



PORT OF SALDANHA OIL SPILL CONTINGENCY PLAN

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TERMS & ABBREVIATIONS

AIS	Automatic Identification System
TPT	Transnet Port Terminals, a division of Transnet Limited
DEAT	Department of Environmental Affairs and Tourism
DWT	Dead Weight Tonnage
HQ	Transnet National Ports Authority Head Office
MCM	Marine & Coastal Management
MTT	Marine Tanker Terminal
MPT	Transnet Port Terminals-Multi Purpose Terminal
TNPA	Transnet National Ports Authority
NSRI	National Sea Rescue Institute
OPCSA	Oil Pollution Control of South Africa
PetroSA	The Petroleum and Gas Corporation of South Africa (Pty) Ltd
PCO	Pollution Control Officer
SANP	South African National Parks
SAMSA	South African Maritime Safety Authority
TPT	Transnet Port Terminals
Smit Marine	Smit Amandla Marine (Pty) Ltd
VTS	Vessel Traffic Control
BCM	Business Continuity Management
SHEM	Safety, Health and Environmental Manager
SHEQ	Safety, Health, Environment and Quality
JOC	Joint Operations Committee

POLICY COMMITMENTS

TRANSNET GROUP SHEQ POLICY

- Manage and mitigate SHEQ risks inherent to Transnet to be within legally acceptable limits:
- Monitor and audit SHEQ Risk Management systems to ensure effectiveness, efficiency and continuous improvement throughout Transnet: and
- Review the SHEQ Risk Management Policy annually or as circumstances dictate to ensure continued effectiveness and relevance.

LEGISLATIVE REQUIREMENTS AND AGREEMENTS RELATING TO THE COMBATING OF OIL POLLUTION

1. The Marine Pollution (Control & Civil Liability Act) (No. 6 of 1981) gives SAMSA wide-ranging powers regarding the prevention and combating of oil pollution. However in terms of Notice No. 1646 in Government Gazette No. 10377 of 8 August 1986, any power, duty or function regarding the combating of pollution of the sea by oil has been assigned to the Minister of Environmental Affairs with effect from 20 May 1986. This gives the Minister of Environmental Affairs the authority for protection and clean-up aspects of oil spills. During an incident either Minister will be able to order any person who is capable, to supply goods or services required for removal of such pollution. The responsibility for initiating and co-ordinating the necessary actions to effect protection and clean-up operations lie with the Department Officers to whom the ministerial powers have been delegated. In the case of the Department of Environmental Affairs & Tourism (DEAT), the Marine Pollution division of the Chief Directorate: pollution control has been delegated the powers for combating oil spills at sea. Various functions may also be delegated to local authorities and other relevant bodies.
2. In terms of the Sea Birds and Seals Protection Act (No. 46 of 1973) the Minister of Environmental Affairs has jurisdiction over all sea birds. Marine Development, the Department of Environmental Affairs administers this act and is responsible for co-ordinating the treatment of oiled birds.
3. By virtue of the Health Act (No. 63 of 1977), it is the responsibility of the Department of National Health and Population Development to delegate functions to a Provincial administration or to a local authority to take steps to prevent the occurrence of any nuisance which may be harmful to human health, and to remedy such nuisance where it has occurred.
4. The Sea-Shore Act (No. 21 of 1935) makes specific provision for the protection of human health against pollution of the sea-shore or the sea. In terms of this Act the State President may instruct any local authority to exercise any of the functions conferred on it by the Health Act.

Note: The latter two Acts, together with the Marine Pollution (Control and Civil Liability Act) (No. 6 of 1981), thus confer on the local authorities the responsibility of co-operating with the Department of Environmental Affairs and Tourism in activities relating to the protection and clean up of the shoreline as a result of the spill.

5. In terms of the National Water Act (No. 36 of 1998), it is an offence for any person to willingly or negligently commit any act which could pollute any water in such a way as to render it less fit for the purpose for which is, or could ordinarily be, used by other persons (e.g. the contamination of ground water supplies by the disposal of collected oil). For this reason, the decisions regarding the disposal of collected oil and oily waste must be taken by the DEAT On-scene Co-ordinator on the advice of the Department of Water Affairs.

6. The Civil Defence Act (No. 67 of 1977), read in conjunction with the Civil Defence Ordinance (No.8 of 1977), makes provision for the Provincial Authorities to confer the necessary emergency powers to local authorities in the event of an emergency or disaster. An oil spill is NOT, however, regarded as falling within the definitions of emergency or disaster given in these statutes. The necessary powers and the organisation that will come into effect during an oil spill incident are set out in this plan and will be co-ordinated by the responsible government department. The local civil defence unit is considered part of the response organisation.
7. Regulation 38(3) for the harbours of the Republic of South Africa, promulgated in terms of Section 21(2) of the Legal Succession to the South African Transport Services Act (No. 9 of 1989), makes the provisions for the Oil Act (No. 6 of 1981), applicable to the waters of a harbour under the jurisdiction of the South African Transport Services.

Legal and Financial Implications

Marine Pollution (Control & Civil Liability Act) (No.6 of 1981)

In terms of Section 1. (1) "offshore installation" means a facility situated wholly or partly within the prohibited area and which is used for the transfer of harmful substances from a ship or a tanker to a point on land or from a point on land to a ship or tanker or from a bunkering vessel to a ship or tanker, and includes any exploration or production platform situated within the prohibited area and used in prospecting for or the mining of natural oil.

In the event of a discharge of oil from the MTT, the owner shall, in terms of Section 2, be guilty of an offence unless the oil escaped as a consequence of damage to the facility and as soon as practical after the damage occurred all reasonable steps were taken for preventing or (if it could not be prevented) for stopping or reducing the escape of oil.

In terms of Section 3 the responsible TRANSNET NATIONAL PORTS AUTHORITY person, or any person designated by him, shall by the quickest means of communication available report the fact that a discharge of oil has taken place to the SAMSA Principal Officer, Department of Transport, Port of Saldanha. See Annex G, **SAMSA Marine Notice No. 16 of 2007**.

