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LIST OF CORRECTIONS AND AMENDMENTS

1. This control sheet should be retained in the front of the plan binder until the next amendment issue is received
2. The amendment number appears at the bottom of each replacement page.
3. Kindly replace the following pages with the accompanying new pages.

Pages ii, iii, v, vii, xii, xiv

Chapter 1: Pages 4 and 5

Chapter 2: Pages 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 19, 20

Chapter 3: Pages 24, 25, 26, 27, and 31

Chapter 4: Pages 32, 35

Chapter 5: Pages 41, 42

Chapter 6: All pages

Annexure 4: All pages

Annexure 5: All pages

Annexure 6: All pages

4. Please ensure that the table below is completed after the above amendments have been done, and fax this control sheet to the Directorate of Maritime Affairs at: 061 - 240024.

Issuing Authority		Correcting Authority		
Amendment No. of	Date issued by	Corrected by (Name of organisation)	Signature	Date corrected
1 of May 2001	28 May 2001			

Amendment No. 1 of May 2001

NOSCP, Republic of Namibia

ii

Amendment No 1 of March 2004

PREAMBLE

Namibia as a coastal state faces the possibility of oil spills along its coastline. The marine traffic and other activities along its coastline is expected to increase. Namibia has marine ports and a vast land area.

The National Oil Spill Contingency Plan provides a framework for national response to an oil spill.

The Plan involves a command structure under which the National Response Team would rapidly respond to any incident with appropriate mechanisms of mobilizing resources in the event of a spill, and even international resources in the event of a major oil spill.

This plan is guided by international norms and practices.

The plan outlines the responsibilities for initiating and coordinating the necessary actions to effect protection and clean – up operations.

DEFINITIONS

Any word or expression given or used in this Contingency Plan has the same meaning as in the Prevention and Combating Pollution by Oil Act (Act No. 24 of 1991) unless the context indicates otherwise-

“Oil” means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined products.

“Oil pollution incident” means an occurrence or series of occurrences having the same origin, which results or may result in a discharge of oil and which poses or may pose a threat to the marine environment, or to the coastline or related interests of one or more States, and which requires emergency action or other immediate response.

“Exclusive Economic Zone (EEZ)” means the sea outside the territorial sea of Namibia but within a distance of two hundred nautical miles from the low water line from which territorial sea was measured

ABBREVIATIONS

DCA	=	Directorate of Civil Aviation
DMA	=	Directorate of Maritime Affairs
DRC	=	Deputy Response Co-ordinator
DWA	=	Department of Water Affairs
EEZ	=	Exclusive Economic Zone
EMU	=	Emergency Management Unit
EOC	=	Emergency Operation Centre
EPC	=	Environmental Protection Committee
EPZ	=	Economic Processing Zone
GACG	=	Government Action Control Group
GRN	=	Government of the Republic of Namibia
IMO	=	International Maritime Organisation
IOPPC	=	International Oil Pollution Certificate
MARPOL	=	Marine Pollution Convention
MET	=	Ministry of Environment and Tourism
MAWRD	=	Ministry of Agriculture, Water and Rural Development
MFA&IB	=	Ministry of Foreign Affairs & Information and Broadcasting
MFMR	=	Ministry of Fisheries & Marine Resources
MHA	=	Ministry of Home Affairs
MHSS	=	Ministry of Health and Social Services
MME	=	Ministry of Mines & Energy
M&O	=	Monitor and Observe
MIB	=	Ministry of Information & Broadcasting
MOD	=	Ministry of Defence
MOF	=	Ministry of Finance
MOJ	=	Ministry of Justice
MWTC	=	Ministry of Works, Transport and Communication
NAMCO	=	Namibia Mineral Corporation
NAMCOR	=	National Petroleum Corporation of Namibia
NAMPOL	=	Namibian Police
NEMC	=	National Emergency Management Committee
NGO	=	None-governmental Organisation
NOSCO	=	National Oil Spill Contingency Organisation
NOSCP	=	National Oil Spill Contingency Plan
NRT	=	National Response Team
OPC	=	Operational Centre
OSC	=	On-Scene Commander
OT	=	Operations Team
PPE	=	Personal Protective Equipment
PS	=	Permanent Secretary
RC	=	Response Co-ordinator
RCC	=	Roads Contractor Company
SAAR	=	South African Search and Rescue Organisation
TELCOM	=	Telecommunication
UNCLOS-82	=	United Nations Convention on the Law of the Sea of 1982
VCR	=	Video Camera Recordings
WR	=	Walvis Bay Radio

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CHAPTER 1

1.1 BACKGROUND TO THE NATIONAL OIL SPILL CONTINGENCY PLAN

1.1.1 Purpose

The purpose of the National Oil Spill Contingency Plan (NOSCP) is to provide for a safe, timely, effective and co-ordinated response by the Government of the Republic of Namibia (GRN), acting through the National Response Team (NRT) of the National Oil Spill Contingency Organisation (NOSCO), in concert with other responding governments, industry and community agencies acting under the NRT, to any oil spill affecting Namibia's coastal and marine environment. The plan defines the scope, structure and responsibilities of the component parts of NOSCO in combating an oil spill.

1.1.2 Objectives

The National Oil Spill Contingency Plan has five basic objectives during a spill event:

- (i) To ensure health and safety;
- (ii) To ensure that the coastal and marine environment is protected;
- (iii) To ensure effective reporting and speedy response;
- (iv) To ensure that personnel, equipment and funds are available to prevent, combat, contain and clean up oil spills and to adequately dispose of waste oil and polluted materials; and
- (v) To ensure that good record keeping is maintained and accurate information kept.

1.1.3 Interaction with other Agencies

The National Oil Spill Contingency Plan provides a framework for national response to oil spills. The responsibility for managing and co-ordinating the national response to an oil spill is delegated to the NRT of National Oil Spill Contingency Organisation (NOSCO). This will involve government ministries, parastatals and private industry as determined by the plan. Various functions may also be delegated to Regional and Local Authorities and other relevant bodies.

In the case of a polluter with a high degree of expertise and readiness to handle spills of its own making, the NRT will be alerted and will monitor and observe the progress of the combating operation and will be on standby to render any assistance, co-ordination or advice needed.

To ensure the implementation and accuracy of this National Oil Spill Contingency Plan the Government of the Republic of Namibia (GRN) will have systems and resources in place that will:

- (a) Establish and train all parties involved in response to oil spills as described in this plan;
- (b) Have available sufficient quantities of appropriate and functioning oil spill response

- equipment and materials to handle Tier 1 and 2 spills; and
- (c) Ensure that a programme of training and exercise is in place that will guarantee that this Contingency Plan can be implemented efficiently at any time in the event of a spill.

Since oil spill response involves many organisations, this plan is intended to operate concurrently and in co-operation with the plans of other response organisations. The diagram below (Fig 1.) illustrates the NOSCO's interaction with the national emergency response system.

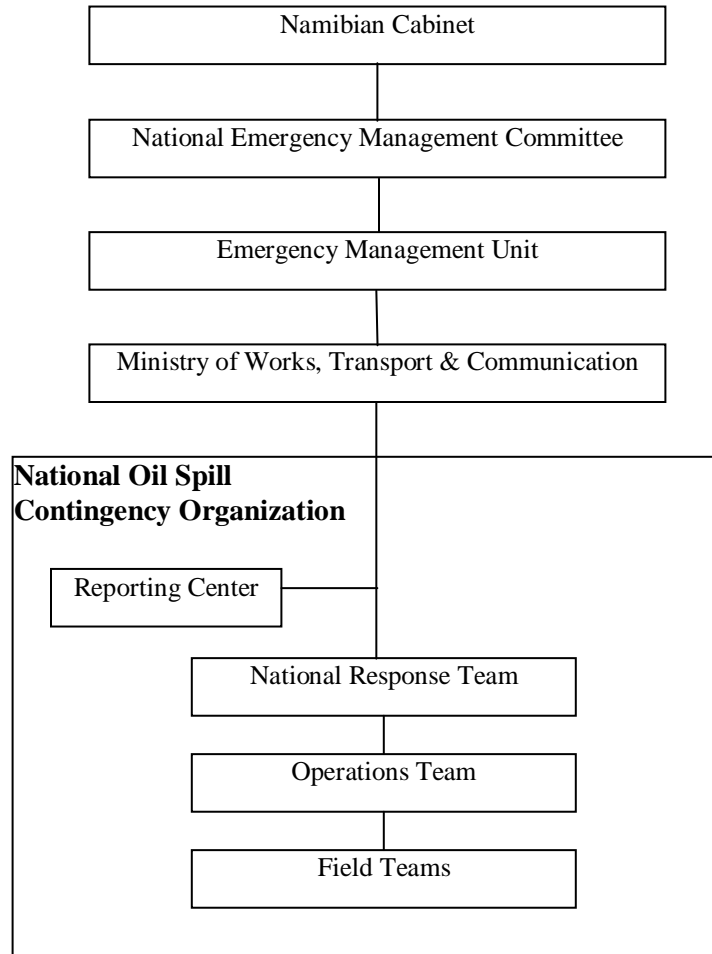


Fig. 1

Fig. 1.1 NOSCO in relation to the National Emergency Response System

1.2 Statutory Requirements and Relevant Agreements

In terms of section 9 of the Prevention and Combating of Pollution of the Sea by Oil Act, No 6 of 1981 and its amendments, the polluter is responsible for the costs of combating the pollution it has caused.

The Petroleum (Exploration & Production) Act, No. 2 of 1991 and each Petroleum Agreement that is signed between the government and a petroleum exploration and/or production licensee specifically directs that the license holder shall be fully prepared to combat any oil spill he may cause and to cover all costs involved.

The Prevention and Combating Pollution by Oil Act (Act No. 6 of 1981) establishes the Ministry of Works, Transport and Communication as the line Ministry responsible for the management of oil spill emergencies. The Act provides the Minister with a wide range of powers regarding prevention and combating of oil pollution. Section 29 of the Act permits the Minister and the Permanent Secretary to delegate to any person or to two or more persons any of the powers conferred upon either of them in terms of the Act except those powers conferred upon the Minister in terms of section 28. Section 27 of the Act empowers the Minister to engage any person to assist in the execution of any provisions of the Act. Section 5 of the Act gives the Minister the authority to order any person capable of providing goods or services for the removal of oil pollution to provide such goods or services and are to be compensated for the provision of such goods and services in terms of the Act.

1.3 National laws relevant to pollution prevention

Prevention and Combating of Pollution of the Sea by Oil Act, No. 6 of 1981.
Prevention and Combating of Pollution of the Sea by Oil Amendment Act, No. 59 of 1985.
Prevention and Combating of Pollution of the Sea by Oil Amendment Act, No. 63 of 1987.
Prevention and Combating of Pollution of the Sea by Oil Amendment Act, No. 24 of 1991.
Territorial Sea and Exclusive Economic Zone of Namibia Act, No. 3 of 1990 and Amendments, Act 30 of 1991.
Marine Traffic Act, 1981.
Namibian Ports Authority Act No. 2 of 1994
Apportionment of Damages Act, No. 34 of 1956.
Hazardous Substances Ordinance, No 14 of 1974
Merchant Shipping Act, No. 57 of 1951.
Minerals (Prospecting and Mining) Act, No. 33 of 1992 and Regulations
Petroleum (Exploration & Production) Act, No. 2 of 1991 and
Petroleum (Exploration & Production) Amendment Act, 1997
Petroleum Laws Amendment Act, 1998 and Petroleum Regulations
Petroleum Agreements between the Government of the Republic of Namibia and petroleum exploration and production licensees.
Petroleum (Product and Energy) Act, No. 13 of 1990) and Petroleum Regulations 2000
Public Health Act, No. 36 of 1919 and amendments and regulations
National Welfare Act, No. 79 of 1965.
Magistrates' Courts Act, No. 32 of 1944.
National Transport Corporation Act, No. 21 of 1987.
Sea Birds and Seals Protection Act, No. 46 of 1973.
Water Act, No 54 of 1956
Sea Fisheries Act, No. 29 of 2000.
Sea Shore Ordinance 37 of 1958 and Amendments under Proclamation 144 of 1982.

1.4 International laws and conventions to which Namibia is a signatory

United Nations Convention on the Law of the Sea, 1982. (UNCLOS-82)

International Maritime Organisation (IMO) Convention of 1948.

International Convention on the Safety of Life at Sea, 1974/78

International Convention on the Regulations for Preventing Collisions at Sea, 1972

International Convention on Tonnage Measurement of Ships, 1969

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

International Convention for the Prevention of Pollution from ships, 1973 as modified by the Protocol of 1978 (MARPOL 73/78);

International Convention on Civil Liability for Oil Pollution Damage, 1992 (CLC Protocol of 1992); and

International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992 (Fund Protocol of 1992).

International Convention Relating to Intervention on the High Sea in Case of Oil Pollution Casualties as amended 1969/73

1.5 Dimensions of plan

The National Oil Spill Contingency Plan is designed to take into account the following types of spills:

(a) Small or minor spills (Tier 1)

Tier 1: small local spills of <0.5 tons or 500 litres of oil. Such incidents are usually associated with ship transfer or bunkering operations at a jetty, pier, mooring or at the anchorage, and around fish factory storage tanks. These incidents are normally handled by local resources.

(b) Medium spills (Tier 2)

Tier 2: Medium spills of 0.5-10 tons or 500-1000 litres require more resources than those available locally. These incidents are typically associated with shipping incidents in ports, estuaries or coastal waters, but could be from pipelines, tank failures or near-shore exploration and production operations. These incidents are normally handled by all available local resources and may require additional resources from Government and industry.

(c) Major oil spills (Tier 3)

Tier 3: Large spills of >10 tons or 10 000 litres and above. This tier covers major incidents, normally involving oil tankers or other vessels having large amounts of crude or bunker oil, exploration or production platforms or oil pipelines. The first line of defence in a Tier 3 spill

is generally the response organisation of the polluter. These incidents are normally handled by all resources available nationally and may require additional resources from regional and international Governments and institutions.

Major oil spills will usually cause sever damage to the coastal and marine environment but medium spills in sensitive areas can have sever consequences.

As a member of the international maritime community, Namibia could be called upon to participate in incidents that threaten or result in an oil spill which harms the environmental resources of another member state or vice versa. Details are provided in Section 3.5.2 on page 30 of the plan.

1.7 Geographical area of coverage

This plan covers the waters within the EEZ of the Republic of Namibia as defined in the Territorial Sea and Exclusive Economic Zone of Namibia Act, No 3 of 1990 and amendments, Act 30 of 1991.

1.8 Interfaces with other plans

The NOSCP and the NOSCO fall under the umbrella of the Emergency Management Unit (EMU), which, in turn, reports to the Secretary to the Cabinet. The NOSCP is a specialist plan falling under the EMU. The NRT can call on the EMU for assistance. The NOSCP interfaces with local contingency plans such as the Walvis Bay and Lüderitz harbour and lagoon areas and with the NAMPORT contingency plan. It will also interface with contingency plans of the fishing companies and offshore mining and petroleum exploration and production companies and any other plans.

As a member of the international maritime community, Namibia could be called upon to participate in incidents that threaten or result in an oil spill which harms the environmental resources of another member state or vice versa

Interfaces of NOSCP with plans of neighbouring countries depend on guidelines provided in Section 3.5.2 on page 30 of the plan and specific admissions of a particular plan in each country.

1.9 INCIDENT (S) REPORTING PROCEDURES

CHAPTER 2

2. NATIONAL OIL SPILL CONTINGENCY ORGANISATION

2.1 The Structure, Tables and Responsibilities of the NOSCO and its component units

The National Oil Spill Contingency Organisation consists of a National Response Team (NRT) and an Operations Team (OT), who are the executive bodies that fulfil the Minister's role of responding to oil spill emergencies. It serves as the lead agency for oil spill emergencies in terms of Namibia's National Emergency Response Plan. Individual Ministries appoint staff members to the NRT and OT on the basis of their specific expertise, knowledge or skills in one or more of the requirements for the handling of oil spills. The structure, responsibilities and roles of the various units comprising the NOSCO are detailed in this Chapter.

Although the organogram in Fig. 2 shows the Reporting Centre outside the blocks for the Response Team (RT) and the Operations Team (OT), it is a critical part of NOSCO. It receives the first reports of a spill from any source whatsoever. It then conveys the report to the Pollution Control Officer of the Director of Maritime Affairs, to the Response Co-ordinator (RC) or the Deputy Response Co-ordinator (DRC). The shaded blocks outside the blocks for the NRT and OT are not part of NOSCO but are individuals or organisations that the NRT must maintain regular contact with. Other Ministries not listed in the NRT or the OT may be approached by the NRT for assistance or may even be co-opted to the NRT in certain circumstances. The institution providing the leader for a particular section or unit is shown in bold letters. Where more than one institution is listed, and no leader is appointed beforehand, the individuals who will fill leadership positions and their alternates have to be chosen from such individuals.

For ease of communication and monitoring of the response activities of the polluter, it may be necessary for the RC to place a member of the NRT in the operations room of the polluter or at or close to the OSC of the polluter and vice versa.

The Director of Maritime Affairs is the head of the NOSCO and the NRT. His duty as head of the NRT may be delegated to another person entirely. Responsibility for the NRT must be automatically delegated to an appointed deputy Response Co-ordinator during the absence of the Response Co-ordinator.

