they can be appointed to the following positions if a marine pollution incident occurs.

Figure 4 shows a typical Incident Control Structure (ICS) structure. A more detailed structure may be found in Appendix 4

2.8.1.1 Marine Pollution Controller (MPC)

The MEMAC shall nominate a senior management level MPC to take overall responsibility for managing the response. The MPC must be capable of ministerial as well as senior government, industry and media liaison.

2.8.1.2 Incident Controller (IC)

The relevant RSA Member States shall identify appropriate individuals to act as an IC. The IC is responsible for the management and coordination of response operations at the scene of a pollution incident to achieve the most cost effective and least environmentally damaging resolution to the problem.

During a major incident the IC is responsible to the MPC for the operational aspects of the response. During lesser incidents the IC shall have overall responsibility for managing the response. MEMAC should ensure that the IC is assisted by a response team with appropriate planning, operational, technical, scientific, chemical, environmental, logistical, administrative, financial, and media liaison skills.

2.8.1.3 Planning Officer (PO)

The MEMAC and each RSA member States Statutory Agency shall identify appropriate individuals to act as the Planning Officer (PO) in accordance with relevant contingency plan requirements. The PO is responsible for the provision of scientific and environmental information, maintenance of incident information services, and the development of Strategic and Incident Action Plans. The PO shall ensure the distribution of all information to the Incident Management Team and to all response personnel generally in RSA.

2.8.1.4 Operations Officer (OO)

The MEMAC and each RSA Member States Statutory Agency shall identify appropriate individuals to act as the Operations Officer (OO) in accordance with relevant contingency plan requirements. The OO is responsible to the IC for all response operational activities. This includes ensuring that the requirements of Incident Action Plans (IAP) are passed on to operational personnel in the field, and for ensuring that the plans are implemented effectively.

2.8.1.5 Logistics Officer (LO)

The MEMAC and each RSA Member States Statutory Agency shall identify appropriate individuals to act as Logistics Officers (LO) in accordance with relevant contingency plan requirements. In any response there is a vital need to ensure that response personnel are provided with adequate resources to enable an effective response to be mounted. The LO shall ensure that all resources are made available as required. This includes the procurement and provision of personnel, equipment and support services for operations in the field and for the management of resource Staging Areas.

2.8.1.6 Finance and Administration Officer (FAO)

The MEMAC and each RSA Member States Statutory Agency shall identify appropriate individuals to act as Finance and Administration Officers (FAO) in accordance with relevant contingency plan requirements. The FAO shall be responsible for all financial, legal, procurement, clerical, accounting and recording activities including the contracting

of personnel, equipment and support resources. In addition, the FAO is responsible for the management of the Incident Control Centre (ICC).

2.8.1.7 Environmental and Scientific Coordinator (ESC)

The MEMAC and each RSA Member States shall pre-appoint the Environmental and Scientific Coordinator (ESC), either on a State, local area or regional basis. During a spill response the ESC will normally form part of the Planning Section. In this role the Planning Section is to provide the IC with an up-to-date and balanced assessment of the likely environmental effects of a chemical spill. The Planning Section will advise on environmental priorities and preferred response options, taking into account the significance, sensitivity and possible recovery of the resources likely to be affected.

2.8.1.8 Media Liaison Officer (MLO)

An experienced and well-informed Media Liaison Officer (MLO) appointed by the Combat Agency shall be provided for the overall contingency plan. The MLO shall ensure adequate liaison between the IC's team and the media. All queries received from the media should be directed to this person. Before releasing any information, the MLO's action should have the approval of either the MPC or IC, depending on the size of the spill incident.

2.9 Specialist Advice and Assistance

Specialist technical advice is available to response managers from a variety of sources. Advice can vary from the fate of spilled chemicals, and the selection and deployment of pollution control equipment, to the capabilities of support equipment and the safety and stability of ships.

2.9.1 International Assistance

In the event of a major chemical spill incident, it is likely that assistance may be sought from overseas chemical manufacturers, transport companies, private and government spill response organisations in accordance with the Protocol on Preparedness,

Response and Cooperation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol). Requests for such overseas assistance should be passed to MEMAC, which will make the necessary arrangements.

MEMAC has obtained the cooperation of the RSA States Customs and Immigration Departments to expedite the temporary import of equipment and experienced personnel should the need arise on a request from MEMAC with the consultation with the respective State. MEMAC, in accordance with current Emergency Protocol and relevant International Conventions, may also assist RSA States in relation to marine spill incidents in their waters.

2.10 Equipment Availability

A variety of chemical monitoring, response and personal protective equipment may be needed to support a chemical spill incident response. A list of items of specialized chemical response and cleanup equipment across RSA States identified by the chemical industry and Fire Services is available from these agencies to support this Plan.

2.10.1 Use of Regional Plan Oil Spill Equipment

Conventional on-water oil spill containment and recovery equipment is of little use in the majority of marine chemical spills. Only approximately 15% of bulk chemicals transported by sea float and are persistent. Many of these could also be incompatible with the equipment construction materials or pose a health hazard to response equipment operators.

Tier 1 marine pollution response equipment is located in each RSA State ports. In addition to the equipment held by the States, the Regional Plan through MEMAC and MERCU operates four (4) regional stockpiles of Tier 2/3 equipment, which can be utilised for larger incidents or where additional resources are required to those available in the area concerned. These stockpiles are in State of Kuwait, Kingdom of Bahrain, B. Abbass of IR. Iran, Fujairah of UAE with the operational link to Sultanate of Oman. Release of this equipment shall be authorised by the MEMAC with the consultation with the respective States.

Requests for equipment from other RSA States should be made by the requesting State, directly to the assisting State, which will, in turn, request the equipment through MEMAC.