In terms of Section 9 the owners of the MTT shall be liable generally for the loss or damage caused by pollution resulting from the discharge of oil and/or hydrocarbons from the facility as well as for the cost of measures taken and the loss or damage cause by the measures taken.

CHAPTER 1

INTRODUCTION

The Oil Spill Contingency Plan is intended to ensure a rapid response to oil spills occurring at the Port of Saldanha and their approaches regardless of whether the spill was caused by failures of the MTT, Transnet National Ports Authority or by a visiting vessel/barge or rig at the Port of Saldanha.

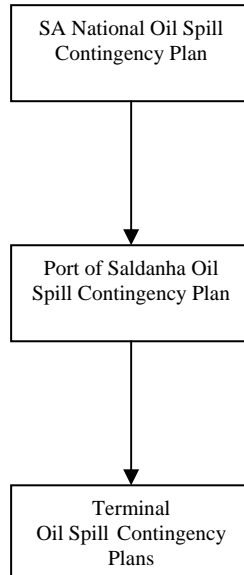
SAMSA is responsible for preventing oil spillages but once these have occurred, DEAT is responsible for coordinating the response actions to contain and clean-up pollution that has been released to the sea from the ship. DEAT will, in consultation with SAMSA, initiate, approve, oversee and coordinate all activities taken by other role-players in responding to the containment and clean-up action.

The above does not limit the responsibility of Transnet National Ports Authority, as the custodian and operator of the commercial Port of Saldanha, to prevent pollution and in the event of a spill, to minimise the amount of oil spilled, to monitor the spilled oil and where necessary affect clean-up, in consultation with DEAT, with due attention to the possible detrimental effects that the clean-up may potentially have on the environment.

Interfaces with other contingency plans

The Port of Saldanha Oil Spill Contingency Plan is designed in conjunction with the following specific plans;

- OPCSA Contingency Plan for the MTT operated by PetroSA,
- SA National Oil Spill Contingency Plan-version 1 dated 23 April 2005



Most oil spills are small and can be dealt with in-house or by an appointed contractor. Should the incidents occur larger than Transnet National Ports Authority's own capabilities, outside local assistance (SAMSA, DEAT, Coastal Patrol vessels, etc) will be requested, while even larger spills will require assistance on a national or even international basis-as depicted in the different tiers.

The boundaries of the different tiers are set out in this plan but are indicative only as the decision to progress from one tier to the next lies with the Transnet National Ports Authority On-Scene Commander/Recovery Director in close consultation with the DEAT and SAMSA and will be based on the prevailing circumstances and conditions at the time of the incident.

Regardless of size all pollution incidents must be immediately reported to SAMSA, & DEAT.

Dimensions of this Plan

This plan has been compiled to serve the areas under Transnet National Ports Authority has legal jurisdiction and mandate. The plan recognises the extreme sensitive ecological areas of Langebaan Lagoon and the West Coast National Park. These areas will be given the highest protection priority on the basis that oil spills do not respect man made boundaries.

CHAPTER 2

SITE INFORMATION-SALDANHA

Regional Municipal Authority

Saldanha Bay Municipality-West Coast District Council, Western Cape Province

Nearest towns

Saldanha – 5km west of port

Vredenburg – 18 km north of port

Langebaan – 20km south of port

There are informal settlements within a 10km radius of the site.

Infrastructure

Port of Saldanha is situated approximately 6km from the R27 highway and is connected to it by means of a secondary road and from which the port is accessed via a tarred road. Water is supplied to the adjoining Saldanha Township, and sewage is returned to the sewerage works of the town council. Rail access is via the Sishen-Saldanha main line. 400kV and 88 kV Eskom power lines cross the existing road network in the area.

Landowner

Transnet is the registered landowner of the Port. Its boundaries are indicated in Appendix E: Port of Saldanha Jurisdiction.

Regional climate

Saldanha Port is situated on the west coast of the Western Cape Province on the Langebaan Lagoon, at an average height of 15m above sea level. The winters are generally wet and cold. The summers are dry and hot with very little rainfall occurring during the season.

Tide levels

The following average tide levels for Saldanha Bay are given in the 2006 South African Tide Tables reference to chart datum. Chart datum at Saldanha Bay is 0.865m meters below the MSL survey datum.

Lowest astronomical tide	(LAT)	0m CD
Mean low water springs	(MLWS)	0.24m CD
Mean low water neaps	(MLWN)	0.70m CD
Mean level		0.99m CD
Mean high water neaps	(MHWN)	1.27m CD
Mean high water springs	(MHWS)	1.75m CD
Highest astronomical tide	(HAT)	2.03m CD

Important to note that variations of water level other than astronomical tide levels given above may be expected to occur.

Temperatures/Sea Water Density

Air temperatures seldom reach more than 30C, except during berg winds and are mostly less than 20C. Mean daily minimum temperatures are around 10C.

Sea water temperature average 15C but varies at different locations in the Bay. Some studies have found that the water in the inner bay is warmer than the water found the outer Bay. Similarly, cool water enters the Inner Bay along Marcus island causeway and is warmed up as it travels in a clockwise direction around the Bay. A temperature enhancement of as much as 5C can occur in this process.

Sea water density can regarded as remaining between 1,025-1,0255.

Currents & Circulations

Circulation patterns differ in the various regions in the Bay according to topography and morphology. In Langebaan Lagoon the circulation is mainly tidal and is not strongly influenced by winds. As it is tidally dominated seasonal variations are dampened. Velocities as high as 1.9 knots have been observed at the entrance to the Lagoon.

In Outer and Inner bay circulation patterns differ in summer and winter because of thermocline stratification in the former period. The stratification is mediated by the intrusion of cold bottom water due to coastal upwelling driven by South and South-East winds.

In the surface layer in summer, and in the overall water column in the winter, wind is the major factor that drives currents. In the inner bay circulation is mainly clockwise with strong acceleration south westwards down the iron ore causeway.

A water exchange with the open sea varies from once every 8 to 12 days in summer to once in 20 days in winter.