Fig. 2.1 NATIONAL OIL SPILL CONTINGENCY ORGANISATION (NOSCO)

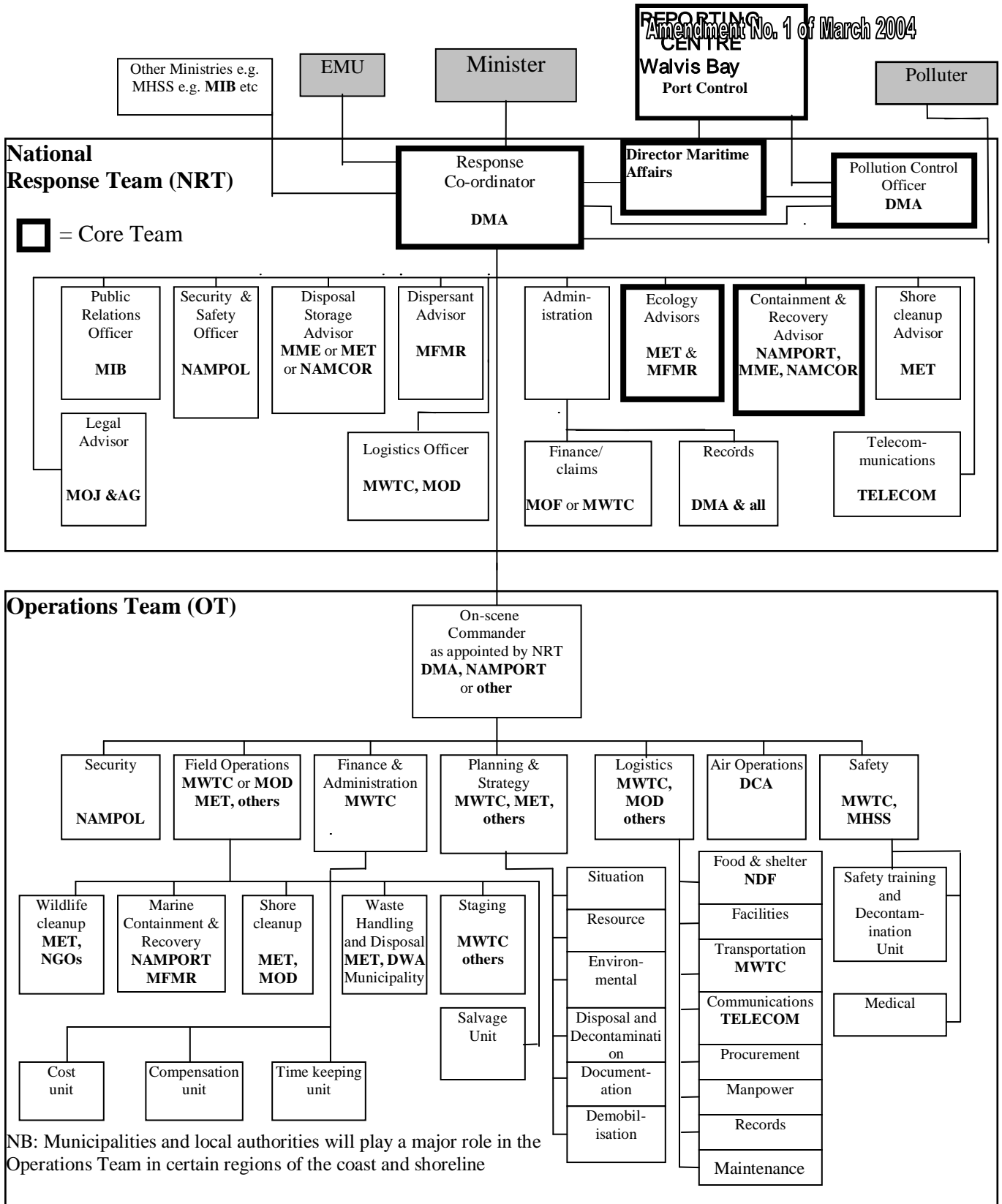


Table 2.1 Responsibilities of Bodies / Institutions of NOSCO

Post/Body	Institution	Responsibilities
Reporting Centre	NAMPORT	<ul style="list-style-type: none"> • Receive all reports of incidence at sea, or in relation to oil pipelines, storage and transport facilities within the geographical area covered by this plan; • Receive all reports of accidents at sea and observed oil spills in neighbouring countries and countries with whom oil spill prevention and response co-operation agreements have been concluded; and • To immediately relay the information to the Pollution Control Officer, the Director of Maritime Affairs and Response Co-ordinator of the NRT (if this is a person other than the Director of Maritime Affairs)
National Response Team (NRT)	MWTC NAMPORT MME NAMCOR MFMR MET	<ul style="list-style-type: none"> • Activate the Operations Team if required; • Monitor the contingency plan response; • Assess <u>response plans</u> of other bodies; • Ensure that other bodies with response plans and the obligation to respond do respond; • Assess <u>response action</u> taken by other bodies during a spill; • Provide any assistance needed by other bodies during their response to a spill within the geographical area covered by this Contingency Plan; • Assist the Response Co-ordinator in deciding whether to activate the full Response Team and/or the Operations Team; • Assist the Response Co-ordinator in deciding on the most appropriate response to an oil spill incident based on the preliminary report by the pollution officer, previously prepared scientific data and the circumstances surrounding the incident; • Assist the Response Co-ordinator with the execution of all decisions; including termination of operation • Lead, monitor and, if necessary, modify the response to an oil spill in accordance with the procedures laid down by this Contingency Plan; • Provide the OT with all the guidance, advice and assistance it needs to function efficiently; • Where necessary, request NAMPORT in Walvis Bay and Silver Mine in South Africa to issue a general warning to shipping and the fishing industry; • Comply with national, regional and international agreements and conventions; —————→

		<ul style="list-style-type: none"> • Keep full and complete record of activities, actions taken, reporting, requests for assistance and claims for compensation, legal, public relations, security and safety, environmental, oil behaviour and properties, marine or shoreline containment and recovery, dispersants, final disposal, beach cleanup, administration and record keeping; and • Develop and provide expertise to the NOSCO and the whole response operation. • Appoint OSC & his deputies
Operations Team (OT)	ALL	<ul style="list-style-type: none"> • Appoint On-Scene Commander, his deputies and section leaders if not already established in the NOSCP; Not NRT • Prevent, contain, and clean-up oil spill in accordance with the directives of the NRT and the NOSCP; • Activate resources to appropriately respond to the spill; • Monitor, advise and if necessary, co-ordinate and contribute to response measures undertaken by the polluter; • Collect and log/record information, data, and reports related to the spill and its mitigation; • Ensure physical safety of operational staff; • Establish contact with and obtain information, data or advice from advisors as and when required for each incident; • Inform and update the NRT with results of measures and decisions taken and implemented; and • Keep full records of activities, decisions, personnel and equipment used, claims, and time spent in handling the incident, winding down operations, and carrying out administration of operation. <p>NB: Participation in the OT does not mean that members are surrendering the roles, responsibilities and authority ordinarily assigned to them as part of their institutional duties. The OT merely enables a consistent and systematic means of organising a variety of agencies with relevant jurisdiction and interest concerning an incident into a single focussed effort. This allows for a uniform and trackable approach that allows all concerned agencies to perform their roles effectively and in unison.</p>

On-Scene Commander and Deputy(ies)	DMA NAMPORT Others as appointed by NRT	<ul style="list-style-type: none"> • Manage and co-ordinate OT operations; • Facilitate communication and co-operation between OT divisions; • Establish polluter's response capabilities; • Observe polluter's response and report to NRT; • If requested, provide assistance to polluter after approval by RC; • Keep RC and NRT fully informed about developments; • Make provisions for receiving, recording, co-ordinating and evaluating of calls; • Keep accurate time sheets including own time spent; and • Any other duties necessary for the efficient operation of OT.
Response Co-ordinator	MWTC (Civil Aviation) / MME, MET, MFMR	<ul style="list-style-type: none"> • Manage & co ordinate NRT operation • Assess incident priorities; • Evaluate spill reports received; • Contact polluters and determine their response capability and strategy; • Activate the operations team if required and implement suitable response strategy; • Co-ordinate specific response activities; • Facilitate, monitor, advise, co-ordinate and contribute to response measures undertaken as required; • Receive and co-ordinate all information from private and public entities offering assistance; and • Co-ordinate with all components of the NRT.
Ecological Advisors	MFMR / MET	<ul style="list-style-type: none"> • Determine, in the light of NRT instructions and in consultation with the OT, appropriate response strategy to combat and clean up spill; and • Monitor and advise on response measures undertaken.
Public Relations Officer	MFA&IB	<ul style="list-style-type: none"> • Receive press releases from NRT; • Serve as central clearing point for the dissemination of public information; • Review and resolve conflicting information and convey media concerns to the RC;

		<ul style="list-style-type: none"> • Co-ordinate and obtain approval from the RC prior to releasing information to the media; • Organise and conduct media briefings; • Provide information to the mass media; and → <ul style="list-style-type: none"> • Give feedback and report to government offices as required (e.g. Offices of the President, PM).
Shore Clean-up Advisor	MET Municipality Civil /Civil Defence	<ul style="list-style-type: none"> • Assess potential safety hazards on an ongoing basis and ensure procedures regarding personnel safety are adequate and adhered to; • Ensure an incident-specific safety plan is prepared in co-ordination with NRT and OT, released and implemented; • Ensure personnel are briefed regarding work safety practices and the safety plan; • Ensure all staff have the basic level of training and knowledge to safely carry out the tasks assigned to them; • Assure that the safety plan is being followed; • Investigate all injury incidents and report status to the OSC; • Liaise with local search and rescue team and offer advice and services; • Work with local public health officials regarding general health concerns related to oil spill contamination (i.e. Beach closures, etc.); and • Traffic & crowd control.
Legal Advisor	MOJ & AG	<ul style="list-style-type: none"> • Asses the situation as it develops; • Ensure that basic legal requirements are complied with and advise RC accordingly; and • Work closely with finance and administration Sections, especially with claims and cost units.
Logistics officer	MWTC / MFMR / MET / NAMPORT	<ul style="list-style-type: none"> • Assess response needs in co-operation with the OSC and response co-ordinators; and • Mobilise resources required to appropriately respond to a spill.
Polluter's representative (if requested)	Polluter	<p>Even if not part of the NOSCO, if requested:</p> <ul style="list-style-type: none"> • Provide single contact point between the polluter and the NRT/OT (government); and • Update polluter and government NRT on decisions and actions taken by each.

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Table 2.2 Responsibilities of the component Sections and Units of NOSCO

Section/Unit	Institution	Responsibilities
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<p>Planning Section</p>	<p>MWTC, MET, Others</p>	<ul style="list-style-type: none"> • Assess the present and projected short-term and long-term situation, so as to enable pro-active incident management; • Obtain feedback from Operations Section and revise it according to changing circumstances; • Collect information on incident e.g. quantity and type of oil, loss rate, projected total loss before spill is secured, weather conditions, sea state, current and projected trajectory of oil over time; • Establish present and projected response resources and schedule of delivery; • Establish natural and economic resources actually impacted and projected impacts based on trajectory, and their sensitivity; • Recommend oil spill response activity priorities in consultation with Environmental Unit; • Recommend oil spill countermeasures (skimming, booming, application of dispersants, etc.); • Develop an effective incident plan based upon projected needs and revise plan to meet changing circumstances; • Prepare alternative strategies and tactical operations based on incident potential and effectiveness of current operations in consultation with OSC; • Indicate to OSC specific areas where assistance and co-operation is required; • Develop units and appoint staff within the section to meet the needs of the response required; and • Keep accurate incident time sheets recording time spent on duty in or for the OT.
<p>Situation Unit</p>		<ul style="list-style-type: none"> ▪ Analyse incident as it progresses and evaluate information e.g.: <ul style="list-style-type: none"> ❑ Quantity and type of oil lost; ❑ Loss rate, if continuing; ❑ Projected total loss of oil before spill is secured ❑ Weather and sea conditions; and ❑ Current location and projected trajectory over time. ▪ Report progress and evaluations to the Planning Section Chief; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
<p>Resource Unit</p>		<ul style="list-style-type: none"> ▪ Record and evaluate status of resources and volunteers committed to the incident; →

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		<ul style="list-style-type: none"> ▪ Evaluate current and projected response resources and schedule of delivery, including personnel, equipment, materials and supplies required in response strategies; ▪ Evaluate impact that additional responding resources will have in meeting the spill response objectives; ▪ Evaluate response resources availability to meet response priorities; ▪ Work closely with Operations and Logistics Sections to ensure effectiveness and availability of resources; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Environmental Unit		<ul style="list-style-type: none"> ▪ Predict potential impact on natural resources from the spill; ▪ Evaluate and advise on the suitability of pre-identified combat and cleanup measures from the sensitivity and response charts to be implemented by the Operations Section; ▪ Identifying potential number and type of wildlife and marine resources that will require recovery and rehabilitation based upon species, sensitivity to oil and mobility; ▪ Identify capture and care protocols and procedures based upon species, location and available care facilities; ▪ Identify logistic support needs for capture and rehabilitation; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Disposal and Contamination Unit		<ul style="list-style-type: none"> ▪ Create an incident-specific waste disposal plan within the NOSCP waste disposal guidelines; ▪ Ensure that wastes are properly classified for appropriate disposal; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Documentation Unit		<ul style="list-style-type: none"> ▪ Record and protect all documents relevant to incident i.e. incident reports, communication logs, injury claims, and situation status reports; ▪ Ensure that other sections and units maintain the

		<p>relevant records associated with the incident; and</p> <p style="text-align: right;">—————→</p> <ul style="list-style-type: none"> ▪ Keep accurate incident time sheets in a hard cover book recording own time spent on duty in or for the OT. <p>NB: All documentation should be initiated in accordance with the Guidelines developed by IOPC FUND</p>
Demobilisation Unit		<ul style="list-style-type: none"> ▪ Develop a plan for the safe, competent, and cost-effective demobilisation of resources committed to an incident; and ▪ Keep accurate incident time sheets recording own time spent on duty in or for the OT.
Field Operations Section	MWTC MET MOF and Others.	<ul style="list-style-type: none"> • Assist the OSC and planning section chief to develop strategic goals and tactical objectives for the incident; • Develop incident-specific operational action plans based on the Request or release resources through the OSC; • Consult with OSC on the overall incident action plan; • Update the OSC on the situation and resource status of operations; • Provide reports on efficiency measures; and • Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Staging Unit	MWTC Others	<ul style="list-style-type: none"> ▪ Identify areas from which operations will be conducted; ▪ Stage equipment and supplies at identified locations i.e. <ul style="list-style-type: none"> ❑ Onshore cleanup staging area(s) ❑ Vessel support base(s) ❑ Helicopter landing / departure areas ❑ Fixed wing aircraft landing / departure areas. ▪ Report on developments and progress to field operations chief; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Marine Containment and Recovery Unit	NAMPORT MFMR	<ul style="list-style-type: none"> ▪ Identify logistic support needs for booming, skimming, spraying and deployment operations; ▪ Co-ordinate delivery and deployment of materials and equipment; ▪ Maintain estimates of recovered oil by booming and

		<p>skimming operations;</p> <ul style="list-style-type: none"> ▪ Identify field conditions related to skimming and booming operations; ▪ Provide field status booming and skimming operations to Operations Section Chief; → ▪ Provide alternative booming and skimming strategies based on field conditions; ▪ Report on developments, progress and success or otherwise of operations; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Shore Clean-up Unit	MET MOD	<ul style="list-style-type: none"> ▪ Identify logistic support needs and co-ordinate with Logistics Section; ▪ Deploy field units; ▪ Manage personnel and equipment necessary to accomplish cleanup priorities and strategies established by the NOSCP, the OSC and the planning section; ▪ Report on developments, progress of cleanup methods to Field Operations Chief; ▪ Project cleanup completion date; ▪ Obtain signoff on cleanup activities if required; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Salvage Unit	As appointed by NRT	<ul style="list-style-type: none"> ▪ Co-ordinate the safe salvage of vessel(s) involved in the incident. <p>NB: Due to the technical complexity of salvage operations, this task may be assigned to parties outside of the NRT, but the OSC and operations chief should continue to be involved to ensure that the operation takes place to their satisfaction.</p>
Wildlife Cleanup Unit	MET NGOs	<ul style="list-style-type: none"> ▪ Identify logistics support needs; ▪ Assist in wildlife recovery and de-oiling; ▪ Maintain central clearing point for recovered wildlife; ▪ Maintain records of recovered wildlife, including condition, tagging procedures, etc; ▪ Co-ordinate cleanup operations between various volunteer and official organisations; ▪ Report status of recovery operations to Operations Section Chief; ▪ Co-ordinate caring and feeding of wildlife until it can be released into the wild again; ▪ Keep accurate records of all goods and services

		<p>bought, used and/ or acquired and its cost;</p> <ul style="list-style-type: none"> ▪ Keep accurate incident time sheets recording time spent on duty in or for the OT. →
Waste handling and Disposal Unit	MET DWA Municipa- Lity MAWRD (DRM)	<ul style="list-style-type: none"> ▪ Recommend support requirements to Logistics Section e.g. fixed /mobile/temporary/permanent storage facilities and transport; ▪ Liase with planning unit to identify capacity constraints in offloading recovered oil contaminated materials at the rate needed; ▪ Maintain records of all recovered materials; ▪ Direct transportation and final storage of recovered materials; ▪ Reporting status of disposal operations to field operations section chief; ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT; and ▪ Identify suitable transport routes with NAMPOL and local authorities to ensure minimum pollution of roads etc. <p>NB: Disposal operation should comply with the provisions of the Water Act and Public Health Act.</p>
Logistics Section	MWTC MOD MOF MHA Others.	<ul style="list-style-type: none"> • Ensure that all logistics functions are provided during an incident; • Liase closely with all sections needing logistics support; • Manage service and support resources required for the incident; • Establish additional functional units when needed to avoid work overload and to maintain control; • Liase with the OSC in acquiring additional logistics support; • Keep the OSC regularly updated on developments, progress and needs; and • Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Food and Shelter Unit	NDF	<ul style="list-style-type: none"> ▪ Provide meals to all field teams at the location of their activities; ▪ Provide lodging for personnel involved with an incident at various central localities. ▪ Keep accurate records of the amount of food and drink provided and its cost.

		<ul style="list-style-type: none"> ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Facilities Unit		<ul style="list-style-type: none"> ▪ Ensure availability of facilities i.e. □ A Command Post (CP) with one large room for support staff and one room large enough for incident commanders and other appropriate personnel to hold meetings and conferences; □ An Incident base.** ▪ Provide fixed facilities including catering, accommodation areas and sanitary facilities for an incident; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT. <p>** An incident base serves several functions. It is the location where primary support activities are performed and it serves as a reporting and marshalling area for resources not considered available for immediate assignment. The base is not commonly established for small or minor events. However, it may be established during large oil spills that affect a large geographical area.</p>
Transportation Unit	MWTC NDF	<ul style="list-style-type: none"> ▪ Obtain sufficient transport to ensure that ALL onshore and offshore operations and units function effectively and that activities can be carried out fast and efficiently; ▪ Refuel, maintain or repair vehicles and vessels; ▪ Transport personnel and supplies; ▪ Prepare incident traffic plan if necessary to facilitate the flow of vehicles, vessels, machinery and equipment within the incident area; ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT; and ▪ Keep accurate records of all goods / services used, hired or acquired and its costs.
Communications Unit	MWTC TELECOM	<ul style="list-style-type: none"> ▪ Develop an incident communications plan; ▪ Distribute communications equipment; ▪ Supervise communications network; ▪ Keep accurate records of goods and services bought, used hired or acquired and its costs; ▪ Maintain/repair communications equipment; and ▪ Keep accurate incident time sheets recording the time

		spent on duty in or for the OT.
Procurement Unit		<ul style="list-style-type: none"> ▪ Procure goods or services from vendors; ▪ Acquire equipment and supplies needed during incident operations; ▪ Maintain an inventory and control of these resources; ▪ Keep accurate records of goods and services bought, used hired or acquired and its costs; ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT; and <p>NB: Equipment and supplies may include additional booms, zodiac-style boats, skimmers, etc., or may be expendable supplies such as overalls, sorbants or dispersants etc.</p>
Manpower Unit		<ul style="list-style-type: none"> ▪ Find sufficient manpower for operation from Ministries, Civil Defence, Local Authorities, Municipalities and volunteer organisations; ▪ Serve as a mustering and departure point for deployment of manpower; ▪ Provide suitable personal protective clothing and equipment (PPE); ▪ De-contamination of personnel after working hours; ▪ Keep records of all such PPE issues and reconcile their return. ▪ Record details of the numbers of people supplied; ▪ Ensure that details of numbers and places of deployment are forwarded to the leaders of all sections and units or were the manpower is being deployed; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Records Unit		<ul style="list-style-type: none"> ▪ Receive all records of equipment, vessels, vehicles, manpower, time, claims from all units; ▪ Keep a register of all the records; ▪ Keep all the records of the Logistics Section; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Maintenance Unit		<ul style="list-style-type: none"> ▪ Carry out maintenance of clean-up equipment; ▪ Keep accurate records of all equipment repaired and services bought, used, hired or acquired and its costs; and ▪ Keep accurate incident time sheets recording the time

		spent on duty in or for the OT.
Air Operations Section	DCA, MFMR and MOD	<ul style="list-style-type: none"> • Provide air support services to response personnel i.e; □ Oil spill observation and trajectory mapping → □ Natural resources damage assessment □ Deploy and retrieve personnel to/from distant or inaccessible areas. • Identify response needs and resources available and providing same when needed; • Liaise with air traffic control, as necessary to schedule and co-ordinate flight departures and arrivals; • Maintain a status board of flight resources and status; • Maintain flight safety; • Keep accurate records of aircraft utilisation and fuel consumption and its costs; and • Keeping accurate incident time sheets recording the time spent on duty in or for the OT.
Security Section	NAMPOL	<ul style="list-style-type: none"> • Provide security and traffic control services wherever they may be needed; • Keep curious onlookers and scavengers from getting in the way of operations, equipment and recovered materials; • Keep members of the press or public from interfering with operations; • Provide guidance on routing of vehicles from spill sites to temporary or final sites; • Perform other duties that fall into their normal line-function duties as they become necessary; and • Keep accurate incident time sheets recording the time spent on duty in or for the OT.