2.11 Financial Arrangements

The RSA Member States shall observe the following principles concerning the reimbursement of costs related to mutual assistance:

1.1.1 General Principles

1) The RSA Member State who has requested assistance shall reimburse to the assisting Contracting State all expenses incurred in rendering such assistance, according to the invoice submitted by the assisting Contracting State unless otherwise decided on a case by case basis.
2) At the time of incident, the assisting State shall provide information on the wages of personnel, the rental rates for equipment and other means and the cost of treatment products, which might be rendered as assistance.
3) The RSA States shall endeavour to harmonise their rates and discuss all relevant questions during the annual meetings of the OSRO.
4) The assisting State shall, immediately following receipt of a request for assistance, submit to the requesting State an offer of the personnel, equipment and other means which can be provided and an estimate of the costs of such assistance.
5) If the State who requested assistance decides to withdraw the request for whatever reason, it shall nevertheless pay to the assisting State all the expenses incurred up to the moment when the request was withdrawn or the personnel and equipment return to their country of origin, as appropriate.
6) In the event of the transfer of responsibility of Lead State from one State to another, the costs incurred by requests for assistance by the Lead State shall remain that State's responsibility up to the time of transfer of Operational Command. Any continuation of assistance provided at the confirmed request of the State taking over responsibility as Lead State shall also take over

responsibility for the reimbursement of the costs of assistance from the time of transfer of Operational Command.

The RSA States shall resolve all questions related to financial matters after the termination of Joint Response Operations through MEMAC.

1.1.2 Disputes

The provisions of this paragraph shall not prejudice the resolution of any dispute involving third RSA States that may arise regarding liability and compensation for damages resulting from any pollution incident.

1.1.3 Joint Operations Costs – Lead State

In the case of Joint Response Operations, the Lead State (the RSA State who has requested assistance) shall directly cover the following expenses related to the stay in its territory of personnel, equipment and means (including vessels and aircraft) of the assisting Contracting State:

1) board and lodging and/or daily subsistence allowance as appropriate, of all response personnel other than the crews of ships and vessels;
2) any port dues for vessels and ships rendered as assistance;
3) any airport dues for aircraft rendered as assistance;
4) necessary fuel for all equipment and means including, in particular, vessels and aircraft, engaged Joint Response Operations;
5) medical services provided to injured and ill personnel of the assisting State;
6) costs related to repatriation of any personnel who died, were injured or taken ill during Joint Response Operations;
7) maintenance costs for any piece of equipment, vessel and aircraft engaged in Joint Response Operations;

8) repair costs for any piece of equipment, vessel or aircraft damaged in its territory during and due to the Joint Response Operations, if such repair needs to be made prior to returning to the country of origin of such equipment and means;
9) costs of communications related to the Joint Response Operations that have been incurred by the personnel of the assisting State in the territory of the Lead State.

1.1.4 Joint Operations Costs – Assisting State

The assisting State shall directly cover the following expenses related to the sending to the state that requested the assistance of its personnel, equipment, products or other means including, in particular, vessels and aircraft:

1) the mobilization of personnel, equipment, products or other means;
2) the costs of transport of personnel, equipment and products to and from the country where Joint Response Operations are taking place;
3) fuel for self-contained units (vessels, aircraft) which travel to the scene of Joint Response Operations using their own power;
4) costs of communications related to Joint Response Operations that are originating from the territory of the assisting Contracting State;
5) insurance of the personnel of the strike teams;
6) medical services rendered, following their return to their country of origin, to response personnel who were injured or taken ill during Joint Response Operations;
7) maintenance and repair costs for equipment and means engaged in Joint Response Operations which were incurred after the return of such equipment and means to the country of origin.

1.1.5 Joint Operations Costs – Invoicing

Following the termination of the Joint Response Operations and the return of all personnel, equipment and other means which were engaged in the Joint Response Operations, each assisting State shall prepare a detailed invoice including the costs of assistance rendered to the Lead State and other expenses related to this assistance. The following items shall be included in the invoice:

1) wages of personnel engaged in the Joint Response Operations, calculated on the basis of the prices given to the Lead State when assistance was requested, and the daily work logs approved by the SOSC or another responsible officer of the Lead State;
2) costs of rental of equipment and means calculated on the basis of the prices given to the Lead State when assistance was requested, and the daily work logs approved by the SOSC or another responsible officer of the Lead State;
3) cost of treatment products used during Joint Response Operations calculated on the basis of the prices given to the Lead State when assistance was requested, and the daily work logs approved by the SOSC or another responsible officer of the Lead State;
4) all expenses incurred by the assisting Contracting State as listed above;
5) costs for replacement of equipment damaged beyond repair during Joint Response Operations.

1.1.6 Joint Operations Costs – Cost Recovery

Upon receipt of such an invoice, the RSA State who had activated the Plan and requested assistance shall reimburse the expenses incurred by the assisting States in relation to the pollution response measures undertaken by these States following the activation of the Plan. The RSA State who activated the Plan shall subsequently include such invoices in its own claim for reimbursement of pollution response related costs,

submitted to the RSA State liable for the pollution incident, its insurers or an international system for compensation for pollution damages, as appropriate. Alternatively, the RSA States may agree that the claims for reimbursement of such expenses shall be submitted directly to the RSA State liable for the pollution incident, its insurers or an international system for compensation for pollution damages, by each Contracting State separately. Regardless of the RSA State to whom such claims are submitted, they shall be prepared in accordance with the guidelines provided by the IOPC Fund in its "Claims Manual" and attached to the Plan as **Appendix 9.**

2.12 Communications

In a pollution incident it is important that the ICT has access to adequate communication facilities. In addition to the facilities available through the ERC it is envisaged that port Very High Frequency (VHF) radio facilities, and the National Plan communication systems, consisting of portable Satcom M, MiniSat, VHF marine band radios and repeater VHF aviation band radios and Ultra High Frequency (UHF) networks would be available to coordinate a response. In a major incident it may be necessary to seek the assistance of emergency services radio networks.