CHAPTER 3

ASSESSMENT OF SPILL RISKS

An average of 400 vessels a year call at the Port of Saldanha with this amount of vessels expected to be on the increase on a annual basis as the Port expands and increases its in/export activities.

Possible causes for pollution:

Tanker Terminal:

- a) Tanker overflow (less than 1 ton)
- b) Tanker leaking valves or seals (less than 1 ton)
- c) Loading Arms failure (less than 1 ton)
- d) Pipeline failure (up to 2, 5 tonnes)
- e) Vessel punctures (up to 5000 tonnes)
- f) Bilge or slops pumped overboard (less than 1 ton)

Vessel incidents:

- g) Vessel collision (up to 5000 tonnes*)
- h) Vessel structural failure (up to 5000 tonnes*)
- i) Tanker explosion (up to 300 000 tonnes*)
- j) Vessel grounding (up to 5000 tonnes*)

** assuming the vessel sinks, in most cases experience has shown that up to 100 tons can be spilled during the above mentioned incidents because oil and bunker fuels can be pumped between tanks on a vessel or recovered before sinking.*

The estimated maximum quantities spilled (in brackets) are based on the following;

- Iron Ore vessels of 350 000 DWT,
- MPT vessels of 60 000 DWT, &
- Oil Tankers of 300 000 DWT.

Notwithstanding the above there is, of course, always the unlikely possibility of a vessel completely breaking-up and spilling its entire cargo into the bay.

The likelihood of item g-j occurring are remote and would constitute a disaster that would result in worldwide attention on the scale of "ERICA" and "PRESTIGE". This will also trigger the Port Business Continuity Plan to be activated to ensure a speedy business recovery and clean up operation.

Any oil spilled at this Port would most likely be the result of items a-f. In these cases the resulting spill would be minimised due to the fact that oil cargo operations are closely monitored by the PetroSA tanker team, Transnet National Ports Authority Fire team, Transnet National Ports Authority PCO and OPCSA with their oil boom that is in place at all times when oil is being pumped. All the other cargo vessels undergo an inspection by the Transnet National Ports Authority PCO upon arrival and before departure. The purpose of these inspections is to prevent pollution by checking overboard valves and ensuring the vessel understand the Port's environmental requirements.

As mentioned above, the likelihood of items g-j occurring is remote. Consequently, the likelihood of any heavy-fuel-oil bunkers being spilled is also remote as no bunker operations are carried out at the Port of Saldanha. Therefore, the only oils likely to be spilled are bilge oils, diesel & possibly major problems at the tanker terminal. Bilge oils and diesels are usually non-persistent oils which are likely to disperse within 48 hours. As a general rule clean up of non-persistent oils is not usually necessary.¹ The other main sources of spills are from the fishing industry which is not within the commercial port jurisdiction. There have been a number of spillages resulting from refuelling and bilge pumping over the years.

¹ *Response to Marine Oil Spills*, The International Tanker Owners Pollution Federation Ltd, Witherby & Co Ltd 1986 reprinted 1993, p. I.5 *Oil types*, I.10 Table 2. Classification of Common Crude and Fuel Oils according to their Specific Gravity (see Group I), I.11 Figure 3: The rate of removal of oil group's I-IV from the sea surface according to their physical properties, IV.14 *Fluid Oils*.

CHAPTER 4

MOVEMENT OF OIL SPILLED AT PORT OF SALDANHA

Oil Movement Prediction

The factors causing oil to move at sea are wind, current and waves. As current and waves are strongly influenced by the wind, the wind can generally be regarded as the most important factor.

Wind

The predominant winds in the Saldanha area are South to South-South East in summer and North West in winter. The general trends can be seen in the wind roses.² The summer months have been taken as December, January and February and the winter as June, July and August.

Waves

Waves cause floating oil to move slightly in the direction of wave propagation.

Conclusion

In conclusion, as the currents and waves themselves are strongly influenced by the wind, a simplistic prediction of oil movement can be based purely on wind data. Spilled oil will move with the current at the same speed as the current and under the influence of the wind at between 3% of the wind speed and at a slight angle to the left of the wind direction.

Thus, with the use of a vector diagram, it is possible to predict the movement of the spilled oil at the time of the accident and the likelihood of beaching of oil. It can then be established whether or not action is required and what response time is available. Beaching of oil on sacrificial beaches can only be done on consent of DEAT and SAMSA.

CHAPTER 5

TIERED RESPONSE

As mentioned in chapter 1, Transnet National Ports Authority have aligned itself with the three tiered response of the national contingency plan, where tier one can be handled by the contractor and its facilities, tier two calls for assistance at a local level, while tier three requires an all-out effort on a regional, national or even international level. The tiers are specified as follows: -

- **Tier 1:** Response where the containment, clean up and rescue of contaminated fauna can be dealt with within the boundaries of the vessel, berth or a small geographical area where the incident has no impact outside the operational area but poses a potential emergency condition.
- Spill up to approximately 7 tonnes
- **Tier 2:** Response where the nature of the incident puts it beyond the containment, clean up and rescue of contaminated fauna capabilities of the ship or terminal operator and the containment of clean up requires the use of some of or the government and industry resources.
- Spill between 7-300 tonnes
- **Tier 3:** Response where the nature of the incident puts it beyond containment, clean up and rescue of contaminated fauna capabilities of a national or regional response. It is usually a large spill which has the probability of causing severe environmental and human health problems.
- Spill in excess of 300 tonnes.

In all cases the DEAT and SAMSA is to be informed immediately.

CHAPTER 6

NOTIFICATIONS

- 5.1 The first notification of an oil spill will in most cases come from Port Control. He will collect the following information:
- a) Date and time oil first observed.
 - b) Position/location
 - c) Source and cause of pollution.
 - d) Estimate of amount and type of oil spilled and likelihood of further spillage.
 - e) Description of oil slick i.e. direction, length, breadth and appearance.
 - f) Weather and sea condition. (Include, wind/current direction/speed)
 - g) Type of oil, where possible
 - h) Name of vessel and type of vessel
 - i) Action, both taken and intended, to combat pollution and prevent further spillage.
 - j) Name and contact of reporter of incident

The following is a guide³ as to the appearance of oil on the sea and the method of reporting such oil:

Effect of oil on appearance of the water:

Condition 1: Barely visible under most favourable light conditions.