Safety Section	MWCT MHSS and Others	<ul style="list-style-type: none"> • Ensure safety of personnel; and • Provide initial treatment for any injuries or illnesses that may occur.
Safety Training and Decontamination Unit		<ul style="list-style-type: none"> ▪ Train teams and individuals on the use of specific types of equipment; ▪ Train teams and individuals on any specific type of work; ▪ Train teams and individuals on how to wear protective clothing; ▪ Establish decontamination zone, ▪ Train teams and individuals on how to follow the right safety procedures; and ▪ Decontaminate personnel and response equipment in the stepwise sequence and in compliance with health and safety regulations; and ▪ Keep accurate incident time sheets recording the time spent on duty in or for the OT. <p>NB: Decontamination takes place in an organised series of procedures in a specific sequence to reduce contamination to personnel and equipment until no contamination is present. Each procedure is performed at a separate station, stations being lined up in the sequence of decreasing contamination. (See Table 2.3 below)</p>
Medical Unit		<ul style="list-style-type: none"> ▪ Provide emergency medical treatment to response personnel; and ▪ Liaise with MHSS Amendment No. 1 of May 2001 <p>NB: This unit does not provide treatment for the public at large.</p>
Finance and Admin Section	MWTC	<ul style="list-style-type: none"> • Provide incident logbooks to all Sections/ Units; • Provide documentation of all incident costs; • Provide guidance to the OSC on financial issues related to incident operations; • Provide all finance functions needed during an incident; • Establish functional units as required to maintain an acceptable workload and control; • Make arrangements for: <ul style="list-style-type: none"> ❑ Payment of personnel costs; ❑ Cost recovery; ❑ Timely administration of contracts; ❑ Future payments; ❑ Future budgeting; • Keep complete records of all claims; and • Keep accurate incident time sheets recording the time spent on duty in or for the OT.
Time Keeping Unit		<ul style="list-style-type: none"> ▪ Keep time keeping for personnel working at an

		<p>incident</p> <p>NB: To do this effectively each agency, responsible party and all contractors will need to address this function. A similar format and procedure will ensure a smooth working system. To ensure this happens, each agency, responsible party, contractor, etc., should have some formalised method of checking in and out for all personnel.</p>
Compensation / Claims Unit		<ul style="list-style-type: none"> Keep record and handle financial claims related to damages created by the spill, taking into account guidelines developed by the IOPC FUND.
Cost Unit		<ul style="list-style-type: none"> Track costs, analyse cost data, make cost estimates, contracts and recommending cost-saving measures. <p>NB: The cost unit should be aware of the framework of national and international laws, conventions and claims procedures within which it operates. A summary guidance document should be prepared to lead the unit in this regard.</p>

Table 2.3

Contamination Zone	Decontamination procedure sequence	Station number in order of decreasing contamination
Hot zone (most contaminated)	Tool/equipment drop	1
Boot drop station not listed	Rubbish drop	2
Warm zone (less contaminated)	Wash outer garments	3
	Rinse outer garments	4
	Remove outer garments	5
	Wash/rinse inner garments	6
	Wash boots	7
Cold zone (least contaminated)	Face-piece drop	8
	Inner glove drop	9
	Shower/changing area	10

CHAPTER 3

3. GENERAL DUTIES AND RESPONSIBILITIES

In the event of an oil spill, each institution will be responsible for the protection of its own sea-water intakes, sensitive resources and installations within its areas of responsibility. In view of this, each institution is required to prepare its own protection and clean-up measures.

Such measures should include the drawing up of contingency plans for the protection of the marine environment within that specific area.

Where possible, the plans must include the following:

- Description of water intake structure or sensitive installation,
- Water flow characteristics,
- Equipment on hand,
- Methods of deployment,
- Ways of disposing recovered oil - only in co-ordination with local and national plans,
- Training of site personnel, and
- A list of persons responsible for carrying out the plan.

These plans must be made available to the NRT for review and approval as they are to be incorporated into the National Oil Spill Contingency Plan (NOSCP). The plans must be kept up to date to reflect the current situation in the country. Each institution must structure its plan to enable it to participate in a national event if needed. Plans must be co-ordinated with the NOSCP.

The polluter is always liable for cleaning up his own spill and/or reimbursing the government through its lead agency for the costs incurred as governed by legislation. However, the lead agency has an overall responsibility for protecting both private and public interests.

3.1 Government Responsibilities

Response to general emergencies in Namibia is regulated by a National Emergency system. Under this system, the Namibian Cabinet has the highest authority. The National Emergency Management Committee (NEMC) reports to Cabinet through the Secretary to the Cabinet. It is composed of representatives of Government and non-Governmental agencies. It is the principal policy formulating and coordinating body.

(a) Emergency Management Unit

The Emergency Management Unit (EMU) is the executive body of the NEMC and is directly responsible to the Secretary to Cabinet. In the exercising of its functions, it may take direct, command and run an emergency operation itself or it may rely on specialist emergency teams to handle specific types of emergencies. Such specialist teams fall under the overall umbrella of the EMU but they resort under specific Ministries where they carry out the functions of the relevant Ministers in terms of specific legislations.

With regard to oil spill contingency planning the EMU is not directly involved in responding to oil spills. However, it is available to facilitate high-level communication between the National Response Team and itself and Cabinet, between Ministries and between Namibia and other governments. It can assist in resource mobilisation if required, particularly from government and international sources. The EMU maintains a register of all available emergency resources in Namibia.

(b) Ministry of Works, Transport and Communications

The Ministry of Works, Transport and Communications (MWTC) is responsible for ensuring that all mechanisms and resources are available and in place to efficiently and effectively identify and respond to an oil spill incident. As such, it is responsible for:

- Establishing and maintaining a Reporting Centre, a National Oil Spill Contingency Organisation with its National Response Team, its Operations Team and Field Teams and the relevant resources necessary for the rapid and efficient response to oil spill emergencies or threats thereof;
- Establishing, on 24 hours basis, the capacity to receive, verify evaluate all reports on oil spill or possible oil spills and to initiate any response as appropriate;
- Establishing and maintaining an appropriately equipped Control Room with for example adequate telephone lines, fax machines, computers, recording equipment for rapid, up-to-the-minute records of calls, events, decisions and instructions;
- Resource mobilisation and facilitation including co-ordinating with other government bodies, agencies and the private sector to ensure appropriate and sufficient resources are available to respond to an oil spill incident;
- Ensuring adequate storage and maintenance of oil spill equipment and resources;
- Ensuring adequate training and exercise planning for personnel;
- The development of an exercise programme to ensure a continuous state of readiness;
- Facilitating communication and co-operation between various government authorities and agencies and non-government organisations;
- Conducting post-spill reviews to assess the suitability of actions taken and to identify problems encountered in order to improve this plan;
- Reviewing the national oil spill contingency plan on a regular basis;
- Providing information to the public and media; and

- Maintain close contact with national oil spill response organisations of neighbouring states and within the framework of West and Central Africa Regional seas, Co-operation (WACAF).

Most of the functions allocated to this Ministry will be performed by the Directorates of Maritime Affairs, Civil Aviation and Department of Works. However, other Directorates could also become involved as the need arises.

The Directorates of Maritime Affairs and Civil Aviation will have the following roles to play during an oil spill:

(I) Directorate of Maritime Affairs

The Directorate of Maritime Affairs will act as the co-ordinating agency of the Ministry and report to the Permanent Secretary. It will be responsible for:

- Receiving and passing on information related to oil spills;
- Appointing and providing the Response Co-ordinator and the Duty Officer;
- Preventive and operational maintenance of oil spill equipment;
- Co-ordinating the hiring of equipment, equipment teams, boats etc.;
- Collection and labelling of oil samples and keeping them secure for future analysis;
- Provision of trained team leaders from own or other sources, and authorising the hiring of personnel to operate GRN oil spill clean-up equipment during clean-up operations;
- Carrying out or organising surveillance of the spill and giving feedback to the NRT;
- Organisation and supervision of offshore clean up operations;
- Co-operate with the Ministry of Environment and Tourism as well as other authorities for onshore and beach cleaning operations;
- Any other duties as assigned by the National Response Team and the PS;
- Provide legal advice on maritime national and international laws and conventions related to marine pollution;
- Regular reviewing and updating of the NOSCP plan;
- Ensuring proper implementation of the plan;
- Ensuring the integration and mutual support of the plan by local, regional, national and international institutions;
- Ensuring the proper training of personnel at managerial, technical and operational levels;
- any other functions as assigned by the Permanent Secretary of Works, Transport and Communication.; and
- Provide a mechanism to facilitate international and regional assistance.

(II) Directorate Civil Aviation

The Directorate will be responsible for:

- Routine air surveillance through civilian aircraft reports;
- Hiring of surveillance/rescue aircraft;
- Facilitating entry permits for permanent and temporary air surveillance units;
- Providing weather report and oil slick movement predictions to air surveillance units; and
- Facilitating over-flight and landing clearances for foreign air surveillance units.

(c) Namibian Ports Authority (NAMPORT)

During routine work, NAMPORT should be responsible for:

- Co-organising and maintaining reporting and operation centre;
- Training its personnel for possible oil spill situations;
- Receiving and passing on information on oil spills;
- Assisting in providing operation centre for oil spills;
- Appointing the OSC at sea when necessary;
- Providing team leaders for beach cleaning where necessary;
- Assigning any other person to the operational team as may be required; and
- Performing any other task as assigned by the NRT.

(d) Roads Contractor Company (RCC)

In case of emergencies, the RCC Heads at the following regional headquarters should be contacted:

Karas	-	Keetmanshoop
Hardap	-	Windhoek
Erongo & Kunene	-	Swakopmund

RCC will be responsible for:

- Assisting, in co-ordination with the OSC and MET, onshore site construction;
- Provision of transport for disposal of recovered oil, oily materials and other wastes;
- Assigning representatives to the operational team; and
- Any other duties as requested by the NRT.

(e) Ministry of Fisheries and Marine Resources

During routine work, MFMR should be responsible for:

- Monitoring and detection of possible oil spill at sea;
- Identifying individuals for training;
- Providing the OSC where necessary;
- Providing and controlling all patrol vessels and crew;
- Providing aircraft for aerial surveillance;

- Assigning representatives to the operational team;
- Assessing the impact of oil on marine resources;
- Providing supplementary flow of information to participating offshore and onshore units; and
- Any other duty as assigned by NRT.

(f) Ministry of Environment and Tourism (MET)

During routine work, the MET should be responsible for:

- Monitoring and detecting possible spills along the coast;
- Identifying personnel for training;
- Providing sensitivity maps and shoreline clean-up manuals;
- Organising, supervising and, where necessary, providing team leaders for onshore clean-up operations;
- Assigning representatives to the operational team;
- Any other duty as determined by NRT;
- Collecting and labelling oil samples from beaches/onshore and other dunes and hand it to DMA for future analysis;
- Providing legal advice on environmental laws and other related matters; and
- Any other duties as assigned by the NRT.

(g) Ministry of Mines and Energy (MME) and NAMCOR

- During routine work, the MME should be responsible for:
- Monitoring mining and petroleum exploration and production activities;
- Receiving and passing on information on oil spills;
- Identifying personnel for training;
- Providing expertise available within the Ministry as well as within NAMCOR in;
- Case of any emergency arising from oil spills in the Namibian territorial waters or coastal regions;
- Facilitating clean up measures especially when pollution originates from offshore mining and petroleum activities; and
- Any other duties as assigned by the NRT.

(h) Ministry of Finance (MOF)

The Directorate of Customs and Excise will be responsible for:

- Keeping records and providing immediate clearance of equipment brought into Namibia for and during oil spill emergency operations;
- Ensuring that hired equipment will be free of customs duties and taxes; and
- Any other task as assigned by the NRT.

NB: Rebate item 4.12.11 should always be used.

(i) Ministry of Home Affairs (MHA)

(I) Namibian Police will be responsible for:

- Establishing Security Zones and keeping polluted areas clear of spectators when necessary;
- Providing security to temporary stores for spill clean-up equipment and recovered oil;
- When possible, providing vehicles /vessels at the request of the NRT;
- Providing team leaders to any response units;
- Providing traffic control when necessary; and
- Any other functions as assigned by the NRT.

(II) The Department of Immigration will be responsible for:

- Providing immediate visa and other clearance for foreign oil spill experts arriving in Namibia to advise on or participate in any in an emergency oil spill clean up operation;
- Assigning a person to assist the NRT with the above; and
- Any other functions as assigned by NRT

(j) Ministry of Defence (MOD)

The Ministry will be responsible for:

- Providing of personnel, transport, tents, field kitchens, field toilets etc.;
- Assisting in air surveillance where necessary;
- Identify personnel for training; and
- Any other duties as assigned by the NRT.

(k) Ministry of Foreign Affairs & Information and Broadcasting (MFA&IB)

(I) The Foreign Affairs Department will be responsible for;

- Facilitating matters concerning foreign governments;
- Informing foreign governments if oil spills are threatening to move into their territories, or if assistance of any kind is required;

(II) The Information and Broadcasting Department will be responsible for:

- Providing assistance to NRT head with regard to media briefings;
- Planning and conducting media briefings;
- Any other duties as assigned by the NRT; and
- Announce termination of operation.

Please Note: Normal diplomatic correspondence or communication is not fast enough for communication between states in case of an oil spill of any significance. Procedures should be developed to allow the MWTC to communicate directly with the national responsible authority of a neighbouring state in case of a transboundary oil spill.

(l) Ministry of Justice (MOJ) and Office of the Attorney General (AG)

The Department of the Attorney General will be responsible for:

- Providing legal advisory services to the lead agency and the NRT;
- Assigning a legal person to the NRT; and
- Speeding up payment of both local and foreign accounts.

(m) Ministry of Higher Education, Youth and Employment Creation

The Directorate of Youth Development will be responsible for:

- Organising and providing supervision of volunteers;
- Assisting the wildlife rescue centres in the collection, cleaning and rehabilitation of oiled birds and mammals; and
- Assisting where required in any part of the operation.

(n) Ministry of Agriculture, Water and Rural Development

(I) The Department of Water Affairs in co-operation with the **Ministry of Environment and Tourism** will be responsible for:

- Identify the disposal site;
- The ensuring of proper disposal of recovered oil; and
- Any other duties as assigned by the NRT.

3.2 Local Companies

(a) Industry Responsibilities

All spills of oil and petroleum products are the responsibility of the polluter. Tier 3 incidents (very large spills) are generally caused by the petroleum industry and are generally handled at national and international level. The NRT will normally handle Tier 1 and 2 spills (small and medium spills). However, in the absence of the polluter being identified or if the polluter is unable to handle a Tier 3 spill, the NRT must handle such a spill. If the polluter is capable of handling Tier 1 and 2 spills, then it shall also handle spills of its own making of this size. All spills are to be handled to the satisfaction of the NRT and the Ministry of Works, Transport and Communication

The Companies are categorised as follows:

i. Polluter

The Polluter will be responsible for:

- Facilitating immediate response to any oil spill within its area of responsibility;
- Oil handling industry which handles oil for commercial reasons or as a source of energy for its primary production should develop an emergency response plan. The plan shall be in compliance with the NOSCP and its guidelines;
- Reporting the spill and the polluter's anticipated actions to the NRT duty officer;
- responding to the spill (prevention, control, clean up) and requesting assistance when necessary;
- Accepting financial liability for the spill and costs of control, combating and clean up;
- Burning oil mixed with debris in their oil field dumps, if NRT and MET deem this

- necessary;
- Receiving recovered oil and disposal thereof in co-ordination with NRT and MET; and
- Assisting in analysing and identification of recovered oil if so required.

ii. Non-polluters

A non-polluter will:

- Respond to the spill according to local plans and agreements;
- Provide assistance to polluters or NRT, if requested by either of them; and
- Operate within the provisions of the NOSCP.

3.3 Other Institutions

(a) Wild Life Rescue Centres

The Centres will be responsible for:

- The cleaning and rehabilitation of oiled birds and mammals in co-ordination with MET;
- Any other task as determined by NRT.

(b) Local Municipalities

The Municipalities will be responsible for:

- Providing any service as prescribed by local plans;
- Providing maps and charts as necessary;
- Providing position fixing equipment as required;
- Assisting with the cleaning up;
- Other services as required by the NRT;
- Providing room for media briefings;
- Providing leaders for their own teams; and
- Assist in the designation of area (s) for immediate and/or final disposal of oily wastes.

(c) Telecom Namibia: Walvis Bay Radio

The Walvis Bay radio will be responsible for:

- Providing radiotelegraph and long range radio communication when required;
- Maintaining communication facilities at substations including aeronautical transceivers; and
- Co-operating with the MFMR in ensuring good communications and a reliable flow of information between the onshore and offshore units.

3.4 General requirements

Each Ministry/institution mentioned above, shall designate a focal person and an alternative to the NOSCO. To ensure competence in an emergency, a high degree of understanding within the NRT and of the NOSCP and well trained teams and decision-makers, the focal persons and their alternates shall be appointed on a permanent basis and

all should attend all NRT meetings and relevant activities related to the NOSCP. When the focal persons or their alternatives change their posts, they must be replaced and the DMA should be informed of their names and contact details. MWTC will assemble the NRT once a year to plan for annual activities, including exercises. MWTC will always assemble the NRT after any oil spill, exercise or training activities in which it participated in order to review that particular activity. This will help the team to improve its future performance.

3.5 Support by institutions outside NOSCO

3.5.1 Support from national sources outside the contingency organisation

Any volunteer willing to assist in an oil spill clean up operation can only do so with the permission of the NRT or the approval of the Permanent Secretary of the MWTC.

The facilitation of a large-scale, long-lasting oil spill response operation will require huge support from many components of society and industry. The support needed could include a multitude of different functions e.g. break down of equipment, a missing spare part, the need for special fuel, lubricant or special tools, more personnel, a boat, a helicopter, medical emergency etc. The NRT should establish standard administrative procedures to deal with such requests on a very short notice.

Such procedures must cover all aspects of procurement, including approval procedures, exemption from normal procurement procedures, financing, registration, etc.

3.5.2 International co-operation and co-ordination

As a member of the international maritime community, Namibia is obliged to establish a national system for responding promptly to oil pollution incidents.

This system should be in line with the provisions of the International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (OPRC90) and the Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region, (WACAF) signed in Abidjan, Cote d'Ivoire, 1981 and related protocols (Abidjan Convention 1981)

Present stock of oil spill combating equipment has its limitations with regard to protecting shore lines from a major oil spill approaching the coast. Basically, they are re-designed for harbour and sheltered bays only. Contingency cooperation between SADC members will be taken into account.