The communications network established by the RSA States in accordance with section 5.1 shall be used for all exchanges of information pertinent to the implementation of the Plan.

1) Fax shall be used for all communications between the Operational Authorities, SOSC, NOSCs and their respective Incident Command Teams, particularly in cases of emergency.
    a) Telephone and radio communications could also be used; however, all decisions, information relevant to the situation at the site of operations and, in particular,
    b) Requests for assistance and replies to such requests shall be confirmed by fax.
2) Operational communications between JERC, SOSC, NOSCs, team and unit leaders and other participants in response operations shall be made by using

pre-selected VHF channels (see Appendix 5), mobile or satellite telephones and other appropriate means. Lines of communication to be used in cases of Joint Response Operations are shown in Diagram 2.

3) The English language shall be used in all communications related to the implementation of the Plan.

2.13 Wildlife Response

When a marine pollution incident occurs it is possible that the contamination of birds, marine mammals and other wildlife will eventuate. The impact on wildlife and biodiversity will depend upon the environmental sensitivity, the type and quantity of the pollutant, and the location of the spill. Contaminated and dead wildlife attracts significant community and media attention. The effectiveness of a spill response is sometimes measured on the success of its wildlife rescue and rehabilitation.

with the objective to provide guidance for the immediate and effective protection, rescue, cleaning and rehabilitation of birds, marine mammals, their habitat, and other wildlife resources that are harmed or potentially harmed by a marine spill. This is further Environment Protection Authorities have the responsibility to protect wildlife and respond to wildlife impacts such as marine spills. These arrangements vary from State to State and should be detailed within a RSA State wildlife plan.

2.14 Place of Refuge

It is rarely possible to deal expeditiously and satisfactorily with a casualty in open sea conditions, and the longer a damaged ship is forced to remain at the mercy of the open sea, the higher the risk of its condition deteriorating and thereby becoming a greater pollution hazard. A place of refuge must provide favourable conditions to enable a ship to stabilise its condition, protect human life, and minimise the risk of environmental degradation. RSA is better placed than many maritime nations in that passing traffic calling at RSA States ports is minimal, and RSA States have sufficient jurisdiction over waters and areas of the coast to enable the selection of a place of refuge.

Some RSA States have adopted specific policies on places of refuge, and these should be followed as appropriate. IMO Maritime Place of Refuge Risk Assessment Guidelines (Appendix 6) have been developed to provide an overall framework for the assessment and identification of place of refuge requirements. Regardless of whether places of refuge are pre-designated or not, the following criteria form the basis for their selection:

• Adequate water depth;
• Good holding ground;
• Shelter from the effect of prevailing wind/swell;
• Relatively unobstructed approach from seaward;
• Environmental classification of adjacent coastline and fisheries activity;
• Access to land/air transport; and
• Access to loading/unloading facilities for emergency equipment.

It should be noted that the International Convention on Salvage 1989 places an obligation on RSA States response authorities to take into account the need for cooperation between various parties concerned in a salvage operation, including public authorities, when considering admittance of damaged vessels to ports.

2.15 Training and Exercises

The RSA States shall conduct joint training courses and biennial joint exercises. The main objectives of these training courses and exercises shall be:

- to improve the level of cooperation and co-ordination among operational personnel and, in particular, the strike teams of the different RSA States;
- to test the command structure of the Regional Plan;
- to achieve a satisfactory level of communication among personnel and, in particular, the strike teams designated to take part in joint response operations;

- to acquire knowledge in handling equipment, products and other means which might be used in joint response operations;
- to enable the personnel from different States to gain experience in working together.

The timing and content of the training and exercise programmes, their duration and other relevant details shall be proposed by MEMAC and decided by the ROPME Council. The RSA States shall normally conduct these exercises in rotation. MEMAC shall organise the training courses and exercises and will provide the necessary logistic support. The expenses of the national participants and national means deployed in joint exercises shall be borne by the respective RSA States. Expenses of the exercise facilitators and observers from the RSA States shall be borne by MEMAC. MEMAC may also assist Contracting States to organise the national training courses and exercises if required. Training courses shall be normally be based on the IMO OPRC- HNS Model Training Courses. Training programs are conducted at three levels, which recognise the overall technical complexity of managing a marine pollution response and that the associated knowledge required by personnel varies depending on their level of responsibilities. The three levels of training conducted are:

Senior Management

- The focus is on the requirements of senior government and industry management personnel, including RSA States appointed Marine Pollution Controllers - responsible for high level decision making.

Middle Management

- The focus is on the requirements of middle management personnel, including designated and potential ICs, their deputies, responsible for the preparation of contingency and response plans and the management and conduct of effective chemical spill response operations and associated logistic, administrative and financial tasks.

Operator

• The focus is on the requirements of operational personnel, those undertaking onsite cleanup operations and operating spill response equipment.

3. Response

3.1 Measures to be Employed

In the event of a chemical spill in the marine environment the following measures should be employed according to the circumstances of the spill and conditions prevailing:

• If possible prevent, control or stop the outflow or release of the chemical from the source;

• If coastal or marine resources are not threatened or likely to be threatened, monitor the movement and behaviour of the chemical residues, plume or vapour;

• If coastal and marine resources are threatened, determine whether to begin response operations, either at sea and/or to protect sensitive resources;

• If possible contain the spread of chemical residues; and

• If, due to weather and sea conditions, response at sea or protection of sensitive areas is not feasible, or the foreshores have already been affected, determine appropriate chemical contamination monitoring, cleanup priorities and other response measures. The importance of human health and safety in any response operation cannot be overstressed.

3.2 Overall Protection Priorities

Protection priorities to be employed during a response to a chemical spill are, in order of descending priority:

• Human health and safety;

• Habitat and cultural resources;

• Rare and/or endangered flora and fauna;

• Commercial resources; and

• Amenities.