Condition 2: Visible as a silvery sheen on the water surface.

Condition 3: First trace of colour may be observed.

Condition 4: Bright bands of colour.

Condition 5: Colours begin to turn dull natural to colour of oil.

Condition 6: Colours natural to colour of oil.

Note: *Conditions 4, 5 and 6* would require immediate action by the Organisation

Any vessel sighting oil in Port would report the incident to the Port Control and in turn must relay the message to the Harbour Master & Environmental Manager.

- 5.2 The DEAT Pollution Officer should be informed by the Transnet National Ports Authority as soon as possible.
- 5.3 The On-Scene Commander, if necessary in consultation with the DEAT Pollution Officer, will declare either tier I, II or III based on information received.
- 5.4 Primary response to an oil spill is as follows:
The emergency centres will be manned by, Transnet National Ports Authority, SAMSA & DEAT and the Terminal the vessel was intending to berth at.

Tier I -

- Contain the oil with booms,
- Monitor if any oil is not enclosed in the boomed area.
- Begin cleanup of oil with skimmer/absorbents.

³ South African Sailing Directions, Volume I, Chapter 1, NAVIGATION, Paragraphs 1.18 1 to 9

- Monitor booms for any breakages, ensure connections are secure (at vessel or at quayside)
- Boom in Mussel Rafts, if required.
- Note that the use of Oil Spill dispersants is not allowed for treating oil that has impacted the shoreline or the sea in the bay area. Dispersants are only permitted in water depth exceeding 30 meters).

Permission to use oil spill dispersant must be obtained from DEAT.

Tier II and III -

- The execution of the cleanup exercise will be under the control of the Joint Operations Committee (JOC) headed by DEAT & SAMSA.
- Transnet National Ports Authority will form part of that team to assist with resources and also deploy a resource to man the emergency centres.
- Port Control will ensure shipping movements do not interfere with the cleanup operations by controlling traffic.
- In case of Tier II and III, the Harbour Master will initiate the call-out of key personnel to activate Business Continuity Plan (BCP).
- Key personnel in turn will call-out their support staff.

The Transnet National Ports Authority SHEM will inform the DEAT and will provide them with details on the spill and action taken so far.

- 5.5 In case of Tier II and III the DEAT will activate their own contingency plan, whereas in Tier I they may opt to act as observers only.
- 5.6 Transnet National Ports Authority will confer with the SAMSA & DEAT on what actions to take to minimise the spill and optimise the clean-up. The strategy to follow will be passed to the On-Scene commander on the scene for his action.
- 5.7 Based on the information available, the Transnet National Ports Authority Port Manager will communicate the incident to the Port stakeholders and advise them of the actions taken and planned. He will update them on the situation as necessary.

CHAPTER 7

INITIAL ACTIONS TO BE TAKEN

6.1 CARGO LOADING OPERATIONS

On discovery of the spill, all cargo operations will be stopped at the terminal involved.

6.2 FORWARD CONTROL POST

Key personnel assigned to the Port Business Continuity Plan will establish contact with their support staff and report to the On-Scene Commander that all staff in place. They will then proceed as instructed by the On-Scene Commander keeping him well informed of progress made or problems encountered.

6.3 EMERGENCY CONTROL CENTRE

An On scene commander will be appointed by the Port Authority to run with matters on the ground level of the cleanup operation. He will in most cases be the Pollution Control Officer or any other designated person. The On scene Commander will check all lines of communications. The On scene Commander will instruct the Loading Master on the tanker (if tanker involved) on the flushing of the lines. He will instruct ship loaders or cranes to cease loading and go into park position. Based on the weather and current, as received from Port Control, he will prepare a vector diagram to predict the movement of the oil at sea and have the position verified by the offshore boats at regular intervals. He will maintain close contact with the Emergency coordination centre to provide regular information and feedback. The Harbour Master will make the call as to whether the vessel remains or vacates the berth.

CHAPTER 8

TYPES OF OIL

The base properties of an oil will determine the physical and chemical changes that occur when it is spilled into the water and will account for its persistence and susceptibility to natural or chemical dispersion.

Many oils have a tendency to absorb water and form an oil-in-water emulsion which can increase the column by a factor of three or four, and the viscosity by several orders of magnitude.

Currently the oils listed below together with their general properties can be expected to be found aboard vessels calling at the Port of Saldanha.

Table representing the general characteristics of different types of oil to which Saldanha is exposed.				
OIL TYPE	Density (kg/l) At 15° C	Kv,Cs At 40° C	Pour point °C	Flash Point °C
Crude Oil	0.8 – 0.95	5 – 100	+10 to -35	Variable
Diesel Oil	0.85	3 – 5	-5 to -30	>55
Light Fuel Oil (LFO)	0.9	100	+50 to -20	>60
Medium Fuel Oil (MFO)	0.9	400	+30 to -20	>60
Heavy Fuel oil (HFO)	0.99	1000	+30 to -20	>60

CHAPTER 9

ROLES & RESPONSIBILITIES

The Transnet National Ports Authority – Response Organisation will maintain close liaison with the Port Terminals, South African Maritime Safety Agency (SAMSA), Department of Environmental Affairs and Tourism (DEAT) and the Local Municipality. Co-ordination of response operations for the Tier 1 spillage is the responsibility of Transnet National Ports Authority in which various government agencies plays a supportive role.

PORT MANAGER/CRISIS MANAGER

He liaises with Transnet National Ports Authority stakeholders. He is the official media spokesperson and ensures that the press is kept up to date by making or authorising press releases or statements at regular intervals. He authorises all expenditures related to the incident recovery.

EMERGENCY CONTROLLER/RECOVERY DIRECTOR

Heads-up the Transnet National Ports Authority recovery team and is based in the Transnet National Ports Authority command centre. He liaises closely with SAMSA and DEAT on strategies to follow and the provision of manpower and materials.