To secure support from international sources such as international stock piles of response equipment or from neighbouring states, arrangements/agreements have to be made in accordance with IMO Resolution A. 625(15) in "**Arrangements for the entry and clearance of Marine Pollution Response Resources During Emergency Situations**".

National procedures of funding logistic support have to be established until international

compensation and claim arrangements can be activated.

Also procedures for communication with supporting countries or agencies have to be put in place. Practically, liaison officers can be exchanged to take care of domestic communication in relation to local authorities and industries.

3.6 Education, training and exercises

The objective is to train personnel to handle the responsibilities involved in oil spill response, containment and clean up.

Training shall be provided on three levels:

- Planning, command and control, and communication;
- Deployment and operation of specific items of equipment; and
- Maintenance of equipment.

Training should be reinforced by regular and realistic exercises in which all aspects of the operation are put to the test.

Management Training: The RC and members of the NRT in spill management shall have a good understanding of:

- The nature and effects of oil spill;
- The assessment of the threat posed by a particular spill;
- The methods available to combat and deal with an oil spill;
- The maintenance requirements of the equipment available; and
- How to organize and run exercises.

Suitable courses of this nature can be conducted following IMO and other international recognised training programmes. The main components of this type of training are table-top exercises, planning and reviewing of exercises or operations conducted.

Operator Training: Training should be reinforced by regular and realistic exercises in which all aspects of the operation are put to the test. Training for personnel identified to operate specific equipment will be arranged with other stakeholders of who might already have trained equipment operators. Where there is not possible courses should be arranged with manufacturers or local representatives.

Maintenance Training: It is the responsibility of the MWTC to ensure that a team of qualified persons is trained to maintain the equipment before, during and after oil spills.

CHAPTER 4

4. OIL SPILL RISKS

4.1 Activities and risks

Namibian coastal waters come under threat from oil-based pollution from coastal shipping and fishing and offshore petroleum and mineral exploration and production activities.

More than 200 Namibian registered fishing vessels and foreign cargo vessels and tankers pass through Namibian waters [EEZ] on a daily basis.

Offshore petroleum and mineral exploration and production activities along the Namibian coast are not regarded as a major threat of pollution but should oil be found and production commence, there could be potential for a major spill.

Minor localised oil spills have occurred along the coast from the sinking of fishing vessels, from ruptured hulls of cargo vessels and in the ports of Walvis Bay and Lüderitz from time to time.

4.2 Types and volumes of oil that could be spilled

Spills could originate from any type of ocean-going vessel in Namibian waters. Bulk fuels are normally offloaded at Walvis Bay twice a month. HFF (Heavy Furnace Fuel) is offloaded about 3 to 4 times a year. Lubricating oils in drums in containers are offloaded about once a week.

Only gas oil (diesel) is delivered through the Walvis Bay harbour pipeline: capacity 80 tonnes/hour. Inland delivery is by road fuel tankers of 18 – 30 tonnes capacity or by rail tank cars of 38 – 45 tonnes capacity.

4.3 Guides Sensitivity Maps

GIS mapping of isolated portions of the coastline is being carried out by various organizations and institutions. As this mapping tool is ideal for portraying priority response areas, by layering sensitive zones, co-operation and collaboration by the different mappers was sought, to produce reference maps which can be used for the National Oil Contingency Plan. Geological Survey have a base map of the coastline and have agreed to assist by incorporating the following features :

- coastline type (rocky/sandy)
- commercial fishing grounds
- spawning areas of commercially important fish species
- seal colonies
- aquaculture sites

- dolphin occurrence
- coastal and sea bird concentrations
- wetlands
- key recreational/tourist beaches
- urban and industrial areas
- harbour areas and layout
- diamond mining
- Offshore offloading terminal at Oranjemund

Additional feature which will facilitate response in the event of an oil spill are also to be included on these maps :

- municipalities
- access roads to beach areas
- police stations
- satellite stations
- radio stations
- conservation offices
- depots where oil combating equipment is stored
- oil disposal sites
- small vessel launching sites

The mapping programme being used by Geological Survey is Arc-Info. More detail can be incorporated as it becomes available. The hard copies will be used to provide:

- a) large-scale maps of the entire coast: objective prioritizing of sensitive areas can be made by layering - this will facilitate decision-making by the NRT
- b) small-scale sections of the coastline to reference, in the event of localized oil pollution - these will facilitate actions taken by the OT.

Hard copies of the mapping system must be on hand to both the NRT and the OT.

Note : Entering of data to produce the maps will take several months; in the interim period the sensitivity maps showing some of the features listed above are available from Geological Survey: contact persons Drs. Schneider, Schreiber, Petzel.

4.4 Sensitive areas and areas to be protected

In order to protect the resources identified by the sensitivity maps, priorities for protection and clean-up must be established on the grounds of vulnerability, environmental sensitivity and socio-economic importance.

4.4.1 Coastal wetlands and birds

There are several sensitive coastal wetlands along the coast of Namibia that would be vulnerable to oil pollution. These sheltered, semi-enclosed areas provide specialized habitats to estuarine fauna and huge bird populations. A slick driven onshore at these

localities would accumulate and not be exposed to rapid natural weathering by heavy wave action, as occurs on the open shore.

The coastal wetlands are situated as follows :

• Kunene River Mouth	17 ⁰ 15' S	11 ⁰ 45' E
• Cape Cross lagoons	21 ⁰ 45' S	13 ⁰ 50' E
• Swakopmund Saltworks	22 ⁰ 30' S	14 ⁰ 15' E
• Walvis Bay Wetlands	23 ⁰ 00' S	14 ⁰ 28' E
• Sandwich Harbour	23 ⁰ 20' S	14 ⁰ 28' E
• Luderitz lagoon	26 ⁰ 30' S	15 ⁰ 00' E
• Orange River Mouth	28 ⁰ 38' S	16 ⁰ 26' E

Both the Walvis Bay Wetlands and Sandwich Harbour have been proposed as sites of international importance to be registered under the Ramsar Convention on Wetlands.

4.4.2 Kunene River mouth

This wetland consists of a tidal lagoon, several islands in the estuary and the river mouth itself which is 20 to 50 m wide. Water depth in the lagoon rarely exceeds 70 cm and its length varies between 2 and 4 km long.

This area is a major staging post for palaeartic waders, and high numbers of shorebirds are found in the region in peak migration periods.

The area also supports some Nile soft shelled terrapins *Trionyx trianguis* and a healthy population of Green Turtles *Chelonia mydas*.

Nile crocodiles *Crocodylus niloticus* inhabit the river banks and islands and the estuary supports several species of endemic fish as well as the freshwater prawn *Macrobrachium vollenhoveni*.

4.4.3 Cape Cross Lagoons

At times sea water washes over the sand barrier into the saline lagoons situated south of the promontory of Cape Cross. These lagoons periodically support large populations of shore birds.

4.4.4 Swakopmund Salt Works

Sea water is pumped from the open shore into a series of evaporation ponds used for commercial salt production. Oysters are cultured in the ponds nearest to the inlet. A large wooden guano platform, which supports up to 250 000 pairs of Cape Cormorants, has been constructed in one of the evaporating ponds. Large numbers of Greater and Lesser Flamingoes, as well as some rare bird species are attracted to this area.

4.4.5 Walvis Bay Wetlands

These wetlands include the Walvis Bay Lagoon, the “second lagoon”, the artificially flooded areas south of the salt works and the eastern half of Pelican Point.

Significant populations of palaeartic and intra-African migrant and resident breeding wetland birds (37 000 - 79 000) occur throughout this region. This includes over 50% of the world population of Chestnut-banded Plover, 60% of the Southern African population of Lesser Flamingoes and 38% of sub-continental Greater Flamingoes.

4.4.6 Sandwich Harbour

A freshwater wetland in the north, fed from an underground aquifer, results in a lagoon of brackish water. Under influences of coastal currents and tidal flow the original lagoon has been cut off from a new tidal lagoon. The southern mudflats cover approximately 16 km² and comprise a high tide flooded section and large lagoon.

The area supports large numbers of roosting terns, flamingoes and cormorants; and is important for palaeartic and intra-African migratory and resident birds.

4.4.7 Luderitz lagoon

The sheltered lagoon offers several wetland sites, characterized by fine sands with high biotic content and salt marsh vegetation. The area supports populations of Cape Cormorant and several thousand wetland birds. In addition the lagoon supports aquaculture (oysters and seaweed).

4.4.8 Orange river mouth

The Orange River mouth includes all natural and artificial wetlands within the river-affected area seaward of the Sir Ernest Oppenheimer bridge - some 10 km inland.

The 2 km wide river mouth opens to the sea via a narrow channel through a sand bar which effectively creates extensive sand/mud flats and island areas. Limited tidal penetration therefore occurs upstream. The wetland, which supports large numbers of shore birds, is regarded as the sixth most important in southern Africa.

The danger of oil contamination to birds is either directly onto plumage, or pollution of nesting sites and feeding habitats. Invertebrate fauna is smothered by oil.

A species worthy of special mention along the Namibian coast is the Damara Tern - an endangered species endemic to Namibia. Local resident populations and known nesting sites are found along the open coast from Mowe point in the north to Conception Bay in the central region, where contamination could have severe effects.

4.5 Marine resources

The commercial marine resources of Namibia can be divided into those inhabiting coastal and near shore waters and those found offshore. The distribution of pelagic, mid-water and demersal fishing grounds as well as aquaculture, rock lobster, fishing activity, dolphin occurrence, seal and bird colonies are shown in the sensitivity maps.

Oil pollution reaching the shore will cause the greatest threat to the following marine resources: the aquaculture ventures (Luderitz lagoon, the eastern shore of Pelican Point, Walvis Bay Saltworks, Swakopmund Saltworks and Mile 4), the commercial rock lobster fishing in the Luderitz area and the recreational line-fishing, mussel gathering and rock lobster collection along the central coastal area.

4.6 Sections of coastline of socio-economic importance

The urban, industrial and recreational coastlines of Luderitz, Walvis Bay, Swakopmund and Henties Bay are obviously sensitive to oil contamination. The popular recreational coastline between Walvis Bay and Swakopmund has high tourism value and thus rates as highly sensitive, as does the coastline northwards as far as Mile 108 during the prime holiday season (December and January).

4.7 Priorities for response

Priority sensitive coastal resources are :

- the numerous localities that support breeding colonies of seals and sea birds and the coastal wetlands,
- commercial fishing areas and spawning grounds,
- aquaculture operations at Luderitz, Pelican Point, Mile 4 and in the Saltworks ponds at Walvis Bay and Swakopmund,
- urban and industrial sections of coastline at Luderitz, Walvis Bay, Swakopmund and Henties Bay,
- recreational sections of coastline with high tourism value; notably the stretch between Walvis Bay and Swakopmund.

Site or Coastal segment	Shore type	Sensitivity and Priority for Protection		Response Action	
		Priority	Action: Notify Port Control, Walvis Bay, then ...	Rating	Action
Kunene River mouth	Sandy, sand and mud banks and bars, open mouth,	High	Protect river mouth ¹	High	Manual clean-up

	wetland				
Kunene R. to Cape Fria	Sandy	Low	M&O*	Low	M&O
Cape Fria	Rocky, sandy	Medium	M&O	Low	M&O
Cape Fria to Khumib River	Sandy, stretches of pebble beach, local rocky outcrops, semi-consolidated sandy cliffs near Khumib	Low	M&O	Low	M&O
Sud-tidal reef: Fria to Khumib	Sub-tidal rocks	Medium	M&O	Low	M&O
Khumib River mouth	Sandy, pebbly, raised delta of semi-consolidated sandy cliffs	Medium	M&O	Low	M&O
Khumib River to Hoarusib River	Sandy beaches, pebble beaches, local rocky outcrops	Low	M&O	Low	M&O
Hoarusib River mouth	Sandy, small wetland	High	Protect mouth	Medium	Clean-up
Hoarusib River to Hoanib River	Sandy beaches, pebble beaches, rocky outcrops	Medium	M&O	Low	M&O on rocks, manual clean-up on sand
Hoanib River mouth	Sandy, pebbly, small wetland	High	Protect mouth	Medium	Manual clean-up
Hoanib River to N end of Terrace Bay angling area	Sandy beaches, pebble beaches, local rocky outcrops	Low	M&O	Low	M&O
Terrace Bay angling area to Koichab River	Sandy beach, pebble beach, rocky outcrops, sub-tidal reefs	High	M&O, notify angling assoc.	High	Manual clean-up
Koichab River to Huab River	Sandy, local pebble beaches, local rocky outcrops	Low	M&O	Low	M&O
Huab River mouth	Sandy, small wetland	High	Protect mouth	High	Manual clean-up
Huab River to Ugab River	Sandy beaches, pebble beaches, local rocky outcrops	Low	M&O	Low	M&O

Ugab River mouth	Sandy, small wetland	High	Protect mouth	High	Manual clean-up
Ugab River to Cape Cross	Sandy	Medium, high at camp sites in season	M&O	Medium to low, high at camp sites in season	Manual clean-up
Cape Cross to Mile 72	Rocky at Cape Cross, sandy to Mile 72	High, seal colony, birds	Disperse oil at sea; boom at colony. Vital to stop oil reaching shore	High	Manual, mechanical clean-up; bird deoiling, rehabilitation
Mile 72 to Swakopmund Saltworks	Sandy, gravelly in places, bathing beach at Henties Bay	High	M&O	High	Manual, mechanical clean-up; bird deoiling, rehab.
Saltworks	Sandy, pebbly or gravelly in places	High	Notify salt Co., close seawater intake	High	Clean-up; bird deoiling, rehab.
Saltworks to Swakop River mouth	Sandy beaches, gravelly beaches, local rocky outcrops, breakwater, bathing beach	High	Boom at Mole to protect bathing beach	High	Manual, mechanical clean-up; bird deoiling, rehab.
Swakop River mouth	Sandy, wetland	High	Protect mouth	High	Clean-up
Swakop River to Walvis Bay	Sandy – gravelly beaches, local rocky outcrops	High	M&O	High	Manual, mechanical clean-up; bird deoiling, rehab.
Bird Rock platform	Artificial nesting platform erected about 100 m from shore	High	Boom oil if possible	High	Bird deoiling, rehab.
Walvis Bay lagoon and wetlands (town to Pelican Point)	Tidal wetland, mudflats, sandy beaches	High	Boom, spread straw bales to protect lagoon	High	Clean-up; bird deoiling, rehab.
Walvis Bay Saltworks	Evaporation ponds	High	Notify salt Co., close seawater intake	High	Clean-up; bird deoiling, rehab.

Pelican Point to Sandwich Harbour	Sandy	Low	M&O	Low	M&O
Sandwich Harbour	Wetland, mudflats, sand bars, sandy beaches	High	If possible boom southern entrance to divert oil to beach	High	Manual clean-up or M&O, deoiling, rehab.
Sandwich Harbour to Spencer Bay	Sandy, local rocky outcrops	Low	M&O	Low	M&O
Spencer Bay (Mercury Island)	Rocky, sandy	High	M&O	High	M&O
Ichaboe Island	Rocky	High	M&O	High	Bird deoiling, rehab.
Sencer Bay to Lüderitz North	Sandy, rocky	Low	M&O	M&O	M&O
Lüderitz Harbour and islands	Rocky, sandy, tidal mudflats	High	Boom, spread straw bales to protect harbour, maricultures	High	Clean-up; bird deoiling, rehab.
Lüderitz to Atlas Bay	Rocky, local sandy to gravelly beaches	High	Protect seal colonies, disperse oil at sea	High	M&O
Possession Island	Rocky	High	M&O	High	Bird deoiling, rehab.
Possession Island to Orange River mouth	Rocky, local gravelly to sandy beaches in N; sandy in S	Low	M&O	M&O	M&O
Orange River mouth	Sandy, open mouth, wetland, mud flats, sand bars	High	Protect mouth, boom or close sand bar	High	Manual, mechanical clean-up

Table 4.1 Sensitivity and priority for protection of coastal segments

CHAPTER 5

5. SPILL RESPONSE STRATEGY

5.1 Philosophy and Objectives

A polluter who has caused an oil spill is responsible for the total costs of cleanup, including those costs incurred by the NOSCO and suppliers of goods and services.

If the polluter has a well-prepared response plan and a response organisation, the polluter's response team is the first line of defense.

NRT will monitor and observe the progress of the response by the polluter and will render assistance where and when requested.

If the response by the polluter is inadequate or unsatisfactory, the NRT and OT will probably be mobilised and take over the response action.

If the polluter cannot be identified or has no response team or is too slow in responding, the NRT will mobilise and start a response.

A decision by NRT on whether to respond or simply monitor and observe will be pragmatic and will be taken in the light of prevailing circumstances, the environment or resources under threat, the location of the spill, the limitations of actions that can be taken, the limitations of available combating equipment and any other factor that might influence a response decision.

Environments and resources that have been given a high priority for protection will require as efficient a response as possible.

Priorities for protection in a response situation are in the order:

- Humans lives first,
- The environment next,
- Installations and equipment last.

5.2 Limiting and adverse conditions

- Under strong coastal wind and storm conditions no response is possible
- Fishing activities must be diverted from areas of oil spill.
- Long stretches of the Namibian coastline are inaccessible, making land based response difficult if not impossible. Natural weathering of the oil by the high-energy surf zone will usually be the best option:
 - ✓ Response in these areas could result in more damage to the coastal dune area than impact mitigation. This must be carefully considered before a response is initiated.

Some beach areas comprise pebbles and cobbles. Oil clean-up of this type of shore is ineffectual and should not be attempted. Only if the area is environmentally sensitive (e.g. birds, seals, aquaculture, recreationally popular) should immediate action be taken.

5.3 Strategy for offshore areas

1. Alert shipping and fishing industries;
2. Monitor and observe:
 - probably not necessary to mount response action for spill more than 40 km offshore;
 - 60 % chance of not having to mount a containment and recovery action for spills between 10 and 40 km offshore;
3. Coordinate with industry that caused the spill, monitor and observe their response actions, provide any assistance requested, coordinate combined response if need be;
4. Alert wildlife cleanup unit; and
5. Initiate response action if so decided by NRT.

5.4 Strategy for coastal zones

1. Alert shipping and fishing industries, ski boat fishermen;
2. Put NRT, OT and relevant municipalities on standby;
3. Monitor and observe, may not be necessary to mount response action;
4. Decide on whether or not to use dispersants (not to be used in water depths of less than 35 m);
5. Coordinate with the polluter that caused the spill, monitor and observe their response actions, provide any assistance requested, coordinate combined response if need be;
6. Alert wildlife cleanup unit; and
7. Initiate response action if so decided by NRT but this might be limited because of the limitations of some coastal areas.

5.5 Strategy for shoreline

1. Alert fishing industries, ski boat fishermen for the presence of floating oil near shore, tourism, general public;
2. Put NRT, OT and relevant municipalities on standby if NOSCP indicates that the action for the affected stretch of coast is merely to monitor and observe;
3. Coordinate with industry that caused the spill, monitor and observe their response actions, provide any assistance requested, coordinate combined response if need be; and
4. Mobilise NRT, OT and relevant municipalities and initiate response action if no action taken by polluter and if NOSCP requires action to be taken on the affected stretch of coast; follow the response recommended in the NOSCP but be alert to modifying the response if circumstances warrant it.