However, in assessing protection priorities, it is necessary to maintain a balanced view of the potential success of particular response strategies.

3.3 Specialised Agency Participation

Due to the wide range of chemicals and their diverse hazards and properties, specialist expertise from Fire Services, industry, MEMAC advisers and environmental agencies should be sought to ensure the use of safe and practical response systems. Fire Services, chemical spill response units or hazardous materials units of RSA States and Environmental Agencies, as key response resources, will meet their normal agency responsibilities but will operate under direction of the Statutory or Combat Agency. This maximises the utilisation of existing national and Regional resources and expertise in fire and toxic emission control, hazardous material containment, cleanup and decontamination operations. A response by a specialised agency does not in any way indicate an admission of liability for the source of the spill or for acceptance of the costs of a spill. Liability for a spill is to be determined by due legal proceedings.

3.4 Incident Reporting and Response Activation

3.4.1 Initial Reports

Notification of a pollution incident will normally be made from observations by Government agencies, shipping or aircraft, by the public, or by those responsible for the incident. It is important that the information received be reported without delay to enable immediate and appropriate action to be taken. The response procedures, which shall be followed, are summarised in Figure 4. The most efficient method of ensuring that reports are dealt with promptly is by reporting through the Emergency Response Centre. The ERC operates twenty-four (24) hours a day and is equipped with continuously monitored telephone, facsimile and telex lines. The ERC will disseminate this information to respected authorities at National level as well as MEMAC.

The ERC contact details are outlined in Appendix 3.

3.4.2 Initial Action

The agency receiving the report of a pollution incident shall notify the relevant State Statutory Agency and MEMAC will be also informed directly by the relevant national Agency. The Statutory Agency shall promptly assess the information contained in any report and make the necessary decisions in relation to appropriate investigations and response actions. This will include jurisdiction and expected Statutory and Combat Agency responsibilities. The Statutory Agency shall advise the relevant Combat Agency of the need for a response. Following the report of an incident the Combat Agency shall issue a Pollution Report (POLREP) in accordance with part 3.4.4.

3.4.3 Activation

The Plan shall be activated by the Operational Authority of one of the RSA States in the following cases:

- An occurrence of a pollution incident within the Territorial Waters or EEZ of the Contracting State who activates the Plan, which threatens to affect or has already affected the responsibility zone of another Contracting State;

- An occurrence of an incident within the within the national waters or EEZ of the Contracting State who activates the Plan, whose severity surpasses the response capabilities of the State concerned alone.

In the cases of emergency listed above, the Plan shall be activated after consultations with MEMAC and the other RSA States affected or potentially affected. However, when the situation does not permit such consultations, the Plan may be activated by the affected State without prior consultations. When, in the opinion of the Operational Authority of one of the RSA States, its interests are threatened by a pollution incident which has occurred within the national waters or EEZ of another Contracting State, and when the other Contracting State/s have not taken appropriate action to respond to it,

that State may, after consulting with MEMAC and the other RSA State or States concerned, activate the Plan. The Operational Authority of the Contracting State who has activated the Plan shall immediately inform MEMAC and MEMAC will inform the Operational Authorities of the other RSA States that the Plan has been activated. Notification, which shall be formulated in accordance with the provisions of section 5.2, shall be transmitted through MEMAC to the Operational Authorities of the other Contracting States through the designated national Focal Points listed in Appendix 2. When a report has been received by the Combat Agency, that agency should confirm the incident details. The proximity, and possible subsequent movement of a chemical spill to sensitive areas will dictate the urgency of the method used to confirm the presence of the pollution. On confirmation of the presence of hazardous materials or where a decision has been made to implement response action, the Combat Agency should mount a response operation in accordance with the appropriate contingency plan arrangements. This should be done without delay to facilitate any subsequent cost recovery actions.

3.4.4 Pollution Report (POLREP)

After initial verbal advice has been provided to the Statutory Agency, the Combat Agency should issue a POLREP to relevant agencies and MEMAC. This would best be directed to the Emergency Response Centre who would disseminate to relevant agencies based on the incident type and location. A generic Regional POLREP form is shown in Appendix 7, which can be used by agencies. It should also be noted that the MARPOL 73/78 Convention establishes the requirement for ship's Masters to report discharges from their vessels. For reference, a copy of the details that ship's Masters should report is also listed at Appendix 8 (Harmful Substances Report).

3.4.5 Situation Report (SITREP)

During a marine pollution incident (or potential incident), it is essential that all relevant authorities be kept advised of any significant developments. The MEMAC and ERC will be responsible for ensuring that periodic Situation Reports (SITREPs) are dispatched to

those concerned. SITREPs should contain as much information as possible. During an incident that involves the risk of marine pollution, the Combat Agency shall be responsible for initiating SITREPs to relevant agencies, including MEMAC. A suggested format, including required content, for reporting this information is outlined in Appendix 9.

3.4.6 Chemical Pollution On-Shore

Chemicals washed ashore are usually in packages, drums or tank containers. Masters of vessels are also required to report the loss overboard of such cargo immediately. The reports are passed to the ERC, which will advise MEMAC and the nearest responsible State as quickly as possible. At the same time, ERC will endeavour to obtain a copy of the vessel's dangerous goods manifest and identify the chemicals involved and possible trajectory or fate of lost chemical cargo containers.

3.5 Incident Control

Operational control of a pollution incident is the responsibility of the Lead Combat Agency representative nominated as an ICT (Incident Command Team), and supported by an IMT that performs the tasks of the Planning, Operations, Logistics, and Finance and Administration sections of OSRICS. The ICT shall establish an ICC at a location, in close proximity to the incident, affording resources and facilities for the sustained management of the incident. This shall include access to communication facilities, suitable road access and other resources required for the response.

3.6 Response Plans

3.6.1 Strategic Plans

In a major incident it is important that a Strategic Plan is drawn up which clearly details the aims and objectives of the overall response. In some cases it may be necessary for strategic plans to be developed to cover a number of aspects of the incident.