SHORELINE CLEAN-UP SUPERVISOR

He will be at the scene of the spill and will be in constant radio communications with the On-Scene Commander on deployment of manpower and success of the operation. He will oversee the shore side cleaning operation.

MANPOWER AND TRANSPORT SUPERVISOR

He organises the availability of sufficient manpower, either Transnet National Ports Authority staff or contractor staff, and also organises the catering requirements of all on-shore workers.

He organises all transport related to the beach clean-up such as: Manpower transport, material transport, sludge removal vehicles, bulldozers, graders and transport of press to/from site etc.

MATERIALS SUPERVISOR

He organises all materials required for beach clean-up, such as temporary storage tanks, plastic bag, plastic sheeting, empty drums, shovels, rakes, bales of straw etc. He also arranges timely customs clearance for any materials that need to be imported.

CORPORATE IMAGE AND COMMUNICATION

Ensures that the general public is kept up-to-date with correct information on the incident in order to prevent the spreading of rumours and false information that can be damaging to the Port and its operators. They prepare press releases at regular intervals and have these approved by the CEO and Port Manager before they are released. The first press release used is the standard format (see APPENDIX A).

He/She is based in the Port Admin office. Organizes access to the scene of the spill for the press if and when required. All other staff are to direct any queries they may receive to the Corporate Affairs Officers of Transnet National Ports Authority. If interviewed by reporters, they will confine themselves to explain the nature of the work they are doing at the time of the interview. Questions relating to size of spill, duration and strategy of clean up and compensation of third parties are to be referred to the Corporate Affairs Officers.

Briefing of the press and media corps takes place at the Transnet National Ports Authority Offices.

“Please note, Transnet National Ports Authority needs to be involved in all aspects of an incident, which includes the cleanup exercise, preparation of press releases and addressing the media. We therefore would like to see a combined approach to dealing with the press involving the Transnet National Ports Authority Corporate Affairs, the Port Manager and the parties involved in the incident.”

SHE/ENVIRONMENTAL MANAGER

Reports to the Port Manager. He/She is based at the emergency coordination centre and is responsible for ensuring that all legal obligations fulfilled that the cleanup is being undertaken as swiftly as possible.

LEGAL SUPERVISOR

Reports to the Port Manager. He ensures that all activities/actions related to the incident are within the letter of law. He also ensures that sufficient back-up information and evidence is recorded to assist in any court cases that might result from the incident.

CLAIMS SUPERVISOR

Reports to the Legal Supervisor. He/She is seconded from the insurers and will be called out by the Administration Co-ordinator. He is based near the press centre readily accessible to third parties wishing to lay a claim against Transnet National Ports Authority resulting from damage to their property, caused by the spilled oil.

He/She is to assure claimants that their claims will be dealt with fairly but will not give assurances on time limits on payments and amounts paid in compensation.

He/She will assist claimants in completing the required forms and documents and advise them on supporting evidence of damage required.

COSTING SUPERVISOR

Reports to the Port Manager. He/She is responsible for keeping accounts of all expenditures related to the incident. He/She arranges the settlement of bills and invoices in accordance with standard corporate policy.

HISTORIAN

Responsible for keeping an accurate record of events as they occur.

ONSCENE COMMANDER

Take charge of controller the cleanup operation on ground level. He will issue instructions to the staff, labour and contractors undertaking the cleanup operations. He reports to the Emergency Controller/Recovery Director.

OPSCA

Reports to the On-Scene Commander. They are responsible for cleaning up the spills occurring from the MTT operations, as per agreements signed by the operators of the terminals and oil industry clients.

They will liaise with DEAT (or SAMSA) and Transnet National Ports Authority on all offshore operations and directs boats where required. At regular intervals they will make inspections to monitor the position of the spilled oil and to report this to the Onshore Commander.

Note: Dispersants only to be used in accordance with the regulations published by Government Notice No. R662 of 9 May 1997.

DEAT

Coordinated cleanup measures along the coastline. They control the Coastal Patrol vessels and a give authorization for use of dispersants. They have dedicated equipment stored in Cape Town that could be utilised, if required. They can give authorisation for the use of a beach or other piece of coastline as a sacrificial area for beaching of oil.

SAMSA

The control of shipping casualties. They ensure prevention of incidents occurring. They can prosecute or take legal action against shipping companies in the case of oil spill or other type of incident.

SANPARKS

Offer specialist advice on effective cleanup operations in the Lagoon and Schaapen Island. They can authorise access to islands and other environmental sensitive areas under their jurisdiction.

CAPE NATURE CONSERVATION

Offer specialist advice on effective cleanup operations on Marcus, Malgas & Jutten islands. They can authorise access to islands and other environmental sensitive areas under their jurisdiction.

LOCAL MUNICIPALITY

Make available resources and equipment to assist in the cleanup operations, where required. Effect traffic and crowd control. Inspecting areas under their jurisdiction and participate in the Emergency control centre.

DISTRICK MUNICIPALITY

Offer support to the local authorities and inspecting areas under their control. Providing support and resources where required.

LOCAL POLICE

Make available resources and equipment to assist in the cleanup operations, where required. Effect traffic and crowd control.

BORDER POLICE

Manage access control to and from the port. Effect traffic and crowd.

TERMINAL

Make available resources and equipment to assist in the cleanup operations, where required. Inspecting areas under their jurisdiction and participate in the Emergency control centre.

MILITARY

Effect cleanup in areas within the Northern Military area. Provide personnel and craft for cleanup operations. Inspecting areas under their jurisdiction and participate in the Emergency control centre.

DWAF

Provide specialist input in respect of waste disposal, treatment and facilities.