5.6 Strategy for Coastal Islands

1. Alert fishing industries, ski boat fishermen for the presence of floating oil near shore;
2. Put NRT, OT and relevant municipalities on standby if NOSCP indicates that the action for the affected stretch of coast is merely to monitor and observe;
3. Coordinate with industry that caused the spill, monitor and observe their response actions, provide any assistance requested, coordinate combined response if need be;
4. Mobilise NRT, OT and relevant municipalities and initiate response action if no action taken by polluter and if NOSCP requires action to be taken on the affected stretch of coast; follow the response recommended in the NOSCP but be alert to modifying the response if circumstances warrant it; and
5. Within the limitations of available equipment, attempt diversion booming in order to divert the oil past the island.

5.7 Strategy for inland spills

1. Alert industry and local population in the area;
2. Co-ordinate with polluter, monitor and observe their response activities, provide any assistance required (combined assistance if need be); and
3. Mobilise NRT, OT if necessary.

5.8 Strategy for oil and waste storage and disposal

If retrieved and stored in drums at sea:

- Take to nearest port and store drums at nearest waste disposal site.
- Arrange for transport to nearest waste oil processing facilities along with other waste oil from garages and factories.

If retrieved from the shore near coastal towns:

- Dispose in pre-arranged location in the municipal dump. Feed with bacteria to hasten biodegradation.
- Treat appropriately to hasten bacteria degradation (feed with bacteria, keep aerated, moist, and mixed).

If retrieved at distant locations along the coast:

- Allocate and prepare local waste disposal trenches under the leadership of MET & DWA.
- Treat appropriately to hasten bacteria degradation (feed with bacteria, keep aerated, moist, and mixed).

CHAPTER 6

6. PROBABLE FATE OF SPILLED OIL

6.1 General fate of oil on water

Being lighter than water, most of the oil stays on or near the surface of the water. Once spilled, several natural weathering processes set in immediately leading to changes in the physical and chemical properties of the oil (see general information section).

The oil will drift with the wind and the current at a rate of 100% of the surface current in the direction of the current and 3.6% (early studies indicated 4%) of the wind in the direction of the wind. The resultant of these two components is the actual direction of drift (Fig. S 3.3.1a. Near the coast, because of the large diurnal variation in wind strengths (difference in the strength of the winds at night and during the day – the strongest winds are often in the afternoons), rate of drift will vary considerably in any 24-hour period and often will be greatest in the afternoons. It is often very difficult to see the exact direction of current flow but this can be remedied easily – throw oranges in the water. They drift almost exactly in the same direction that oil will.

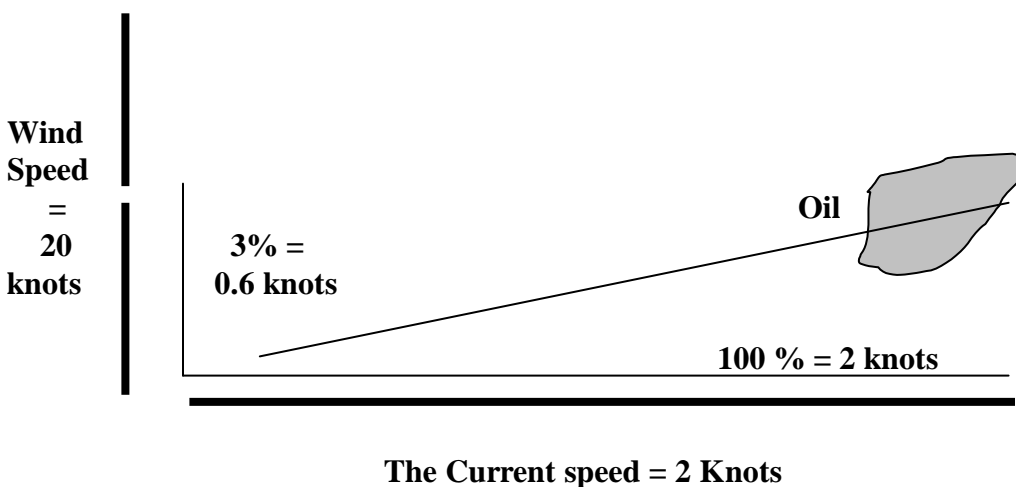


Fig. 6.1 Direction of drift of oil on water: the resultant of 100% of the current speed and 3.6%(4%) of the wind speed.

As long as the oil is non-viscous, it also spreads laterally progressively increasing the size of area covered. As it spreads, the oil film becomes thinner and thinner. Several processes, however, counteract this spreading.

The volatile components, which are also the toxic and water-soluble components, evaporate resulting in a volume loss. The heavier and thicker the original oil, the smaller the proportion of volatile components and the lesser the volume lost to evaporation. The lighter the oil, the greater the amount of evaporation. As the volatile components of oil

evaporate, so the oil becomes less toxic. Light refined products such as petrol and diesel consist almost entirely of volatile components and evaporate almost completely within about one day causing very little environmental damage. They are therefore usually best left to evaporate, even in sensitive areas because most will have disappeared by the time a response action has been mounted (nevertheless, each situation must be assessed on its own and the best response decided on for the prevailing circumstances). Close to the source of a spill of volatile refined products there is extreme danger of fire and explosion and great care needs to be taken regarding the response measures adopted.

The sea state is very important in causing changes to the physical (and to a lesser extent the chemical) properties of the oil. The rougher the sea, the more physical mixing of oil and seawater takes place. Two emulsions result, a water-in-oil emulsion on top and an oil-in-water emulsion underneath. The former is the most abundant and increases rapidly in viscosity to eventually form a thick, gooey, sticky, brown “chocolate mousse” with a density only slightly less than that of seawater. Unemulsified oil is not easy to boom and skim because it flows so easily. Booming and skimming is most effective after the oil has been partly emulsified and thickened up slightly. However, the thick chocolate mousse is so viscous that most skimmers are unable to recover it. Dispersants are ineffective on chocolate mousse.

Physical mixing of oil with water disperses the oil down into the water column taking the toxic, water-soluble, volatile components down with it. Some of the oil droplets may adhere to particles of sediment stirred up by the rough seas and will eventually sink to the seabed. Submarine biota can then take up the oil droplets or the dissolved water-soluble components and become physically contaminated or tainted.

Other, slower-acting processes include the light-induced breakdown of oil (photolysis) and bacterial biodegradation. The final product of weathering (after a few weeks) is tar balls which are non toxic and do not smother like oil. On a bathing beach these tar balls are very unpleasant, however, as they stick to everything leaving dark brown stains that are difficult to get rid of.

To effectively recover oil on water, speed of response is essential in order to recover the oil before it becomes too thick to handle.

Dispersants are most effective when the oil is least viscous, i.e. when it still contains most of its volatile components. Dispersants are totally ineffective when the oil has become highly viscous. Dispersants have the disadvantage of taking the oil down into the water column where the light, volatile, toxic, water-soluble components can cause the most damage. Although most dispersants used today for combating oil spills are environmentally friendly and have very limited effects on the environment, they may only be used with the approval of the Ministry of Fisheries and Marine Resources and only in water depths of greater than 35 m.

6.2 Drifter buoy studies offshore Namibia

The average wind and current data for offshore Namibia suggest that an oil spill more than 30 to 40 km offshore has very little chance of drifting ashore. Indeed, drifter buoy studies by NAMCOR in 1995 (CSIR, 1995). Oil spill simulation field experiment. Vols. I-III. Division of Earth, Marine, and Atmospheric Science and Technology, Council for Scientific and Industrial Research, Stellenbosch. CSIR Report EMAS-C 95084(a), Vol. I (text), 128 pp.) showed that oil more than about 40 km offshore has less than a 3 % chance of being washed ashore. The chances of it washing ashore increase the closer one comes to shore and reaches 40 % or more within 10 km of the coast. But this also means that oil 10 km from the shore has a 60 % chance of drifting out to sea. Some buoys released only 5 km from shore drifted in a NW direction from the start gradually moving further out to sea every day. The buoys indicated that an oil spill close to the shore is likely to come ashore, if it does come ashore at all, north of the point of release but under certain conditions it could come ashore several tens of km south of the point of release.

However, the NAMCOR studies were conducted only over one year. This does not give a database adequate enough to illustrate all the possible scenarios that could occur on a day-by-day basis and predictions of the likely drift direction will have to rely on the conditions prevailing at the time as is standard with any drift prediction.

Nevertheless, the studies did reveal some patterns that deviated from the average which are important to understand for day-to-day predictions of likely drift direction.

Periodically during some summers, eddies of the warm-water Angola current move southwards, hugging the coast. One such incursion coincided with one of the buoy releases. The current, instead of flowing northwards, flowed southwards for 21 days at rates of up to 40 cm/sec. One particular buoy drifted southwards from Jakkalsputs to about Sandwich Harbour before changing direction and finally drifting north-westwards out to sea.

During other releases, drift directions at different times were either NE, E, or SE for periods of a few hours to two days. Such short periods of southerly to south-easterly drift generally coincide with the development of a shelf wave or coastal trapped wave (CTW) which only develops on the continental shelf and about 100 km from shore. The CTW coincides with the southward movement of the coastal low and may lag it by one day. Therefore, north-westerly drift can be expected to reverse or move shorewards during the southward passage of a coastal low.

6.3 Spills in the open ocean

In the open ocean with very little chance of the oil coming ashore, the environmental effect is least and it is best to leave the oil to weather naturally. Some pelagic birds may be affected but numbers are not expected to be large because no large tankers service Namibia and the chances for very large spills are extremely low. Warnings will have to be issued to shipping, the fishing industry and the oil exploration industry.

6.4 Spills in the coastal region

Coastal tankers and dry cargo vessels use heavy furnace fuel (HFF) or diesel as fuel. Fishing vessels use diesel. The quantity of fuel carried by the various categories of vessels, depends on construction and tonnage and may vary from smaller quantities in litres for fishing crafts to thousands of tonnes for bigger ships.

Most oil spill combating equipment is only suitable for use in harbour areas and protected bays. For spills near the coast which do not come ashore, it is again probably best to leave the oil to weather naturally. Impacts on coastal birds could be significant and the appropriate sections of the NRT and OT will have to be alerted to monitor developments and take action if necessary. Fishing is likely to be affected in that it will not be able to fish in or near the area of the spill. Shipping and the fishing industry will have to be informed.

Because of equipment limitations, very little can be done to protect the shore from oil that is coming ashore. Diversion booming may be attempted along beaches with the highest priority for protection. Similarly booming off of estuaries might also be attempted. Use of large amounts of sorbants before the oil reaches the shore could limit its spread, would limit its smothering potential, would reduce the amount of pollution on shore and would make cleaning up easier and more effective.

All Namibian sandy beaches are very dynamic and one finds that oil washed ashore below the high-tide mark can very quickly be covered by a thin layer of sand. This may stay covered or be just as quickly re-exposed during the next tide. The oil will tend to concentrate at the high-tide mark and be spread down the beach on a falling tide. On a beach made up of fine-grained sand, the oil will stay very near the top of the beach profile. As the sand becomes coarser in grain size, so the oil gets trapped at deeper and deeper levels. On beaches made up purely of pebbles and cobbles, such as those north of the mouths of all our major rivers, the oil accumulates well below the top of this pebble layer (30 – 50 cm down) and one may not even know it is there.

Rocky shores exposed to heavy wave action often suffer the least of all shores as the pounding of the waves generally cleans the rocks of oil very quickly. This is not the case when a spill is washed ashore during a high spring tide storm and the oil is deposited above the normal high-water mark. This oil can remain in place for years after it has weathered to tar.

6.5 Spills in harbours and sheltered bays and lagoons

Such spills have the potential to cause the greatest damage. Namibia is fortunate in that it does not have any refineries so no crude oil is brought into our ports. Our greatest threat comes from HFF. At present only one tanker load is discharged a year. Only the tankers themselves and some of the cargo vessels use HFF as fuel, so the threat from shipping in total is also not too great. The greatest threat comes from spills of petrol, diesel or dual

purpose kerosene (DPK), particularly during discharging or bunkering. Generally, these products will evaporate within about a day but in each case, response measures will have to be considered and if need be acted upon. Lagoon and/or sensitive areas should be boomed off if sufficient boom lengths are available after the priority response needs for booms have been satisfied.

6.6 Summary of probable fate of spilled oil

Sorbants could be used before the oil reaches the shore to limit its spread and its smothering potential, This would reduce the amount of pollution on shore and would make cleaning up easier and more effective.

Dispersants would be of limited value and may not be used in water less than 35 m deep.

6.7 Potential Oil Spill Scenarios

6.7.1 Oil spills 40 km or more offshore

Potential causes: shipping accidents, accidents during offshore bunkering, tankers cleaning, accidents with diamond exploration or mining barges or ships, petroleum drilling rig or drill ship accidents, petroleum production platform accidents, offshore loading of tankers from production platforms.

The greatest threat would be from heavy furnace fuel from leaking tankers or cargo vessels. Most fuels used by shipping in Namibia or discharged in harbour are light, refined products which evaporate almost completely within a day if spilled.

Likely behaviour of oil: Beyond about 40 km from the shore, the chance of oil coming ashore is less than 3 %. Therefore its environmental effects will be least.

The chances of oil coming ashore increase closer to the coast but are still only about 40 % about 10 km from shore. Even 5 km from the coast, oil could drift in a north-westerly direction and never come ashore. Normally the oil will drift in a northerly direction but at certain times it could drift a long way south and even beach south of the point of discharge.

Oil will probably drift in a north-westerly direction out to sea. Likely to become chocolate mousse fairly quickly.

Likely impacts: Probably minimal; pelagic sea birds most likely to be affected. Fishing activities may have to be diverted for a few days. Fish very unlikely to be affected.

Action by NOSCO: As provided under 5.3

6.7.2 Oil spills between 10 and 40 km from shore

Potential causes: same as above (6.7.1). Except that petroleum platforms are unlikely to be located this close to the coast.

Likely behaviour of oil: Oil has a more than 50 % chance of drifting in a north-westerly direction out to sea. Likely to become chocolate mousse fairly quickly. Oil could also drift ashore but it will take several days for the oil to reach shore by which time it will have become chocolate mousse.

Likely impacts: Will impact fishing activities, coastal sea birds, seals. Could be washed ashore on beaches if drift does not take it offshore. Fish very unlikely to be affected.

Action by NOSCO:

1. Alert shipping and fishing industries,
2. Monitor and observe, may not be necessary to mount response action,
3. Decide on whether or not to use dispersants,
4. Coordinate with industry that caused the spill, monitor and observe their response actions, provide any assistance requested, coordinate combined response if need be.
5. Alert wildlife cleanup unit,

6.7.3 Oil spills less than 10 km from shore

Potential causes: shipping accidents, tankers cleaning their tanks, accidents with diamond exploration or mining barges or ships, petroleum pipeline accidents.

Likely behaviour of oil: Oil has approximately 50 % chance of drifting ashore and 50 % chance of drifting offshore. As likely to come ashore south of the point of discharge as it is north of the point of discharge.

Likely impacts: Will impact fishing activities, ski boat fishing, coastal sea birds, seals, and possibly line fishing from the beach and tourism. Could be washed ashore on beaches if drift does not take it offshore. Shallow benthic fauna could be affected. Fish very unlikely to be affected.

Action by NOSCO: Same as provided under 5.3

6.7.4 Oil spills reaching the shore

Potential causes: Shipping accidents, ships grounding, any of the above causes.

Likely behaviour of oil: Will pollute any beach or rocky shore that it is washed onto and will be concentrated above the high-tide mark during high-tide storms, at the high-tide mark during normal conditions, and down the shore during falling tides. On a beach made

up of fine-grained sand, the oil will stay very near the top of the beach profile. As the sand becomes coarser in grain size, so the oil gets trapped at deeper and deeper levels. On beaches made up purely of pebbles and cobbles, such as those north of the mouths of all our major rivers, the oil accumulates well below the top of this pebble layer between 30 – 50 cm down and one may not even know it is there. Rocky shores exposed to heavy wave action often suffer the least of all shores as the pounding of the waves generally cleans the rocks of oil very quickly.

Likely impacts: Will impact line fishing from shore, tourism, ski boat fishing, coastal sea birds, seals, shallow sub-tidal and inter-tidal fauna, coastal industries, salt works etc.

Action by NOSCO:

1. Alert would-be affected parties about the presence of floating oil.
2. Put NRT, OT and relevant municipalities on standby if NOSCP indicates that the action for the affected stretch of coast is merely to monitor and observe.
3. Coordinate with industry that caused the spill, monitor and observe their response actions, provide any assistance requested, coordinate combined response if need be.
4. Mobilise NRT, OT and relevant municipalities and initiate response action if no action taken by polluter and if NOSCP requires action to be taken on the affected stretch of coast; follow the response recommended in the NOSCP but be alert to modifying the response if circumstances warrant it.

6.7.5 Oil spills in Walvis Bay and Lüderitz harbours and bay areas

Potential causes: Shipping accidents, ships grounding, bunkering, discharging from tankers, pipeline leaks.

Likely behaviour of oil: Heavy furnace fuel will cause extensive pollution, lubricating oils will cause less pollution because of much smaller volumes, refined products will cause the least pollution because they evaporate within about a day but they will cause the greatest danger because of a much greater chance of fire and explosion.

Likely impacts: Pollution of harbour, bay and lagoon areas and of mariculture industries in the bay area. Pollution of coastal sea birds, waders, seals, breeding islands. Possible impacts on shallow benthic and inter-tidal fauna and breeding grounds in the bay area. Impacts on harbour industries, tourism and recreational activities in the bay and lagoon areas.

Action by NOSCO: Follow the specific NOSCP and NAMPORT response plans for the harbour and bay areas.

6.8 Guidelines on collection of evidence, oil sampling procedures and outline of analytical procedures

Oil sampling procedures and other recommendations in connection with sampling are briefly described in this chapter. They are compiled in line with Section VI of Manual on Oil Pollution by the IMO available at NRT. The information given is designed to assist the sample collector in obtaining samples which may be used for identifying oil spills.

The recommendations do not contain details relating to all types of spill situation, but should merely be regarded as general guidelines. However, by following these guidelines it should be possible to collect and provide legally valid samples that can help the authorities to determine the source responsible for the spill.

6.8.1 Main types of sample

The following main types of oil or oily mixture may occur at spill sites and suspected sources:

- * Oil, oily water, heavily emulsified oil, tar balls or lumps on the water surface.
- * Mixtures of oil and sorbents or other materials which are soaked with oil.
- * Mixtures of oil and foreign materials on beaches.
- * Oiled animals on the water surface or on beaches.
- * Neat oil in ships, offshore constructions or land facilities.
- * Oily water in bilges and slop tanks on board ships.
- * Oily sludge in sludge tanks on board ships.

6.8.2 Sample contamination

It is important to take precautions in order to prevent contamination of samples with traces of other oils. Disposable gloves should be used to reduce the risks of sample contamination. These gloves are to be used once and then discarded. The sampling equipment should also, as far as possible, be disposable and discarded afterwards. If the equipment is to be re-used, it must be carefully cleaned and stored in a clean condition.

6.8.3 Sample volume

In general, the collector should take samples from the heaviest oil accumulations. Each sample should contain 10 - 100 ml of oil whenever this can be achieved. When oil from suspected sources is sampled, this requirement is usually easy to fulfill. However, the analyses require smaller volumes of oil. Even extremely small amounts of oil should be considered for laboratory examination.