Strategic plans address the broader issues of the response, not short-term operational activities. The main outline of the strategy Plan which shall be applied by the Operational Authorities of the RSA States in responding to marine pollution incidents within the framework of the Regional Plan shall take into consideration, inter alia, the following criteria:

- position at which the incident occurred; type of HNS;
- amount of HNS which has been released and/or is likely to be released;
- the movement of the HNS slick;
- the degree of risk to human life and/or potential health hazard; the fire/explosion hazard;
- the toxicity of the released pollutant;
- the potential to damage fisheries and natural resources, especially internationally protected sites such as those under the Ramsar Convention;
- the potential to damage valuable property and/or to have serious economic consequences;
- activation of the National Contingency Plan and notification of other RSA States;
- evaluation of available and required response resources;
- selection of appropriate response methods;
- activation of the Plan and request for assistance;
- implementation of selected response methods, making use of national resources and resources from assisting States;
- re-assessment of the situation and making necessary modifications (if necessary) of response actions;
- termination of response operations;
- de-activation of the Plan,
- the return to the country of origin of personnel, equipment and other means rendered as assistance by the other Contracting States,
- Reinstatement of equipment,

- Consolidating costs,
- Claims for re-imbursement of costs,
- Post spill reporting.

3.6.2 Incident Action Plans (IAP)

Short-term operational objectives and activities are the subject of an IAP. The IAP will provide details of the operational activities and objectives to be achieved over a specified, short-term period. Initially this may be for the subsequent few hours only, but once the operation is underway it is likely to address the activities required over each of the following twenty-four hours or longer.

3.7 Response to Chemical Spills

A detailed Marine Chemical Spill Response Manual prepared by IMO and held by MEMAC supports ChemPlan and National contingency plans. Figure 5 summarises the five main phases of the response to a chemical spill.

3.8 Hazard Identification and Assessment

It is essential to acquire as much information as possible on the identity of the chemical(s) spilled, the quantities released and the risk of further release of chemicals before response action begins. Fire services and National Combating Agency, MEMAC as well as the shipping, plastic, and chemical industries can assist Statutory and Combat agencies with this hazard assessment. A checklist of information that may be required during this phase of a response operation is given in Appendix 10.

3.8.1 Monitoring Chemical Spills at Sea

In some chemical spill situations, especially involving gases, vapours or dissolving chemicals, the only response option is monitoring the dispersion plume, evacuating the public and advising commercial and private fishing vessels to avoid contaminated areas. In water surface pollution and floating chemical incidents, monitoring of the

plume will enable the foreshore impact zone to be established so that equipment and personnel can be deployed to protect sensitive ecological areas, similar to that provided in oil spill trajectory modelling. The majority of chemicals are colourless which renders them difficult to monitor by visual means. Depending on the chemical properties, monitoring by remote ultraviolet, infrared, temperature variations or other remote sensing techniques may be useful. Depending on the chemical spilled and the location of the spill, if there are no threats to environmentally sensitive areas or it is not likely that the pollutant will come ashore, biological and physical processes may naturally disperse the chemical over a period of time. In these circumstances the best action may be to do nothing other than monitor the concentration, movement and fate of the chemical plume or slick. Such action will require the support of sound chemical and environmental advice to Governments, the public and the media to clearly explain why no other action has been taken.

3.9 Occupational Health and Safety

Response managers should be aware that at all times human life, health, and safety is paramount. The degree of risk associated with cleanup operations will depend on:

- Type of chemical spilled;
- Size of the spill;
- Location of the spill;
- Circumstances of the spill; and
- Weather conditions.

At all times response managers should be aware of the limitations and safe operating procedures for all equipment used throughout the phases of the cleanup operation. This should, where necessary, include a risk assessment and development of a formal site-specific management plan, including details for induction and briefing procedures.

3.10 Cultural and Heritage Issues

Important heritage values and places exist in many parts of RSA coastal areas, including historic heritage sites and items,) and natural resources. The potential impact

of response operations on the heritage values of the area needs to be addressed in planning the operation. The potential heritage values of an area need to be identified and the likely impacts that result from the activities should be addressed. Specific consideration should be given to access to, and general use and disturbance of areas. The assessment should consider both direct and indirect impacts, cultural protocols and strategies for minimising impacts. Consultation with local communities should occur as part of the planning process. Information about the heritage values of an area may be limited, or difficult to access.

3.11 Obtaining Samples for Evidence and Analysis

In the aftermath of a pollution incident, identification of the source of contamination is a vital component in identifying the polluter not only for possible legal action but also for the subsequent allocation for the recovery of response costs. Even where one ship is considered to be clearly the source of the spill it is important to be able to establish that other potential sources have been eliminated. Where a spill has occurred there may be a number of different ships that are potential sources of the spill and they must all be identified and sampled as far as practicable. Samples must be obtained from all possible sources (tanks, bilge etc) onboard each ship to compare with a spill sample. The laboratory will use multiple analysis methods to eliminate or identify the source of the spill. To ensure that a positive analysis result may be achieved, correct sampling, storage, handling, preparation of the samples from all potential sources is essential. Further details concerning sample collection, storage and handling are outlined in Appendix 11.

3.12 Disposal of Spill Material

Cleanup operations can generate substantial quantities of contaminated wastes and debris. Temporary storage, transportation and final disposal methods shall be arranged to comply with local National and Regional disposal approvals. Regional and National contingency plans should contain information on the disposal of waste. This should include any predesignated arrangements for disposal sites and approved contractors.

RSA States should ensure that they have arrangements in place with their respective Environment Protection Agencies (EPA) for the disposal of contaminated debris and include contact details for the transport and disposal of chemical waste including chemical re-processors, approved contractors and final disposal sites in their National and local contingency plans.