SANCCOB

Make available resources and equipment to assist in the cleanup operations, where required. Assist with rescue, cleaning and rehabilitation of oiled birds. Participate in the JOC

Communication Structure-chain of command**Joint Operations Committee (JOC)**

In the event of an oil spill incident, SAMSA will bring together a JOC, made up of stakeholders and role-players, the function of which will be to consult, inform and co ordinate activities in dealing with the incident. The stakeholders in the JOC are SAMSA and DEAT and because the "polluter principle" applies, the ship owner or person or organisation responsible for the cost and losses incurred by the incident. The JOC will be compiled with the key role players being SAMSA, DEAT and polluter but additional members can and will be added to the JOC depending on the magnitude of the incident. SAMSA and DEAT will head the JOC and facilitate proceedings up until a point of satisfaction by relevant authorities.

CHAPTER 10

COMMUNICATIONS

The importance of good and reliable communications during an oil-spill incident cannot be over-emphasised. Dedicated telephones and radio frequencies are installed as indicated below and communication disciplines are to be adhered to at all times. The use of cell phones is recommended whenever possible.

EMERGENCY CONTROL CENTRE

The following emergency control centres had been identified in case of an incident of oil pollution occurring:

- Port Control
- Transnet National Port Authority Administration offices
- PetroSA Administration offices

All facilities are required to be fully equipped to attend to all Transnet National Ports Authority emergencies. Which facilities to be used will be the call of the Crisis Manager or the Emergency Controller-depending who is at the command.

Installed are:

- a) 1x Direct line telephones.
- b) 2x VHF radio. (All frequencies)
- c) 1x Fax Machine.
- d) 1x Computer with printer
- e) 1x TV-Set.
- f) 1x Video/tele-conference Facility

All concerned are required to maintain strict communication disciplines and are cautioned not to discuss sensitive issues over the radio. All communications need to be clear and concise and kept as short as possible in order not to congest channels of communication.

CHAPTER 11

CLEAN-UP TECHNIQUES

Spilled oil can be recovered when still on the sea. Once it beaches, clean up is difficult, tedious and time consuming. The environment is damaged most once the spilled oil is beached; the extent of damage depends on the type of beach and the amenities situated there.

The best environmental approach to an oil spill is to contain as swiftly as possible and recover oil either by using absorbents or mechanical skimmers. With really minor spills of Diesel natural dispersion can be done with some agitation by a vessel propeller to break up the slick and minimize concentration. Provided the movement of the slick does not threaten the beaches this approach is to be followed, especially in the case of Tier I spill.

Containment and recovery of spilled oil at sea is to first option using pollution booms and skimmers. Given excellent conditions and efficient equipment a recovery of 90% of the oil spilled is regarded as excellent.

Taking into account the proximity of the Port to the lagoon and beaches, with an onshore wind of 1.5 metres/sec (30 knots) at the time of the spill, oil could land on the beaches within one to one and a half hours of the spill. Consequently, no matter how quick the initial response, it is inevitable that in these circumstances some of the spilled oil will land on the beach. The cleanup of the beaches will involve labour-intensive physical removal of spilled oil and transport of same to suitable disposal sites, either permanent or temporary.

Evaporation

Influencing factors

The rate and extent of evaporation is determined primarily by the volatility of the oil. The greater the proportion of components with low boiling points, the greater the evaporation. The initial spreading rate of the oil also affects evaporation since the larger the surface area, the faster the light components will evaporate. Rough seas, high wind speeds and warm temperatures will further increase the rate of evaporation. In broad terms, those oil components with a boiling point below 200°C will evaporate within a period of 24 hours in temperate conditions.

Evaporation rates

Spills of refined products, such as kerosene and gasoline, may evaporate completely within a few hours and light crude can lose up to 40% during the first day. In contrast, heavy crude and fuel oils undergo little, if any, evaporation. Any residue of oil remaining after evaporation will have an increased density and viscosity which affects further weathering processes as well as the choice of clean-up techniques.

Fire and explosion hazard

When extremely volatile oils are spilled in confined waters, there may be a risk of fire and explosion. The flammability of oil has often led to the idea of burning slicks on the sea surface. Although it is often possible to ignite slicks, particularly of fresh oil, it is difficult to maintain combustion even when wicking agents are employed due to the thinness of the oil layer and the cooling effect of the water underneath. The

residues remaining after partial combustion are usually more troublesome and difficult to deal with than naturally weathered oil.

Boom containment

The ability of containment booms to collect floating oil is subject to limitations described by fundamental physical laws (the speed of the boom moving through the water, or the speed of the water passing under the boom skirt)

The maximum sweeping speed (the speed of the water passing perpendicular to the boom) using a conventional inflatable or foam filled containment boom is 0.7 knots, if you don't want to lose oil, escaping under the boom. The maximum speed perpendicular to the boom is 0.7 knots, no matter how much draught the boom has.

There are, however, minimal variations, dependent on for instance the specific gravity of the oil.

Certain boom sweep formations and boom designs, having a fine meshed net to make a water permeable bottom between the lower parts of the skirts at the apex of the "V-shaped" boom sweep formation - can create a strainer bag effect where the water escapes easier than the oil through the net. These specially designed boom sweep apex formations may reach an effective sweep speed of approx. 1.5 knots before a significant amount of oil is lost under the boom.

Boom Configurations for the Containment, Concentration, and Recovery of Oil

Booms, moored and used for deflection of spilt oil, for instance in a river, must be placed in an angle to the current which ensures that the speed component of water - projected into a direction perpendicular to any section of the boom - does not exceed 0.7 knots.

All static containment of spilt oil must obey the same rule which is that the velocity of the component of water which flows perpendicular to the boom configuration must be less than 0.7 knots.

Dynamic containment and concentration of oil may be performed using several types of boom configurations:

"U" Configuration

Concentrating capability: Poor

Maneuverability: Poor

This is the most commonly used and unfortunately also the most inefficient way of sweeping oil for recovery by a skimmer. The "U" sweep will "concentrate" the oil in a large area inside its huge apex, and therefore it will only build up a thin layer of oil, thus making efficient skimming difficult. The U-shape will normally require two vessels towing the boom, and one vessel operating the skimmer. A three vessel operation is extremely difficult to maintain for the masters of the vessels.

"U+V" Configuration

Concentrating capability: Good

Maneuverability: Poor.

This adds a "V" shaped pocket to the apex of the "U", thus enabling an efficient concentration of the oil, which will support a high recovery efficiency of the skimmer. But still very difficult to navigate.