When samples are collected from very thin oil films on the water surface, it may sometimes be difficult to acquire even visible traces of oil in the sample. In such cases, the sample will appear to consist of pure water. It must be emphasised that even such 'water samples' with a sheen or a smell of oil may be useful for laboratory analysis.

6.8.4 Number of samples

It is essential that all possible sources of a spill be sampled in order to determine responsibility. It is also important that the samples be collected as soon as possible after the spill. If the correct source sample is not obtained shortly after the spillage, it may be impossible to obtain a relevant sample at a later date. This will render the analyses of the spill samples useless with respect to the determination of the source responsible for the spill.

It is sufficient to take only one sample from each sampling point on board ship or in the offshore or land-based installation. If necessary for administrative reasons, more than one sample may be taken from each point.

It is advisable to collect several samples in the spill area. Even in small spills at least two samples should be taken. In larger spills, the distances between the sampling positions should be decided for documentation of the total range and distribution of the spill.

For documentation of other illegal discharges in the spill area, samples should be taken as frequently as appropriate.

Reference samples (blanks) should also be collected from background environments (water, beach, etc.) whenever relevant, in order to determine whether the spilled oil has been contaminated by an earlier spill or other organic material.

6.8.5 Custody of samples

It is important that a complete chain of custody be maintained. This requires careful container and lid markings, container labelling and report writing. The samples must be kept under strict control from the time of initial sampling until final conclusion of the case.

The concept of custody comprises strict surveillance or keeping of the samples. A sample may be considered to be in a person's custody or possession if the person keeps it under surveillance or under lock and key where it cannot be tampered with. The person should be authorised and may be the individual who collects the sample or the one to whom it is duly transferred.

6.8.6 Sample containers

The following type of container for sampling, transport and storage is recommended:

a 250 ml glass bottle with a wide opening (at least 5 cm in diameter) and polyethylene screw cap lined with teflon or aluminium foil. The bottle and the lid should have the same serial number in order to prevent intermixing of lids which could cause sample contamination. The container is sealed in order to prevent unauthorised access to the sample during transport to the laboratory.

Plastic sample containers should be avoided because components from the plastic material may migrate into the oil and interfere with the analysis. However, if only plastic containers, or even bags, are available, it is still better to use these than to obtain no samples at all.

6.8.7 Sample information

All samples should be clearly marked to avoid sample mix up. The sample retains its number throughout the entire handling.

When samples are taken, the following information should be reported:

- 1) Sample number
- 2) Date and time of sampling
- 3) Detailed information giving location of sampling
- 4) Wind direction and velocity, temperature of air and water, if possible
- 5) Method of sampling (see below)
- 6) Description of sample ("heavy viscous", "oil lumps", "water with oil sheen", etc.)
- 7) All observations of extraordinary sampling circumstances
- 8) Name, address and telephone number of responsible sample collector.

At least items 1, 2, 3 and 8 should be reported on the sample label.

The sampling report form should preferably be of a water-repellent quality, and a pen with water-resistant ink should be used.

6.9 Spill sampling

6.9.1 Collection of samples from the water surface

Oil spills on the water surface should be sampled at several sites in the slick or in the polluted area to achieve a representative collection of samples. As an oil slick on the water surface is normally fairly heterogeneous, the sampling should be concentrated on the thickest parts.

In order to document dissolution and evaporation of the spill, sampling of thinner films should also be considered. This is important when the oil has coagulated into balls or lumps. When thin oil films are sampled, only very small amounts of oil are obtained. It is therefore very important to avoid contamination by other oils. Such oils may originate from cooling water and can adhere to the hull of the sampling vessel. Even traces of lubricating oil or fuel oil can ruin samples and thereby the evidence.

Surface waters of harbours and river outlets may contain evident traces of petroleum. When spills in such waters are sampled it is important the skimming technique may be repeated several times to increase the amount of oil in the bucket. Finally, the oil may be transferred to the sample container by means of a stainless-steel or teflon scraper used to scrape the sides of the bucket.

METHOD A: skimming of oil from the water surface can be performed using a conical teflon bag. The bag is attached to a metal ring, which may be fitted to a pole. The bottom end of the bag is cut, giving a hole of approximately 1-2 cm in diameter. By repeated skimming and drainage of water, enough oil may be collected in the bag. When all the water has been drained off, the oil is permitted to flow into the sample container, held under the lower opening of the bag. High-viscosity oils or oil lumps may be transferred mechanically to the sample container.

METHOD B: one approach which is suitable for sampling very thin oil layers or oil present in small isolated globules is to use a sorbent sheet made of teflon or teflon-coated glass fibres. The sheet absorbs the oil and repels the water. The oily sheet can be placed directly in the sample container after absorbing oil for a few minutes on the water surface. The sheet can also be moved along the water surface to allow better sorption of oil. Blank sorbent sheets should be available for the laboratory as blind references.

6.9.2 Collection of samples from beaches

Sampling from beaches and rocks is simplified by relatively easy access to the oil. The distribution of oil in the total contaminated shore area should be documented by several samples.

Oil may be scraped off and placed directly in the sample container. If it is inconvenient to scrape stones, pebbles, seaweed or other material, entire specimens may be placed in the container.

Earlier oil spills, tar balls or other sources of petroleum on the beach must be carefully observed in order to avoid contamination of the samples. Blank samples should be taken if considered necessary. This is especially important when oil from impregnated wood, e.g. pier poles, is sampled.

6.9.3 Obtaining samples from oiled animals

Oil on sea birds or marine mammals can be difficult to remove mechanically. Since it is inconvenient to transport a dead animal to the laboratory, contaminated feathers, wings or fur should be collected in a sample container.

Registration of dead birds or marine mammals contaminated by oil is of interest to several ministries in Namibia, although not involved directly in oil identification e.g. Ministry of Environment and Tourism and Ministry of Fisheries and Marine Resources. For a closer investigation, it may be necessary to transport the dead specimen to the laboratory. The appropriate person should be contacted beforehand to ensure proper handling of the specimen. The dead animal or parts of it may be placed in plastic bags, which are sealed and properly labeled with information on the date, position and all other relevant data as indicated for oil samples above.

Samples containing large amounts of biological material should be frozen to avoid further decomposition. Oil samples taken from such specimens are sometimes sent to special laboratories for identification. If so, detailed information concerning all possible contaminating materials should be furnished.

Obtaining samples from ships and other suspected sources

For sampling on board ships, the following may give valuable information.

Drawings such as the "tank plan", "capacity plan" and "air, filling and sounding pipes" are kept on board. They show the positions and capacities of the different tanks and normally also indicate what types of oil are carried therein.

The oil record book, log book, deck log book and engine log book normally contain information about types (grades) of oils carried in different tanks as well as information about operations which could lead to an oil discharge. The log book may be based on a scrap or rough log book which also is of legal evidence.

When it has been decided where samples should be taken, one of the following methods may be used:

- * Draining directly from tanks located above the double bottom or from the various piping systems.
- * Taking samples from bilge wells with a bucket.
- * Taking samples through manholes or sounding openings. All tanks are fitted with manholes. It is often difficult to open these holes but this is sometimes the only way to obtain a sample from a tank.

A sampler for tanks may be a glass test-tube placed inside a heavy steel tube capable of sinking even in high-viscosity oils. The steel tube should be constructed with an asymmetric end that ensures that it lies horizontal when touching the tank bottom. This is particularly convenient when samples are taken in a nearly empty tank where it is difficult to obtain a reasonable sample volume. When raising the sampler, the oil should be contained in the test-tube, which should afterwards be removed and sealed.

When samples of heavy oil residues are taken in sludge tanks or at the bottom of bunker tanks, the viscosity of the oil may be so high that it will hardly enter the glass test-tube. In this case another sampler designed as a brush or equipped with lamellae may be used. The sampler and its outer cover should be sent to the laboratory for analysis.

Warning: Owing to the risk of electrostatic charges, sampling in tanks containing flammable gases must be carried out by using only a sampler hanging on a string of natural material, not a synthetic one.

Samples should be taken at the upper, middle and bottom levels of the oil in the tank. When oil in sludge tanks and bilges is sampled, particular attention should be paid to the fact that the oil may not be homogeneously distributed.

Two checklists, one for sampling cargo oil systems and the other for machinery space are shown respectively in IMO Guidelines for Sampling and Identification of Oil Spills. As the designs of ships vary considerably, the checklists are only to be regarded as guidelines. The design of the actual ship must always be considered when determining appropriate positions for sampling.

Sampling from other suspected sources such as offshore and land-based installations is sometimes needed. Descriptions of sampling in these cases are not given here. However, much of what has been said above concerning ships should also apply to these types of source. However, experts must be contacted in each individual case.

6.9.4 Transport and storage of samples

The sealed sample container should be transported to an authorised laboratory as quickly as possible, maintaining a chain of custody. It is also necessary to comply with any safety regulations applying to the transport of oils. Before dispatch, it is advisable to verify that sufficient space has been allowed for expansion of the sample. In order to prevent damage, containers should be adequately protected during transport. Containers should be packed in oil-sorbent material to avoid contamination in the event of damage.

Whenever oil samples are stored, they should be kept locked up in darkness at a maximum temperature of +4°C until the spill case is finally settled.

6.9.5 Analytical methods

The identification system presented here is based on two analytical methods:

- * By gas chromatography (GC) using a nonpolar column and a flame-ionisation detector (FID), the boiling range and quantitative distribution of the hydrocarbons in the oil sample are illustrated.
- * Using the same gas chromatographic separation technique as above and a mass spectrometer (MS) as a detector, some specially selected hydrocarbons and hetero compounds are analysed for and a more detailed description of the oil is obtained.

A big problem is that these analytical techniques are not available in Namibia, but in South Africa only. However, in international courts these type of analyses are needed in order to prove the case, regarding responsibility in oil spill situations.

The theory regarding the two cases will briefly be outlined below:

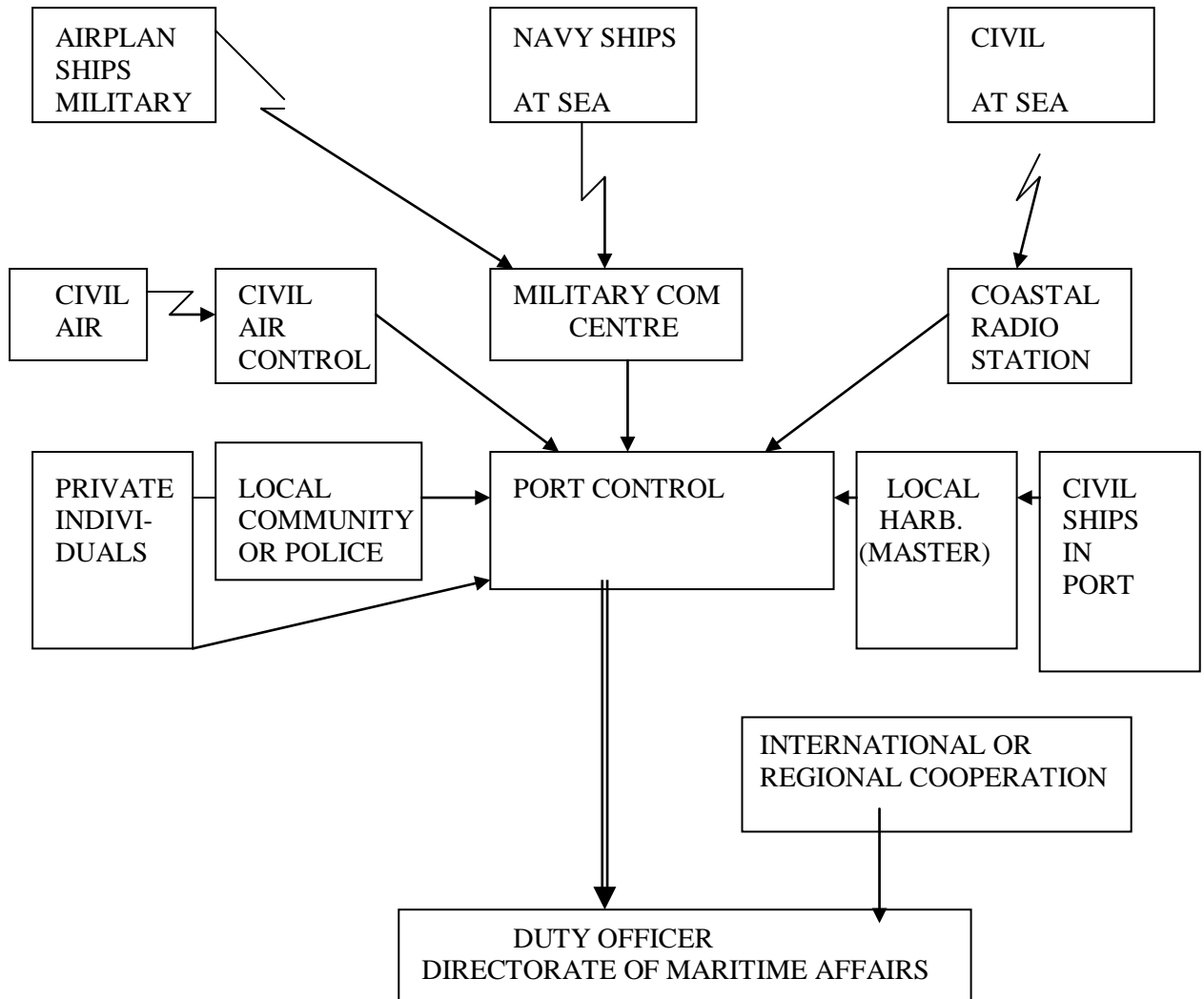
All data from the two methods are used to compare spill samples with samples taken from suspected sources. If significant differences are found at any stage in the identification process, the conclusion will be non-identity. A significant difference between two samples is a difference not caused by analytical inaccuracy or weathering. It will then only be concluded that identity exists when all data from the two methods have been compared and no such differences have been found.

The compounds analysed for in these methods differ in their susceptibility to weathering. However, the influence of weathering on the different compounds is predictable. This fact offers ways and means to ascertain whether an observed difference should be regarded as significant or not.

The groups of components measured by this method are selected in such a way that it will normally be possible to find components which are more sensitive, and components which are less sensitive, to the suspected weathering process.

When this identification system is used, all samples requiring comparison should be run on the same instrument, using the same analytical instrumental parameters, columns and, if possible, batches of solvents and other chemicals.

REPORTING SYSTEM



- : Radio Communication
- : Telephone, Telex or Telefax
- : Personal Communication

Ammendments To NOSCP 2004

Pg. iii. Preamble

Insert after 1st paragraph:

By the Act of No. 6 of 1981, Ministry of Works, Transport and Communication has been designated as the National Responsible Authority with regard to Oil spill preparedness, response and cooperation for the Republic of Namibia.

As authorised, the Ministry of Works, Transport and Communication has to this effect developed the following National Oil Spill Contingency Plan (NOSCP) for the Republic of Namibia. The NOSCP will be kept up to date by the Ministry of Works, Transport and Communication by issuing amendments/corrections as deemed appropriate.

Signatories (should be changed to “Holders”) of the NOSCP are invited to inform/suggest to the Ministry of WTC on any changes, corrections or amendments to the present plan.

John – Include text:

MWTC is responsible for oil pollution and it is the ministry responsible for the NOSCP in Namibia.

Suggestion to Amendments pg. ii:
Suggested changes – ask John for proper description.

e.g. under issuing authority.

Issuing Authority		Correcting Authority		
Amendment No.	Date of Amendment	Corrected by	Signature	Date corrected
1	May 2000			
2	August 2001			
3.				
4.	June 2004			

PS: Split control document and transmittal sheets.

Pg. xi.

“Exclusive Economic Zone (EEZ)” As defined in Act No. 3 of 1990 and Amendments Act 30 of 1991.

Pg. xii.

NAMCO – delete no longer in existent

Pg. 1.

1.1.3. (Simon) Include assistance from neighbouring countries.

e.g. Include line under 1.1.3. “International cooperation with neighbouring states is covered within this NOSCP under Section 3.5.2.”

Pg. 2.

Correct caption: Figure 1.

Pg. 3.

(Simon)
2nd paragraph.

Include

.. using these powers, the minister has authorised this plan.

1.3. List of National Laws relevant to pollution prevention

~~—needs updating— relevant bodies will contact MWTC.
—then include: (as amended) All amendments to these Laws are applicable.~~

Proposal of a new paragraph. Then remove the whole list of laws – Nick.

1.4.

.... Namibia recognises the importance the following international laws have to marine pollution:

International Conventions – list is to be attached to document as an annex.

1.6. Classification (threat) of spills in the NOSCP (Severity of Spills)

(Keep constituency litres of oil)

See Japhet – John’s note.

(b) Medium spills

change 500 – 10,000 litres (instead of 400 – 10,000..)

P.g. 5.

Changes to paging - Simon.

1.7. Use the definition of EEZ to preamble.

Include the plan covers the coastline and the waters....

P.g. 6.

2nd paragraph “organogram”

Paragraph 2

Although the organogram in Figure 2.1.

P.g. 7

Minister (Include WTC)

- Include NAMPORT and AG into Abbreviations
- Legal Advisor(s): MOJ and AG.
 - Ministry of Finance Suggestions from fax:-
(fax with **Japhet**)

P.g. 8

Table 2.1. Responsibilities of Bodies/Institutions of NOSCP

Include National Reporting Centre in table(s)

(Simon): Bullet point 3 – Under Reporting Centre.

Q: How will they relay the info? How? Telephone, fax? This info must be included somewhere in the text.

Do they have a template form so that they know what to ask?

A: We have a form/template with all necessary questions.
They phone them, then follow up by fax in writing.

Include Namport after:Pollution Control Officer **Namport**, the Director of Maritime Affairs/and or his nominated deputy....

Include MIB in Abbreviations

Pg. 10

Include **Local** On Scene Commander on (On Scene Commander and Deputy(ies))

P.g. 11

Change Legal Advisor to Legal Advisors

Correct spelling of Municipality

Pg. 12.

Situation Unit – **Mulunga** Pls change to: *Situation Analysis Unit*
Include Meteorological Services Unit under Institution.

Pg. 13.

Situation Unit – **Tim** Pls change to: *Documentation Control Unit*

Pg. 15.

Use **Clean-Up** with dash always.

Under Shoreline Clean-Up:

As a new bullet separate point:

Establish Personnel and Equipment decontamination facilities.

Include Ministry of Higher Education, Training and Employment Creation (MHETEC)
under Wildlife Clean-Up Unit – Under Institutions.

Update this (MHETEC) to the Abbreviations

Pg. 16.

Include **NDF** in abbreviation

Pg. 17.

Under - Facilities Unit

Institution: Include **MWTC**

Under - Transport Unit

Institution: Include **Others**

Pg. 18.

Change Records Unit to *Documentation Control Unit*

Pg. 19.

Security Section

Include co-opt the services of other Law enforcement units.

Pg. 20.

Finance and Admin Section:

Include Prime Minister's office Emergency Funds - **Julias**.

Pg. 21.

PS: John's comment regarding Voluntary Services (Civil Institutions) – Cleaning Up Operations.

Which Institution can be identified for this? Who can set up facilities for screening?

Ministry of Labour? OPM –(EMU)?

Reserve Question for Tim.

CHAPTER 3

Pg. 22.

2nd §: add ALSO. Such measures should **ALSO** include the drawing up of contingency plans for the protection of the marine environment within that specific area.

3.1. Change has to is

Under this system, the Namibian Cabinet ~~has~~ is the highest authority.

Pg.23.

Change National Reporting Centre.