3.13 Equipment

On completion of a chemical pollution response operation, the IC shall arrange recovery of all equipment and unused materials, and arrange their prompt return to the resource centre from which they came. In the event of a major incident, a response team member would normally be available to assist in the coordination of equipment transfers, including returning equipment to its point of origin. The IC shall advise the Manager, EP, of all usage of State-owned National Plan equipment, including details of any damage or discrepancies. The IC, or delegate, will ensure that all equipment is cleaned after use to the extent available facilities allow, and is returned to the ownership authority by the quickest possible means, having regard to freight costs. Where necessary the equipment should be decontaminated of any chemical substances. On its return to the resource centre the equipment shall be thoroughly serviced in accordance with equipment maintenance schedules prior to being stored. The Combat Agency shall ensure that all costs incurred in returning equipment to the resource centre, including cleaning and servicing is included in the overall schedule list of costs submitted for reimbursement by the polluter.

3.14 Termination of a Response

Under the Regional Plan, an incident response will be terminated by the Statutory Agency (MEMAC) once the MEMAC considers that the effective completion of the response is achieved based on expert Combat Agency advice. Termination arrangements should be included in each RSA State National contingency plans.

4. Response Support

4.1 Charter and Hire Arrangements

4.1.1 Charter of Vessels

During an incident there may be the requirement to charter local vessels to assist in response operations. A Vessel Charter Agreement used by MEMAC (Appendix 12) provides an example of such an agreement, which may be amended for use by other agencies. It is suggested that a formal agreement should be used whenever there is a need for agencies to charter a fishing vessel, or other craft, for use at pollution incidents and where the owner agrees to its use for such charter. Whilst the IC may need to control the operation of a vessel to suit prevailing conditions and the particular circumstances of the incident, it shall be made clear that THE NAVIGATION AND SAFETY OF THE VESSEL WILL REMAIN THE RESPONSIBILITY OF THE VESSEL'S MASTER AT ALL TIMES. When an owner is not prepared to accept the suggested agreement, but is prepared to make a vessel available, the charterer should ensure that:

- The vessel complies with all safety and equipment requirements; and
- It is made clear by the charterer to the owner that the controls shall apply at all times.

All other aspects of the charter shall be the subject of local negotiation at the time of the incident. Details of craft availability, including Port and State government craft, should be shown in appropriate National contingency plans.

4.1.2 Surveillance Aircraft

Where the source of an incident is not identified and thus recovery of costs unlikely, where it is intended to claim reimbursement of costs, under the Regional Plan, then concerned States in consultation with MEMAC, must approve the use of aircraft for surveillance or investigation. Procedures for the identification and charter of appropriate aircraft should be shown in appropriate RSA Member States, contingency plans.

4.1.3 Hire of Other Equipment

In a cleanup operation the hire of other equipment, including earthmoving equipment, storage, and transport will be arranged under the direction of the IC as required.

4.2Salvage Arrangements

4.2.1 Salvage Involvement

In the event of an incident involving a damaged or disabled ship, it is paramount that the salvage industry be involved under MERCU in the response as soon as possible. Salvage activities may need to be arranged to take the vessel in tow, refloat a grounded vessel, or reduce or stop a discharge of chemicals to minimise environmental damage resulting from the casualty. It is essential that these operations be undertaken as soon as possible. In accordance with the MERCU, respected state in coordination with MEMAC has responsibility for safety issues relating to vessels on interstate or foreign voyages and will be responsible for ship operational matters. These functions include alerting and liaising with salvors, taking measures to minimise chemical outflow and other salvage activities. The vessel's Master/Owner will normally appoint a salvor by signing a Lloyds Open Form Agreement. However, in cases where this does not occur, MEMAC may use its powers under the Regional Protocol to either direct the Master/Owner to engagea salvor or alternatively contract a salvor to undertake necessary work, with costs recoverable from the owner.

4.2.2 Salvage Liaison

During an incident requiring the salvage of a vessel, consideration should be given to the appointment of a Casualty Coordinator (CC). The role of the CC is to enable continuing exchange of information regarding the salvage operation between the IC, the Salvage Master and the Statutory/Combat Agencies. This will enable the Salvage Master to limit briefings to one person, whilst at the same time providing for continuity in information flow. A senior MEMAC marine surveyor is available to act as the CC as required.

4.2.3 Independent Salvage Advice

In a major casualty the possibility may arise for the need to have access to independent salvage advice. MEMAC will identify suitable companies that can provide independent advice on the salvage operation, including whether the proposed salvage operations are appropriate. In the event of requiring such advice, MEMAC will make appropriate arrangements with one of the identified companies. In incidents involving an intrastate vessel, the State may wish to undertake the above salvage arrangements. MEMAC will provide assistance where required.

4.3 Updating the Plan

Contingency Plans are evolving documents, and as such, require regular updating. It is recommended that all Contingency Plans be reviewed annually to take into account policy changes and experience from incidents and exercises. Regular amendments should be made to reflect changes in contact, equipment and other details. Minor amendments to this Plan will be issued by MEMAC they become necessary. MEMAC will review ChemPlan annually. Information for updating the Plan should be forwarded on a regular basis to RSA Member States for their consideration.

4.4Chemical Spill Trajectory Modelling (CHEMMAP)

4.4.1 About CHEMMAP

MEMAC is custodian of the interactive chemical spill trajectory computer model CHEMMAP. The model is designed to predict the movement (trajectory) and fate of chemicals in the marine environment. The model is capable of simulating spills of pure chemicals as well as chemicals in solutions and emulsions, but not chemical mixtures. Based on user inputs of chemical type and volume, wind data, water temperature and other parameters, CHEMMAP integrates the outputs with hydrodynamic modelling of the local water body to track the chemical according to the following fates:

- Surface (floating) concentration

- Dissolved concentration
- Particulate concentration
- Adsorbed and sediment concentration
- Shoreline fate
- Atmospheric concentration and trajectory of gases and vapours

Outputs are presented on a GIS (geographic information systems) platform compatible with ArcGIS and other GIS applications, including OSRA. CHEMMAP should be used principally to inform the decision-making process regarding resources/areas likely to be affected by a chemical spill. In addition to modelling the behaviour of a spill, CHEMMAP will enable responders to anticipate the likely concentration of the chemical at any location or time. The inbuilt Chemical Database of can also be used to present a detailed summary (MSDS) of the chemical(s) in question.