"J" Configuration

Concentrating capability: Poor to Medium

Maneuverability: Medium

In this concept, the vessel towing the shorter end of the "J" sweep will also operate the skimming unit. This facilitates navigation, but the oil is still not concentrated very well and therefore only in a thin layer, thus making efficient skimming difficult.

"V" Configuration or V-Sweep

Concentrating capability: Medium

Maneuverability: Good

A large scale V-shaped sweep is not possible. It will eventually end up as a U. But for smaller sweeps, mounted at one side of the recovery vessel, this is an extremely efficient way of tracing the "windrows". The limited sweeping width limits the overall concentrating capability, but the efficient concentration of the oil which is caught by the sweep, supports a high recovery efficiency of the skimmer. The use of a bottom net design - incorporated into the V-apex of the sweep - may result in increased recovery speed and efficiency.

"J+V" Configuration

Concentrating capability: Good

Maneuverability: Medium

In this concept, a "V" pocket has been attached to the apex of the "J", and the vessel next to the "V" will also operate the skimming unit. Two vessels facilitate navigation when compared to three vessels, as needed for a "U", and the efficient concentration of the oil entering the V part of the sweep supports a high recovery efficiency of the skimmer

Side Fitted Single Vessel Sweep

Concentrating capability: Poor to medium

Maneuverability: Good

This configuration is very common, and is recommended due to an excellent maneuverability. The vessel is equipped with a side fitted outrigger arm (jib) which holds the boom in either a U shape (poor oil concentration ability), see sketch to the right, or a V shaped formation, see V Sweep sketch above. The V shape has the ability to concentrate the oil and therefore build up a thick oil layer for high skimming efficiency. The sweeping width is, however, limited.

Side Fitted Single Vessel Double Sweep

Concentrating capability: Medium to good

Maneuverability: Good

Two side fitted sweeps are used, one jib arm on each side of the hull hold the sweeps. The sweeping width will be increased, and still the maneuverability of this configuration is good.

"U" Configuration with an open apex, followed by a Side Fitted Single Vessel Sweep

Concentrating capability: Very good

Maneuverability: Medium

Compared to the "U" with two towing vessels and one recovery vessel operating a skimmer at the apex of the boom, this concept combines the advantage of a large sweeping width, with the efficiency of an independent recovery vessel mounted with a single or double side fitted sweep. The oil which is concentrated by the large "U" will be guided into a narrow stripe behind the U-sweep, and may immediately be contained and recovered by the Side Fitted Single Vessel Sweep following right after the U.

SKIMMER-RECOVERY

Skimmers in General:

An oil skimmer is a device which can be used to recover floating oil from (or near) the surface of water.

The Skimmer is only one out of several links in the recovery chain, which for instance at sea may consist of the recovery vessel, tug boats, containment booms, skimmers, transfer pumps, and temporary storage. No chain is stronger than the weakest link, and where this is in the recovery chain, depend very much on weather and sea conditions, size of oil spill and type of oil, presence of debris, seamanship, vessel capability, boom configuration/performance, skimmer type, type and capacity of transfer pump, and finally the storage capability.

Skimmer Principles and their Performance

- **Adhesion/Oleophilic Skimmers**
- **Air Conveying Skimmers**
- **Belt Skimmers**
- **Filter Skimmers**
- **Inclined Plane Skimmers**
- **Mechanical Feeder Skimmers**
- **Vortex Skimmers**
- **Weir Skimmers**

Adhesion/Oleophilic Skimmers

This principle uses the oil's ability to stick to certain materials. Polypropylene, PVC and aluminum are – among others - good adhesion materials. The aim is to let the floating oil stick to a moving surface and then – once out of the water - scrape or squeeze it off into a sump or a pump. This may be a rotating disc, drum, or brush. Or it may be an endless band, mop rope or bristles. Bristles and teathed discs combine adhesion and mechanical feeding.

Viscosity range: Pure adhesion will work up to a maximum of 10,000 cSt, although optimum is 100-1000 cSt and above 5,000 cSt, efficiency is very low.

Water content: Is low at low disc-, band-, drum-, mop-, and bristle speed and at low viscosity. Higher speed and viscosity will increase the water content significantly.

Debris: Adhesion skimmers are not very debris sensitive as long as the debris does not restrict the flow of oil to the skimmer. Smaller debris may nevertheless clog the suction- or pump inlet. Big debris will not be dragged into the skimmer.

Operating conditions: Disc, band, and drum skimmers: Relatively calm water, as the wave action may push the oil away from the adhesion surfaces. Mop ropes and bristles are less wave sensitive. Mops and bristles have demonstrated good performance in water with broken ice. Small disc and mop skimmers (5-15 cbm/h) are the most commonly used skimmers World wide, for in-shore, harbour, and lake spills.

Air Conveying Skimmers

Vacuum trucks or smaller vacuum units are often used as skimmers with or without a skimmer head mounted at the end of the suction hose. But only for very light oil is vacuum the effective player. With a maximum of 0.8-0.9 bar (12 PSI) of suction, the vacuum will be inefficient on higher viscosities due to friction losses in the suction hose.

The secret behind the vacuum unit's ability to recover oil is the high speed movement of the air at the end of- and inside the suction hose. You could talk about an air conveyor belt. The high speed air merely lifts off the oil from the surface of the water and transports it to the reception tank. With viscous oil this is only possible if a lot of air is dragged into the hose "parallel" with the oil. Vacuum (and no air flow) will not do it.

Air conveying has been refined in portable units with small reception tanks, but with powerful air conveying capability.

Viscosity range: Air conveying will handle even solid oil, provided it is in lumps small enough to enter the intake. Range: up to about 1 million cSt.

Water content: Low in calm water conditions, but high in waves.

Debris: As long as the size is small enough to enter the inlet, there is no problem, but bigger debris will clog the intake and seize operation until cleared away.

Operating conditions: Preferably calm water. Autonomous self floating units will due to weight and size get out of phase with waves, thus losing efficiency. If only the intake head is floating, the wave performance may be somewhat better.