Under (b)

Include: **In Terms of Act 6 of 1981**, the Ministry of Works, Transport and Communications (MWTC) is responsible for National Oil Spill preparedness, response and cooperation. **To this effect, the Minister has designated the following responsibilities to the Director of Maritime Affairs:.....**

Pg.23 & 24.

Mulife?

Structure of numbering.

Consolidate (b) and Roman (I).

Pg.25

(d) Roads Contractor Company (RCC)

Delete ~~Swakopmund~~ and replace with Otjiwarongo.

Changes:

(g) Ministry of Mines and Energy (MME) and NAMCOR

During routine work, the MME ~~should~~ shall be responsible for:

- Monitoring mining and petroleum exploration and production activities;
- Receiving and passing on information on oil spills;
- Identifying personnel for training and;
- Providing expertise available within the Ministry as well as within NAMCOR in;

In case of any emergency arising from oil spills in the Namibian territorial waters or

coastal regions:

- Facilitating clean up measures especially when pollution originates from offshore mining and petroleum activities; and
- Any other duties as assigned by the NRT.

(h) **Ministry of Finance (MOF)**

The Directorate of Customs and Excise will be responsible for:

- Keeping records and providing immediate clearance of equipment brought into **and out of** Namibia for use ~~and during~~ during an oil spill emergency operation;
- Ensuring that hired equipment will be free of customs duties and ~~taxesp~~ taxes; and
- Any other task as assigned by the NRT.

NB: Rebate item 4.12.11 of the _____ should always be used. To follow up with MoF- Japhet Iitenge (JI)

Pg. 27.

Change ~~Foreign Affairs Department~~ to Ministry of Foreign Affairs.

(k) **Ministry of Foreign Affairs & Information and Broadcasting (MFA&IB)**

(I) **The Foreign Affairs Department** will be responsible for;

- Facilitating matters concerning foreign governments;
- Informing foreign governments if oil spills are threatening to move into their territories, or if assistance of any kind is required;

(II) **The Ministry of Information and Broadcasting Department** will be responsible for:

- Providing assistance to NRT head with regard to media briefings;
- Planning and conducting media briefings;
- Announcing the **commencement and** termination of operation; and
- Any other duties as assigned by the NRT.

Pg. 28.

(m) ~~Ministry of Higher Education, Youth and Employment Creation~~ Ministry of Higher Education, Training and Employment Creation (MHETEC)

The **Ministry of Higher Education, Training and Employment Creation** will be responsible for:

- Organising and providing supervision of volunteer **Youth**;
- Assisting the wildlife rescue centres in the collection, cleaning and rehabilitation of oiled birds and mammals;
- **The role of the Ministry is to train volunteers? and Youth and – Isreal to give feed back**

- Assisting where required in any part of the operation.

3.2 Local Companies

(a) Industry Responsibilities

All spills of oil and petroleum products are the responsibility of the polluter. Tier 3 incidents (very large spills) are generally caused by the petroleum industry and are generally handled at national and international level. The NRT will normally handle Tier 1 and 2 and 3 spills (small and medium and major spills). However, in the absence of the polluter being identified or if the polluter is unable to handle a Tier 3 spill, the NRT must handle such a spill. ~~If the polluter is capable of handling Tier 1 and 2 spills, then it shall also handle spills of its own making of this size.~~ All spills are to be handled to the satisfaction of the NRT and the Ministry of Works, Transport and Communication. The Companies are categorised as follows:.....

i. Polluter

The Polluter will be responsible for:

- Facilitating immediate response to any oil spill within its area of responsibility;
- Oil handling industry which handles oil for commercial reasons or as a source of energy for its primary production should develop an emergency response plan. The plan shall be in compliance with the NOSCP and its guidelines;
- Reporting the spill and the polluter's anticipated actions to the NRT duty officer;
- responding to the spill (prevention, control, clean up) and requesting assistance when necessary;
- Accepting financial liability for the spill and costs of control, combating and clean up;
- Burning oil mixed with debris in their oil field dumps, if NRT and MET deem this necessary;
- Receiving recovered oil and disposal thereof in co-ordination with NRT and MET; and
- Assisting in analysing and identification of recovered oil if so required.

Amendment No. 1 of March 2004

ii. ~~Non-polluters~~ Volunteers

A ~~non-polluter~~ Volunteer will:

- Respond to the spill according to local plans and agreements;
- Provide assistance to polluters or NRT, if requested by either of them; and
- Operate within the provisions of the NOSCP.

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3.5.1 Support from national sources outside the contingency organisation

wait on John's guidance

Oil spills affecting more than one state.

You have to make international cooperation. Bureaucracy, is not possible in the event of an oil spill. Regional conventions have therefore to be made. A regional framework is in place in West Africa.

1. Governments have to be willing to go into such a regional cooperation.
2. Each country has to have its own National Contingency Plan. Harmonising of different national plans is almost impossible.
3. At regional level, countries have to agree at some level on how to cooperate.
4. If an oil spill occurs in Namibian waters, they all have to work according to the terms set up in the Namibian NOSCP
5. If the oil spill goes over borders, e.g. goes into Angola, then the Angolan NOSCP will be in effect.
6. There is a framework for the Benguela Current Large Marine Ecosystem (BCLME) between RSA, Namibia and Angola.

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Suitable courses of this nature can be conducted following IMO and other international recognised training programmes. The main components of this type of training are table-top exercises, planning and reviewing of exercises or operations conducted.

Operator Training: Training should be reinforced by regular and realistic exercises in which all aspects of the operation are put to the test. Training for personnel identified to operate specific equipment will be arranged with other stakeholders of who might already have trained equipment operators. Where ~~here~~ this is not possible, courses should be arranged with manufacturers or their local representatives.

3.5.1 Support from national sources outside the contingency organisation

Any volunteer willing to assist in an oil spill clean up operation can only do so with the permission of the NRT or the approval of the Permanent Secretary of the MWTC.

The facilitation of a large-scale, long-lasting oil spill response operation will require huge support from many components of society and industry. The support needed could include a multitude of different functions e.g. ~~break down~~ **dismantle and assemble** equipment, a missing spare part, the need for special fuel, lubricant or special tools, more personnel, a boat, a helicopter, medical emergency etc. The NRT should establish standard administrative procedures to deal with such requests on a very short notice.

4.3 Guides Sensitivity Maps

Comment [ID1]: This part to be deleted after development of maps

GIS mapping of isolated portions of the coastline is being carried out by various organizations and institutions. As this mapping tool is ideal for portraying priority response areas, by layering sensitive zones, co-operation and collaboration by the different mappers was sought, to produce reference maps which can be used for the National Oil Contingency Plan. Geological Survey have a base map of the coastline and have agreed to assist by incorporating the following features :

- coastline type (rocky/sandy)
- commercial fishing grounds
- spawning areas of commercially important fish species
- seal colonies
- aquaculture sites
- dolphin occurrence
- coastal and sea bird concentrations
- wetlands
- key recreational/tourist beaches
- urban and industrial areas
- harbour areas and layout
- diamond mining
- Offshore offloading terminal at Oranjemund

Amendment No. 1 of May 2001

Additional feature which will facilitate response in the event of an oil spill are also to be included on these maps :

- municipalities
- access roads to beach areas
- police stations
- satellite stations
- radio stations
- conservation offices
- depots where oil combating equipment is stored
- oil disposal sites
- small vessel launching sites

Other Institutions that the maps with the above features e.g. NPC, municipalities, etc must be approached to provide the GIS maps to NRT for the incorporation into the existing coastline base maps.

NRT must ensure that the hard copies of the total coastal maps must be comprehensive and updated regularly.

~~The mapping programme being used by Geological Survey is Arc Info. More detail can be incorporated as it becomes available. The hard copies will be used to provide:~~

- a) ~~large scale maps of the entire coast: objective prioritizing of sensitive areas can be made by layering – this will facilitate decision making by the NRT~~
- b) ~~small scale sections of the coastline to reference, in the event of localized oil pollution – these will facilitate actions taken by the OT.~~

~~Hard copies of the mapping system must be on hand to both the NRT and the OT.~~

~~Note –: Entering of data to produce the maps will take several months; in the interim period the sensitivity maps showing some of the features listed above are available from Geological Survey: contact persons Drs. Schneider, Schreiber, Petzel.~~

CHAPTER 4

4. OIL SPILL RISKS

4.1 Activities and risks

Namibian coastal waters come under threat from oil-based pollution, ~~from~~ coastal shipping, ~~and~~ fishing and offshore petroleum and mineral exploration and production activities.

More than 200 Namibian registered fishing vessels and foreign cargo vessels and tankers pass through Namibian waters [EEZ] on a daily basis.

Offshore petroleum and mineral exploration and production activities along the Namibian coast are not regarded as a major threat of pollution but should oil be found and production commence, there could be potential for a major spill.

Minor localised oil spills have occurred along the coast from the sinking of fishing vessels, ~~from~~ ruptured hulls of cargo vessels ~~and~~ in the ports of Walvis Bay and Lüderitz from time to time.

Changes – Mulife

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4.3 ~~Guides Sensitivity Maps~~ Guides to Sensitivity Maps

Comment [ID2]: This part to be deleted after development of maps

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~~The mapping programme being used by Geological Survey is Arc Info.~~

More detail can be incorporated on the map, as it becomes available. The hard copies will be used to provide:

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Hard copies of the mapping system must be on hand to both the NRT and the OT.
Note : Entering of data to produce the maps will take several months; in the interim period the sensitivity maps showing some of the features listed above are available from Geological Survey: ~~contact persons Drs. Schneider, Schreiber, Petzel.~~

Include GIS in the abbreviations

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Pt. 4.7. Priorities for Response – **Table 4.1.** needs to be updated. JI to follow up with Fisheries

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Day 5

Exercise Review/Conclusions and recommendations

1. Ask the participants what they think went well.
2. Ask the participants what they think did not go well
3. Recommendations.
 - a. From 3, seek time line. Need to have timelines for all recommendations.

1. Went well	2. Not so well	3. Recommendations
1. Press briefing		
2. Identification of the different groups, responsibility and roles upfront		
3. Spill plotting		
4. Equipment to deploy		
5. Peoples/groups involvement and cooperation		

1. Went well	2. Not so well	3. Recommendations
6. Media coverage		
7.		SWOT Analysis
8. Media Feeds		
9. Preparedness of Equipment/IRT		
10.	Time Keeping (During the Program and Exercise)	<ol style="list-style-type: none"> 1. Leader gives times for briefing. (Time Outs e.g. 15 – 20 minutes) 2. Time keeper/recording
11.	<p>Communication/<u>Initial reporting process</u>: Port control did not notify DMA (could not find authorities at the port) and harbour master; port captain could not proceed because he was not authorised. Simon had to play port control instead. By 12:00 Director at DMA was not informed by Port control.</p>	<p>Establish Communication Handling.</p> <ol style="list-style-type: none"> 1. Time Out. 2. Clearly define the role/identify a person(s) to act as <u>Communication Officer</u> in NOSCP 3. Role of Media Relations Officer in NOSCP clearly define approval of Press Release. 4. Include Press Release <u>Template</u> in NOSCP. (Details ask Simon)
12.	Communications command. Too many participants per Task	Should be composed specifically identified people on the team.
13.	Coordination centre not appropriate	Make separate room for OSC
14.	Confusion/uncertainty of incident; Dissemination of info.	Better this. (Communication, time out etc)
15.	Mobile Phones – coverage/private; vehicle telecom licence not paid	Review use of private/corporate mobiles. <u>Key individuals</u> need to have corporate mobile phones. E.g. OSC, etc. Recommend key individuals are contactable 24/7.
16.	ATC unmanned at private airfield	
17.	Operation/contact list correct?	
18.	Communication breakdown due to power failure in Swakopmund – reliance on mobile phones.	Marine/Air band Radio
19.	Careful on information received: Over complication.	Need to have a dedicated person (communication officer) responsible for communication from OSC to groups.
20.	Appointment of people according to their professions/role allocation	Flexibility should come in here depending in availability of resources. Need to know your roles as stated in the NOSCP.
21.	No Ministry of Health Representative so far	Use Port (Walvis Bay Lüderitz) HSE Officer

1. Went well	2. Not so well	3. Recommendations
22.	Logistics was not considered on choice of equipment	Role of logistics is sourcing where to get new equipment. Planning team organises what to deploy. (Logistics, Planning and Operations work together)
23. Leaning curve		
24. Positive attitude		
25.	Table top planning, despite arranging Live Exercise	Was an opportunity for the management exercise. All in all went well.
26.	Future planning – prepare budget for meals participants.	
27.	Where will the NRT be set up? Identify individuals and Response Box (box with all equipment, incl. Charts, dividers, rulers, erasers, flip charts, etc)	Identify Command Centres. Windhoek, Lüderitz, WB, OM, Use command Centres (Next time Lüderitz?) Getting facilities 24/7 Access 24/7
28.	Contact list	Review contact list/Out of office hours. How often should it be reviewed and how do we get in touch with people out of office hours.
29.	Management of NRT	-Communication – Time Out -Group Team Leaders – Role /Feedback -Information dissemination
30.	Contingency Fund	National Emergency Fund within the Budget. Recommendation for funding for proper training and exercising/preparedness – OPRC.
31.		Review reporting procedures from port control to DMA
32.		Review licenses: All valid, in place, access to obtain at short notice, approvals.
33.		Review of resources, equipment available
34.		Review training needs
35.		NRT persons recommended to attend IMO Level 2/3 course (± 5 days)
36.		OT persons recommended to attend IMO Level 1 course(± 2 days)

3. Timelines

Responsibilities	Who	When
1. Establish Communication handling		
2. Review reporting procedures from Port Control to DMA	Namport : <u>DMA</u>	September 1 2004
3. Review Resources and Equipment (1. <u>What resources are available</u> and 2. Review of resources in relation to the risk)	Namport : <u>DMA</u> : MME : Industry	1. December 1 2004 2. Two years ++
4. Review Training needs (IMO L1 & <u>IMOL2</u>)	<u>DMA</u> All think of training needs. How many people at what level.	Feedback from delegates September 1 2004 Request IMO by November 1 2004. Hold course during 2005 liaison with Namport.
5. Review licenses to obtain at short notice. See IMO Resolution A 869(20); permits; visas; customs clearance; radio....	<u>DMA</u>	September 1 2004
6. Other individual items as stated above under Exercise Review/Conclusions and recommendations :	<u>DMA</u>	March 2005
7. SWOT Analysis	<u>DMA</u>	Review of training

SIGNATORIES TO NATIONAL OIL SPILL CONTINGENCY PLAN

1. MINISTRY OF WORKS, TRANSPORT AND COMMUNICATION

(a) Directorate of Maritime Affairs

Title: Director, Maritime Affairs

Name: M M Nangolo

Signature:

Date:

(b) Directorate of Civil Aviation

Title: Director of Civil Aviation

Name: B T Mujetenga

Signature:

Date:

(c) Road Contractor Company

Title: General Manager: Operations

Name

Signature:

Date:

2. MINISTRY OF HOME AFFAIRS

(a) Namibian Police

Title: Inspector General of The Namibian Police

Name: L Angula

Signature:

Date:

(b) Directorate of Immigration

Title: Director of Immigration

Name: E Negumbo

Signature:

Date:

3. MINISTRY OF INFORMATION AND BROADCASTING

(c) Department of Broadcasting

Title: Permanent Secretary

Name: M Shivute

Signature:

Date:

4. OFFICE OF THE PRIME MINISTER

Emergency Management Unit

Title: Deputy Director

Name: G Kangowa

Signature:

Date:

5. MINISTRY OF ENVIRONMENT AND TOURISM

Title: Dep. Director of Environmental Affairs

Name: Mr. T Nghitila

Signature:

Date:

6. MINISTRY OF FISHERIES AND MARINE RESOURCES

(a) Directorate of Operations

Title: Director of Operations

Name: P Amutenya

Signature:

Date:

(b) Directorate of Resources Management

Title: Director of Resource Management

Name: Mr. M. Maurihungirire

Signature:

Date:

7. MINISTRY OF MINES AND ENERGY

(a) Directorate of Energy

Title: Director of Energy

Name: G. Amanyanga

Signature:

Date:

(b) NAMCOR

Title: Managing Director

Name: J Mazeingo

Signature:

Date:

8. MINISTRY OF DEFENCE

Maritime Wing

Title: Cdr. Maritime Affairs

Name: Vilho

Signature:

Date:

9. ATTORNEY GENERAL

Attorney General's Office

Title: Principal Legal Officer

Name: Mbandeka

Signature:

Date:

10. MINISTRY OF FINANCE

Department of Customs and Excise

Title: Director of Customs and Excise

Name: J L Kabozu

Signature:

Date:

11. MINISTRY OF AGRICULTURE, WATER AND RURAL DEVELOPMENT

Department of Water Affairs

Title: Deputy Director of Water Affairs

Name: Dr. J S de Wet

Signature:

Date:

12. NAMIBIAN PORTS AUTHORITY

Title: General Manager: Ports Authority

Name: M van der Meer

Signature:

Date:

13. MUNICIPALITY OF WALVIS BAY

Title: Chief Executive Officer

Name: A Katiti

Signature:

Date:

14. MUNICIPALITY OF SWAKOPMUND

Title: Town Clerk

Name: E U W Demasius

Signature:

Date:

15. MUNICIPALITY OF HENTIES BAY

Title: Town Clerk

Name:

Signature:

Date:

16. MUNICIPALITY OF LUDERITZ

Title: Town Clerk

Name: R R Windswaai

Signature:

Date:

17. TELECOM NAMIBIA

Walvis Bay Radio

Title: The Head

Name: J Shelly

Signature:

Date:

18. FISHING INDUSTRY

(a) Pelagic Association

(b)

Title: Chairman

Name: W Pronk

Signature:

Date:

(b) White Fish Association

Title: Chairman

Name:

Signature:

Date:

(c) Midwater Trawlers Association

Title: Chairman

Name: N Ernest

Signature:

Date:

19. DOWN STREAM INDUSTRY

BP Namibia

(a) Title: Managing Director

Name: S Mupanemunda

Signature:

Date:

Caltex Namibia

(b) Title: Managing Director

Name: J J Van Staden

Signature:

Date:

Engen Namibia

(c) Title: Managing Director

Name: A Coetzee

Signature:

Date:

Total Namibia

(d) Title: Managing Director

Name: H Eksteen

Signature:

Date:

Shell Namibia

(e) Title: Managing Director

Name: L Wordon

Signature:

Date:

ANNEXURE 4: LIST OF EQUIPMENT AVAILABLE

Table 6.1

Name of organisation	Contact Person	Telephone Number	Type of Equipment	Location
1. Ministry of WTC: DMA	J Iitenge P Auene G Simeon	061 2088037 064 203317 063 203969	- Ocean Skimmer & power and house packs - 1 off loading pump - 400m Ocean Boom - 4 Fast Tanks of 10m ³ - 1 Follex TDS 150 Skimmer & Remote Control - 1 Foxtail 2-6 Skimmer - 3 Air Blowers & 2 Spares - 1250m NOFI 450X with a reel and 3 air blowers & 2 units spare parts - 300m Land/Sea oil boom (15x20m)	Walvis Bay Harbour Harbour Harbour
2. NAMPORT	Port Captain Port Captain	064 208 2258 063 200203	300m EXPNDI Boom	Luderitz
			200m SEA SERPENT Boom with 2 blowers (petrol driven)	Rope / Pollution Store
			75m VIKOMA BOOM with blower (petrol driven)	Pollution Store
			1 12 k KOMARA disc skimmer with power PK and P/P	Igloo / Poll Store
			1 WALSOLP VORTEX skimmer with power PK and P/P	Rope Store
			250 Bags sorbents with loose, pillows etc.	Igloo
			1 Launch & 1 Small Tug	
			1 Motor Barge	
			Forklift Trucks & 2 Front End Loaders	MHA
			Rail Tanker	
			GENSET 105 kw	ELP
			4 4x4 LDVs & 6 LDVs	MHA
			Fire Tender with p/p and hoses	Security
			1 Single engine SR Inflatable	Tugs
			1 Twin Engine SR Inflatable	Lt Tech
			4 Ton Truck	MHA
			7 Ton Truck	MHA
			29 VHF radios	various
			Fax machine	Port Cont
			Copier Machine	Office
3. B P Namibia Ltd	J Abisai	061 299 1122	Oil response trailer	
			2 9Kg dry powder fire extinguishers	
			2 Long luggage straps along sides holds brooms & 2 stiff brooms	
			1 Squeegee	

			2 Scoop handles	
			1 long side rail holding oil retriever supports	
			2 R40 Workmen Ahead signs on stands	
			1 First Aid Kit	
			2 Warning triangles	
			1 100 litre open ended drum containing	
			10kg pack of drizit cushions	
			1 No 5 semi rotary pump	
			1 Drizit spade skimmer	
			1 Drizit Oil Retriever Skimmer	
			2 Drizit Fibre scoops	
			Drizit Oil Absorbent	
			3 Packs Drizit booms	
			4 Packs Drizit Cushions	
			5 Packs Drizit loose fibre	
			1 m 40 mm galvanized pipe	
			8 Hooked steel rods	
			1 Lightweight fence droppers	
			1 Pickaxe and handle	
			1 Chainwrench	
			4 No smoking signs	
			1 Toolbox	
			Emergency food and drink	
			4 Buckets	
			100m Chevron warning tape	
			1 kg Strong cord	
			2 tins Handcleaner	
			2 Gismolites / flashing warning lights (not flameproof)	
			2 spades	
			2 shovels	
			1 Minipak 5 boom	
			1 No 29 tapered wooden plug kit	
			PROTECTIVE CLOTHING	
			2 Size 9 rubber boots	
			2 Size 10 rubber boots	
			4 Hard Hats	
			4 Antimist Chemical Goggles	

			4 Long PVC Gloves	
			4 Short PVC or Neoprene Gloves	
			2 Leather Gloves	
			1 Roll Bandit Strap	
4. Namib Marine Services (NMS)		064 202620	CRAFT	
			2 High Speed Ski Boats (twin motor / screw)	
			2 Launches (1 twin screw)	
			3 Workboats (single screw)	
			MACHINERY	
			2 Front End Loaders	
			1 14 m backhoe tractor	
			1 4x4 truck with winch (10t) and 2 Ton crane	
			1 3 ton FLT	
			MISCELLANEOUS	
			5 Flyght submersible pumps with hoses	
			2 Hydraulic power packs with hoses	
			1 Portable welding plant	
			10 1000 litre storage tanks	
Portable compressors, Air lift equipment, Communication equipment				
Co: Walvis Bay Luderitz			PROTECTIVE CLOTHING	
			Gum boots	
			Gloves	
			Oil resistant suits	
			TOOLS	
			Plastic bags	
			Shovels	
			Spades	
			Drums	
Roads Contractor Company	Mr. C N Mvungi	061 2982721	MACHINERY	
			Trucks	
			Earth moving equipment	
			LDVs	
TELECOM Namibia: Radio Section	Mr. D Fick	064 204028 064 204251(f) 0811246915	COMMUNICATION	
			Telephone/Fax heads	
			Walkie Talkies	
MTC-Walvis Bay	Mr. van der Merwe	0811001055	Cellphones	
Rainbow enterprises	Mrs. Gerda Ms. Heijting	061 251269 081129444	FIRST AID	
			Kits/Bags	

ANNEXURE 5: METEOROLOGICAL STATISTICS

Meteorological and maritime conditions have a significant influence on the management of oil spills. Integration of meteorological conditions in oil spill management may be made at two levels, namely:

- i) At formulation of preparedness strategies, which requires knowledge of the climate of the area of which the strategy is being formulated, and
- ii) At incidence response, which requires the real-time weather conditions during the combating of the spill. The information should be obtained from the Meteorological office in the form of area forecasts or current weather monitoring reports.

This annexure provides a condensed summary of the background climate information necessary for the formulation of oil spill combat strategies. The climatic parameters that may be taken into consideration when faced with an offshore oil spill are explained in the table below. The condensed descriptive summaries for each climatic parameter considered are given in sub-section 6.2.1 of this Annexure, and the supporting statistics showing the annual variations are given in table format (table 6.2). The statistics may be updated at least once every 10 years.

Table 6.2

Climatic Element	Relevance to offshore Oil Spill Management
Rainfall	Tends to suppress fire potential
	High intensity rain washes away spill, thus widening pollution effects
	Might also mitigate against and slow down spill combating efforts
Temperature	High temperatures facilitate spreading and evaporation of oil spills
	High temperatures increase fire risk
Humidity	High humidity levels will tend to suppress fire risk and thinning out/diffusion of oil spills
	Can greatly reduce comfort index, especially in-doors and under calm (no wind) conditions
Wind	Can cause rough seas, emulsion formation, increased density of oil, hazardous to marine operations
	Can influence spill transport
	Can influence rate of fire spread and direction of smoke concentration
Tides	Transport spill to and from coast, thus spreading pollution effect of oil spills at sea or along the coast

6.2.1 Summary

6.2.1.1 Rainfall

The coastal area of Namibia and the adjacent parts of the Atlantic ocean receive practically no rain. Annual rainfall amounts are typically between 0 and 50 millimetres with only about 10 rainy days. Thus the chances of having rain during an oil spill event are evidently very small.

6.2.1.2 Temperature

Relatively high during December to March when, on average, the hottest part of the day (early afternoon) experiences 18°C to 24°C along the coastal regions. During May to August, it is relatively cool. The coolest part of the day (early morning, just before sunrise) experiences temperatures in the range 9°C to 12°C.

6.2.1.3 Humidity

Along the coastal regions and the ocean, humidity is markedly high, with monthly Relative Humidity almost persistently above 80% throughout the year. This is quite unlike in the interior where the monthly average humidity rarely exceeds 70% even during the rainy season.

6.2.1.4 Wind

While higher than in the interior, daily average wind speeds in the coastal area range from 3 to 6 metres per second (about 11 to 22 kph). Some localities such as Luderitz regularly experience higher wind speeds exceeding 6 metres per second. The dominant directions from which wind blows are South and Southwest which, between them, account for about 60% of the prevailing wind direction.

6.2.1.5 Ocean Tides

Like all coastal areas, the Namibian coast experiences the daily periodic rhythmical occurrence of ocean tides. This phenomenon is often well tabulated in the **Almanacs** and the **Shell Tide Table Guide** published annually. It is sufficient for this document to provide this pointer and to urge oil spill management teams to look up the information from those standard publications as and when necessary.

	Element	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Swakopmund	Rain(mm)	1.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
	Tmax(□C)	20.0	21.0	20.0	18.0	18.0	20.0	18.0	16.0	16.0	16.0	18.0	19.0
	Tmin(□C)	15.0	16.0	15.0	13.0	11.0	11.0	9.0	9.0	10.0	11.0	13.0	14.0
	RH(%)	89	89	90	90	82	78	81	88	91	88	88	90
	Wind(m s ⁻¹)	3.4	2.8	2.1	1.5	1.0	1.5	1.5	1.9	2.4	3.0	3.0	3.0
Pelican Point	Rain(mm)	1.3	2.0	5.2	0.7	0.9	1.5	0.0	0.3	0.1	0.1	0.6	0.1
	Tmax(□C)	20.0	20.3	19.7	18.6	19.0	18.8	17.8	16.4	15.7	16.6	17.7	19.0
	Tmin(□C)	15.3	15.5	14.8	13.1	12.1	11.4	10.4	10.1	10.7	11.6	12.8	14.3
	RH(%)	87	88	89	90	84	82	82	86	89	88	88	88
	Wind(m s ⁻¹)	2.7	2.7	3.1	3.2	3.0	3.0	3.2	3.6	3.6	3.9	3.3	3.1
Walvis Bay	Rain(mm)	0.5	0.5	7.3	1.0	0.3	2.6	0.2	0.2	0.4	0.1	0.0	0.2
	Tmax(□C)	23.2	23.1	24.1	24.0	23.6	23.0	21.6	19.8	19.3	19.9	20.9	22.0
	Tmin(□C)	15.6	16.5	16.0	13.3	11.6	10.5	9.2	9.1	10.0	11.4	13.0	14.6
	RH(%)	81	79	81	78	71	67	69	77	79	79	79	65

	Wind(m s ⁻¹)												
Luderitz	Rain(mm)	1.0	3.0	4.0	1.0	3.0	2.0	1.0	1.0	1.0	0.0	0.0	1.0
	Tmax(□C)	21.0	22.0	22.0	20.0	19.0	19.0	18.0	17.0	17.0	18.0	20.0	21.0
	Tmin(□C)	14.0	14.0	14.0	13.0	12.0	11.0	10.0	10.0	11.0	12.0	13.0	13.0
	RH(%)	84	85	84	83	80	75	77	80	83	83	83	83
	Wind(m s ⁻¹)	5.9	5.4	4.9	3.8	3.5	3.3	3.5	4.5	5.0	5.6	6.1	6.1
	Element	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Swakopmund	Rain(mm)	1.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
	Tmax(□C)	20.0	21.0	20.0	18.0	18.0	20.0	18.0	16.0	16.0	16.0	18.0	19.0
	Tmin(□C)	15.0	16.0	15.0	13.0	11.0	11.0	9.0	9.0	10.0	11.0	13.0	14.0
	RH(%)	89	89	90	90	82	78	81	88	91	88	88	90
	Wind(m s ⁻¹)	3.4	2.8	2.1	1.5	1.0	1.5	1.5	1.9	2.4	3.0	3.0	3.0
Pelican Point	Rain(mm)	1.3	2.0	5.2	0.7	0.9	1.5	0.0	0.3	0.1	0.1	0.6	0.1
	Tmax(□C)	20.0	20.3	19.7	18.6	19.0	18.8	17.8	16.4	15.7	16.6	17.7	19.0
	Tmin(□C)	15.3	15.5	14.8	13.1	12.1	11.4	10.4	10.1	10.7	11.6	12.8	14.3
	RH(%)	87	88	89	90	84	82	82	86	89	88	88	88
	Wind(m s ⁻¹)	2.7	2.7	3.1	3.2	3.0	3.0	3.2	3.6	3.6	3.9	3.3	3.1
Walvis Bay	Rain(mm)	0.5	0.5	7.3	1.0	0.3	2.6	0.2	0.2	0.4	0.1	0.0	0.2
	Tmax(□C)	23.2	23.1	24.1	24.0	23.6	23.0	21.6	19.8	19.3	19.9	20.9	22.0
	Tmin(□C)	15.6	16.5	16.0	13.3	11.6	10.5	9.2	9.1	10.0	11.4	13.0	14.6
	RH(%)	81	79	81	78	71	67	69	77	79	79	79	65
	Wind(m s ⁻¹)												
Luderitz	Rain(mm)	1.0	3.0	4.0	1.0	3.0	2.0	1.0	1.0	1.0	0.0	0.0	1.0
	Tmax(□C)	21.0	22.0	22.0	20.0	19.0	19.0	18.0	17.0	17.0	18.0	20.0	21.0
	Tmin(□C)	14.0	14.0	14.0	13.0	12.0	11.0	10.0	10.0	11.0	12.0	13.0	13.0

ANNEXURE 6

ADDRESS AND TELEPHONE LIST

Ministry/Organisation (Representative)	Office Number	Home Number	Fax Number	Other Number
<u>Ministry of Transport</u>				
<u>Directorate: Maritime Affairs</u>				
<u>Windhoek:</u>	(061)	(061)	(061)	
J Iitenge	208 8037	214366	240024	0812624206
M M Nangolo	208 8025	213861	240024	0812706506
<u>Walvis Bay:</u>	(064)		(064)	
T.A. Muttotta	203317		205266	0812481668
P. Auene	203317		205266	0812590174
<u>Luderitz:</u>	(063)	(063)	(063)	
G Simeon	203969	203718	203970	
T E Auchab	203969	203718	203970	0812491907
<u>Directorate: Civil Aviation & GACG</u>				
<u>Windhoek:</u>	(061)		(061)	
J Sell	234100/ 229549	0811241423	238884/7020 77 (SAR)	0811241423
<u>International Airport:</u>	(062)		(062)	
R Rinck	702490/1-3	0811291289	702499	0811291289
<u>Meteorological Division</u>	(061)	(061)	(061)	
Emmanuel Kambueza	2082179	238008	2082167	
<u>Roads Contractor Company</u>				
<u>Windhoek:</u>	(061)	(061)	(061)	
C N Mvungi	231773/ 298 2730	241993	298 2738	0811278824
<u>Central Region:</u>	(067)		(067)	
H Becker	303011		302016	0811290309
<u>Ministry of Mines and Energy & NAMCOR</u>				
<u>Mining: Marine</u>	(061)		(061)	
	2848296		238643	
<u>Petroleum Affairs:</u>	(061)		(061)	
G N Amanyanga	2848111		238643	0811280770
MF von Jeney	2848322		2848200	
<u>NAMCOR:</u>	(061)		(061)	
Dr. R Swart	221699/ 2045053		221785 228501	0811290957
<u>Office of the Prime Minister</u>				
<u>Emergency Management Unit</u>	(061)		(061)	
G K Kangowa	230266	0812467409	226867	0812467409

<u>Ministry of Fisheries and Marine Resources</u> <u>Inspectorates: Walvis Bay</u> SK Ambabi T Gideon <u>Inspectorate: Luderitz</u> ECF Kruger <u>Resources Management: Swakopmund</u> Ms. B Currie <u>Resources Management: Windhoek</u> Dr. B. Oelofsen	(064) 2016202 2016111 (063) 202905 (064) 4101000/ 4101139 (061) 2053015/ 2053084	(064) 400148 (063) 203606 (064) 405466 (061) 232418	(064) 205725 205008 (063) 203337 (064) 404385 (061) 220558	0811293108 0812562355 0812592839 (064) 415466
<u>Ministry of Home Affairs</u> <u>Namibian Police:</u> <u>Windhoek:</u> Inspector Jordaan <u>Walvis Bay:</u> J S Hamman <u>Immigration: Windhoek</u> E Ernst <u>Immigration: Walvis Bay</u> Mr. Bruwer	(061) 2093229 253250 (064) 202281 (061) 2922043 (064) 204036	0811294136	(061) 220621 (064) 205213 (061) 2922185 (064) 203104	081247019 0811294136
<u>Ministry of Financ: Customs & Excise</u> <u>Windhoek:</u> H Garoeb V E Ngaujake <u>Walvis Bay</u> K. Uirab	(061) 2092726 2092005 (064) 219300	(064) 219301	(061) 239278 239278 (064) 203736	0811284031
<u>Ministry of Defence</u> <u>Windhoek</u> P H Vilho	(061) 2042178	0811242344	(061) 2042124	0811242344
<u>Ministry of Environment</u> <u>Windhoek:</u> T Nghitila <u>Swakopmund / Walvis Bay:</u> Mr C.S Maketo Rodney Braby <u>Luderitz</u> T Kooper	(061) 249015 (064) 404576 404576 (063) 202811	(064) 404951	(061) 240339 (064) 403236 403236 (063) 204188	0812494635 0812520968

<u>Ministry of Higher Education, Vocational Training & Employment Creation</u>	(061) 263281/2		(061) 261459	0812495755
<u>Windhoek:</u> Ms. A Otto				
<u>Office of the Attorney General</u>	(061) 2812247/3 2812245		(061) 222428	0811280202
<u>Windhoek:</u> Mr. F.K. Bandeka				
<u>Namibia Ports Authority</u>	(064) 2082204 2082258 2082339 2082263/4/5/0	(064) 205264 (h)	(064) 2082318 2082325 2082333 2082325	0811270170 0811288865 0811290251
<u>Walvis Bay:</u> M v.d Meer Capt V Gosev T Eiman Port Control	(063) 200203		(063) 200218	
<u>Luderitz:</u> Port Captain				
<u>Local Municipalities</u>	(064) 2013215 2013201	(064) 207561 0811220808	(064) 205590 200525	0811220803 0811223003
<u>Municipality: Walvis Bay</u>				
A Brummer				
A Katiti				
<u>Municipality: Swakopmund</u>	(064) 4104322/330		(064) 4104210	0811224700
F Holtzhausen				
N Traut	4104321		4104216	0811289116
A Straus	4104285		4104290	
<u>Municipality: Luderitz</u>	(063) 202041	(063) 203860	(063) 202971	0812593526
<u>Mr E H Hasheela</u>				
<u>Henties Bay Municipality</u>	(064) 500007	(064) 500729	(064) 500521	0811240828
<u>Mr. Gurirab</u>	(063)			
Oranjemund				
<u>Down Stream Petroleum Industries</u>				
<u>BP Namibia Ltd</u>	(061) 2808221	239514	(061) 224141	0811292315
<u>Windhoek:</u> J Abisai				
<u>Walvis Bay:</u> C S Venter	(064) 218000		(064) 206856	0811278701

<u>Caltex Oil Namibia</u> <u>Windhoek:</u> J J van Staden	(061) 227340		(061) 234564	0811243297
<u>Engen Namibia</u> <u>Windhoek:</u> Mr. Volgraaf	(061) 233041		(061) 227955	0811285852
<u>Total Namibia</u> <u>Winhoek:</u> C Maree	(061) 237650		(061) 232308	0811294209
<u>Shell Namibia</u> <u>Windhoek:</u> E Gabriel	(061) 226141/270111 1		(061) 219531	0811227013
<u>Offshore Petroleum Industries</u>				
<u>Telecom Namibia</u> <u>Walvis Bay Radio</u> J Shelly	(064) 203584/1 203202	(064) 202090	(064) 207497	0811242697
<u>Fishing Industries</u> <u>Pelagic Association</u> Mr. W Pronk / N Du Plessis	(064) 217500	(064) 202546	(064) 205273	0811242580
<u>White Fish Association</u> Mr. M Goagoseb	(061) 223366	(061) 251854	(061) 223413	0811282563
<u>Midwater Trawlers Association</u> Mr. Hartman Rota	(064) 206140	202424	(064) 205692	
<u>Offshore Diamond Industry</u> <u>Namco</u> J Midgley	+27 (21) 6591100		+27(21) 6591101	
<u>De Beers Marine</u> N Hagan	(061) 2973806	0811295905	(061) 2978130	(061) 081129590
<u>Yam Diamond Recovery</u> D Shalom	+27 (21) 4615255		+27 (21) 4615388	+27 824150182

NB: Please inform the Directorate of Maritime Affairs (DMA) of any contact person no longer available, and his replacement, as soon as possible.

Neighbouring States				
RSA: <i>Department of Environmental Affairs & Tourism</i>	00 27	00 27		
Cape Twn Kwanele Booi N Andres G. Nxumalo	(021) 402 33 52 5112679 4023344	021 4215342 5112679 4215342		
Republic of Angola				