4.4.2 Activation of CHEMMAP

Activation of CHEMMAP is through the MEMAC Officer, who can be contacted via the ERC. Requests for activation of CHEMMAP should be accompanied by a completed CHEMMAP Proforma (Appendix 20).which can be accessed via the MEMAC website (www.MEMAC.).

4.4.3 Updates and Additional Information

To ensure the model is accurate as possible, user inputs should be updated as required to reflect prevailing field conditions and chemical characteristics. Therefore data should reflect weather updates and water temperature, specific location of the chemical plume, exact information on the product and shoreline characteristics. The CHEMMAP operator will refer to resources such as the Bureau of Meteorology (BOM) and chemical database where field information is not available.

4.5 CAMEO

CAMEO (Computer-Aided Management of Emergency Operations) is a set of software modules and programs designed to assist first responders and emergency planners' access chemical property and response information, and model potential chemical releases. CAMEO was developed jointly by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA), and it runs on both Macintosh and Windows computers. The following programs are used as decision support systems under the National Plan:

- Cameo Chemicals: a program that allows the user to search for chemicals in the CAMEO chemical database, print customized reports with response recommendations, and find out how chemicals would react if they mixed; and
- ALOHA (Areal Locations of Hazardous Atmospheres): is a modeling program that estimates threat zones associated with hazardous chemical releases, including toxic gas clouds, fires, and explosions.

CAMEO may be downloaded from the NOAA Office of Response and Restoration website:
http://response.restoration.noaa.gov/

4.6 CONTINGENCY PLAN DECISION SUPPORT SOFTWARE

MEMAC holds copies of various software programs that can provide assistance to ICs involved in operations under ChemPlan. Full details of the software and its capabilities can be obtained from MEMAC, but brief details are as follows:

Software

Purpose

Information

Remarks

ALOHA

(Areal Locations of Hazardous Atmospheres) Chemical plume modelling software. Allows the user to model the behaviour of a chemical and the "footprint" of a toxic gas plume escaping from a vessel, tank or other storage container under the influence of

wind and other meteorological conditions. The dose and concentration level over time for the escaping chemical can be predicted at any point down wind e.g. indoor and outdoor, in a building, at certain heights, etc. Developed by the US National Oceanic and Atmospheric Administration (NOAA), Hazardous Materials Response and Assessment Division and the US Environmental Protection Agency (EPA). Requires trained operators.

CHRIS

(Chemical Hazard Response Information System) Information needed for decision-making by personnel during emergencies involving hazardous materials. A variety of chemical information, hazard assessment information and response guides. Developed for the US Coast Guard.

IMDG Code

(Computerised International Maritime Dangerous Goods Code) Information on the safe transport, handling and stowage of packaged dangerous goods by sea.Classification, documentation, storage, segregation, packing,Marking, labelling and packaging of packaged dangerous goods.

UN Codes Properties of the substances

GESAMP Ratings Class Packaging Group

Fire Precautions

Emergency Schedules for Ships

Carrying Dangerous Goods (EmS)

Medical First Aid Guide for Use in

Accidents Involving Dangerous

Goods (MFAG)

Code of Safe Practice for Solid

Bulk Cargoes (BC Code)

Reporting Procedures under

SOLAS 74 and MARPOL 73/78

IMO/ILO Guidelines for Packing Cargo in Freight Containers or Vehicles

Recommendations on the Safe Use of Pesticides in Ships

International Nuclear Fuels Code. Developed by IMO

Software Purpose Information Remarks MCIS

(Milbros Chemical Information System) Up-to-date source of information on the safe transportation and handling of liquid bulk chemicals.

1. chemical product name
2. description
3. formula
4. synonyms and trade names
5. UN number
6. CHRIS code (US Coast Guard)
7. IMDG classification
8. IMO regulations that apply
9. various MARPOL information
10. physical data
11. cargo temperature & heating requirements
12. Threshold Limit Value (TLV) levels
13. reactivity of the chemical
14. stability and use of stabilisers/inhibitors
15. cargo handling instructions
16. tank cleaning requirements
17. MARPOL regulations related to cleaning/loading
18. emergency procedures in case of fire, spillage, human exposure
19. loading/transfer equipment requirements including equipment suitability.
20. pollution rankings and details based on GESAMP ratings.

Developed by Milbros Shipping AS.

Originally designed for chemical tanker operators.

MOSES

(Marine Oil Spill Equipment System) Computer based database, of pollution control equipment. Type, quantity, location, status and availability of equipment Developed by AMSA.

OSRA

(Oil Spill Response Atlas) Identifies and describes the coastal resources in an area. Provides information on access features of an area. It can contain information on the response options such as boom deployment and dispersant use, and logistical problems.

Base Map

Shoreline

Biological Resources

Wetlands, Estuaries & Rivers

Human Resources

Logistical Use Resources /Infrastructure

Remote Sensing/Aerial Photography

Incident Details/Spill Trajectory

Sensitivity Ratings/Response Options.

OSRA is a Geographic Information System (GIS), PC based resource for use, with real-time data from the Bureau of Meteorology (BOM), by field scientific and environmental staff during chemical or oil spill incidents and exercises.

ChemAlert

ChemAlert provides definable reports including:

ChemAlert

Reports & Labels;

Manufacturers' Scanned MSDS; Risk Assessment Module;

Hazardous Substances Registers; Dangerous Goods Registers; and

Stock Management System & Reporting.

Features of Chem Alert include:

Health hazards & precautions for use, safe handling procedures, storage & transport requirements,
environmental fate, and emergency and first aid advice.
Developed by Risk Management Technologies, United States of America. Access by contacting Fire Services.

ChemData

An extensive database of hazardous materials, providing ‘first response’ information for fire fighters and other emergency services and designed for use by commu nications personnel rather than technical specialists. Provides information on personal protection, hazards, precautions, environmental protection priorities, fire fighting procedures, decontamination, and first aid for a very broad range of hazardous materials. Also includes the IMDG Emergency Schedules (EmS).
Developed and maintained by the National Chemical Emergency Centre, Harwell, United Kingdom. Practically all Australian Fire Services use a modified Australian edition designed to provide information for the HAZMAT Action Guide form used by Fire Services for communication of response advice by radio.
A list of website links for chemical databases and information follows:

Organisation Website

Computer-Aided Management of Emergency Operations (CAMEO) - National Oceanic and Atmospheric Administration (NOAA) response.restoration.noaa.gov/cameo/links.html
Material Safety Data Sheets www.msds.com.au/ Guiding Principles for Chemical Accident Prevention,
Preparedness and Response
http://www2.oecd.org/guidingprinciples/index.asp
Aids for Chemical Accident Responders and Planners - NOAA
response.restoration.noaa.gov/chemaids.html
US Office of Hazardous Materials hazmat.dot.gov/
US National Safety Council – chemical hazards www.crossroads.nsc.org/index.cfm

Agency For Toxic Substances & Disease Register - Hazardous Substance Release and Health Effects Database

www.atsdr.cdc.gov/hazdat.html

Toxicological Network – data base & fact sheets ace.ace.orst.edu/info/extoxnet/

Dangerous Goods Information – International Air Transport Association

http://www.iata.org/whatwedo/dangerous_goods1

US Chemical Emergency Preparedness and Prevention Officer

http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/ind ex.html

List of Reference Material and Publications

• Emergency Response Guidebook: Guidebook for first response to hazardous materials incidents (2000), US Department of Transportation http://hazmat.dot.gov/pubs/erg2004/gydebook.htm

• Dangerous Goods – Initial Emergency Response Guide: Australian/New Zealand Handbook (1996), Standards Australia/Standards New Zealand (ISBN: 0 7337 0465 4)

• Guide to the Compatibility of Chemical Cargoes from V5 IMDG Code 2000 edition.

• Manual on Chemical Pollution Section 1: Problem assessment and response arrangements 1999 (IMO-630E, ISBN 92-801-6096-6)2 prepared by IMO.

• Manual on Chemical Pollution Section 2: Search and Recovery of Packaged Goods Lost at Sea (IMO-33E)

Appendix 1
Inter Governmental Agreement and Administrative Arrangements

SCHEDULE 1

Administrative Arrangements
Application
Division of Responsibility
For RSA Member States:
(i) At oil terminals -
(ii) At chemical terminals -
(iii) In ports (
For offshore petroleum operations:
Responsibility for overall coordination of a major spill
Equipment
Ports, terminals, rigs and platforms
Transitional Arrangements
Costs and Expenses
Training

SCHEDULE 2

Funding Arrangements
Equipment
Training
National Plan Biennial Exercise
Fixed Wing Aerial Dispersant Capability (FWADC)
Dispersants
Incident Cost Recovery
Research and Development
Oil Spill Response Atlas (OSRA)
Oil Spill Trajectory Model (OSTM)
RSA MemberStates
Equipment
Training
Exercises
Oil Spill Response Atlas

Appendix 2
International Codes and Guidelines Relating to the Carriage of Dangerous Goods

International Maritime Dangerous Goods Code (IMDG Code)
Code of Safe Practice for Solid Bulk Cargoes (BC Code):
The BC Code:
International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (International Bulk Chemical Code or IBC Code)
International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (International Gas Carrier Code or IGC Code)
Emergency Procedures for Ships Carrying Dangerous Goods

Appendix 3
Key Regional Plan Contacts

Appendix 4
Response Structure
OSRICS Response Structure

Appendix 5

Checklist for the Development of RSA Member States,Port Marine Chemical Spill Contingency Plans

ORGANISATIONAL STRUCTURE

Are the following organisations included within the RSA Member States Maritime Chemical Spill Contingency Plan?

Have each organisation's responsibilities and capabilities been determined for:

HAZARD ANALYSIS

COMMUNICATION

Coordination:

Information Exchange:

Information Dissemination:

Information Sources and Data Base Sharing:

Notification Procedures:

RESOURCES

"**Personnel:**

Training:

Equipment:

Facilities:

Appendix 6
Maritime Places of Refuge Risk Assessment Guidelines

Attachments

Appendix 7
Polrep Format
Marine Pollution Report (POLREP)

POLLUTION SOURCE
POLLUTANT
EXTENT
ADDITIONAL INFORMATION
SENDER DETAILS
PRIVACY STATEMENT
SUMMARY OF INCIDENTS TO BE REPORTED
REPORTABLE NON-REPORTABLE
Oil -

Chemicals

.
Harmful Packaged Substances -
Sewage –
Garbage –

Appendix 8

Harmful Substances Report Format

(Sections of the ship-reporting format, which are inappropriate, should be omitted from the report)

Appendix 9
Marine Pollution Situation Report (Sitrep)
Marine Pollution Situation Report (SITREP)

Appendix 10

Checklist of Information that may be required when assessing a Chemical Spill that affects the Marine Environment

Appendix 11
Sampling Procedures Chemical Spills

Appendix 12
Example of a Vessel Charter Agreement

The Schedule

Appendix 13
Contingency Arrangements for Marine Chemical Spills

Appendix 14
Chemical Spill Trajectory Modelling (Chemmap)