Belt Skimmers

as belts are used in several ways, covering "adhesion", "mechanical feeder", "inclined plane", and "filter", and combinations thereof, it is relevant to describe the belt type as a separate principle, although it is not one.

The filter belt combines filtration with adhesion and mechanical feeding. The belt is moved through the water/oil, and a pump behind the belt may increase the flow to and through the belt. The filter effect separates oil and debris, letting the water pass through the filter belt. The adhesion effect lifts the oil and oily debris out of the water, conveyed by the belt's movement. At the top of the belt the oil is scraped off into a sump or a pump, while the biggest debris is guided to a separate storage.

The non-adhesion belt is used to convey the floating oil below the water surface and feed it into a collection and recovery tank, where the oil again will float up to the surface. The belt's movement will offer almost zero relative velocity to the oil, thus facilitating separation and re-floating. As the layer builds up, a built-in weir skimmer recovers the oil, and a pump will transfer it to a reception tank. This principle combines mechanical feeding and inclined plane, and is called the submerged belt or Dynamic Inclined Plane, DIP.

The conveying belt is used to lift - by means of cups or scrapers - the oil (and in some cases also some water) out of the water and dump it into a sump or a pump. This principle is actually mechanical feeding. When cups are mounted on the belt, some water will be recovered together with the oil. However, this may be decanted from the recovery sump prior to transferring the oil.

Viscosity range: The above water belt type skimmers may recover even very viscous oil. The expected maximum is 50-100,000 cSt. The cup belts may have a problem getting high viscosity oil out of the cups. The submerged belt skimmers will only recover what the pump or skimmer in the reception tank will handle.

Water content: The conveying belt with cups will always recover a lot of water with the oil. The other types will have a low water content in calm water, however, increasing with increased wave action, belt speed, and viscosity.

Debris: The belt skimmers are very good at handling debris. Normally it is the transfer pump which sets the limitation.

Operating conditions: From calm sheltered water and near shore up to 8 m/sec wind speed, 1.5 m significant wave height. Higher waves will push the oil away from or under the skimmer. Belt skimmers have been used with good results for many years, although they - due to price and size - have only been distributed moderately.

Filter Skimmers:

The filter belt has already been mentioned above under belt skimmers. Filter skimming also takes place in the net-drum skimmer, which consists of a horizontally oriented drum made of stretch metal, which rotates around a circular tube with a built-in hopper. The diameter of the net-drum varies from maximum at the opening or inlet, to minimum at the horizontal tube and hopper, thus creating a concentrating capability by rotation. The hopper is well above the water surface, so the concentrated oil will be scraped into the hopper with no or minimum water content. Inside the hopper an Archimedes' screw feeds the recovered oil into the transfer

pump. The net-drum combines filter and mechanical feeding, and to some extent adhesion.

Net bags, or so called oil trawls, which can be attached to the apex of a sweep, in order to recover tar balls and high gravity oil and bitumen (floating in or under the water surface), must in principle be considered as a filter skimmer. The forward movement of the sweep will force both oil and water into the oil trawl. The water will escape through the masks, which, however, will hold back the oil, due to the oil's higher viscosity and inner tension (shear rate).

Viscosity range: Net drums and net bags will recover oil well over 100,000 cSt.

Water content: The net drum will increase the water content with increasing RPM of the drum and with the increase of viscosity. But in general both the net drum and the net bag will - under moderate working conditions - recover very little water.

Debris: Once debris, which is too big for the feeding screw and the transfer pump to handle, gets into the net drum, it is very difficult to remove, and it may seize the operation for a long time. But smaller debris is no problem. The net bag will recover whatever debris can get into the bag.

Operating conditions: The net drum and the net bag are not very sensitive to wave action as long as oil is constantly moved to the unit. The expected maximum significant wave height is about 2m for the net drum, while the net bag will work as long as the containment booms can hold the oil.

Inclined Plane Skimmers:

The belt combination was mentioned above, under belt skimmers. The inclined plane skimmer (without belt) works in a similar way. But here it is solely the forward movement of the skimmer through oil and water which forces the oil under the plane and into the collection and recovery area, where the oil will re-float. As the layer builds up, a built in weir skimmer recovers the oil, and a pump will transfer it to a reception tank.

Viscosity range: It should not be expected that the inclined plane skimmers will be efficient above 20,000 cSt, as oil of higher viscosity will tend to be pushed in front of the skimmer and will also have difficulties in following the flow to the surface of the collection chamber. This principle will further be limited to recover what the pump or skimmer in the reception tank will take.

Water content: For moderate weather and moderate viscosity (less than 10,000 cSt) the build up of a thick oil layer in the collection chamber will result in a low water content with the recovered oil. Higher speed, bigger waves and high viscosity will increase water percentage significantly.

Debris: Larger debris may enter the collection chamber, but may not be handled by the built in weir skimmer or transfer pump. This situation will require personnel ready to manually remove debris.

Operating conditions: The principle of re-floating submerged oil limits how much bumping the skimmer can take before the oil is lost under the skimmer. A significant wave height of about 1.5 m will be the upper limit for a reasonable performance.

The principle is intended for higher speed than the normal 0.5 to 1 knots. But the higher speed, the smaller waves can it take.

Mechanical Feeder Skimmers:

This principle is always used in combination with one or more of the other skimmer principles. One exception could be the conveyor belt cup skimmer, which is best described as a mechanical feeder.

Combination examples: A disc skimmer with teeth at the perimeter of the discs combines adhesion with the teeth's ability to feed.

Rotating (or endless ropes of) bristles or brushes, mounted on a weir skimmer, combine adhesion to the bristles, and feeding capability provided by the stiffness of the bristles, with the simplicity and low inertia mass of the weir skimmer.

The net drum skimmer, combines filtration and adhesion with the feeding and concentrating geometry of the stretch metal drum.

The filter belt combines filtration with adhesion and mechanical feeding.

Common for the addition of mechanical feeding to the various skimmer principles is that it results in significantly increased performance regarding high viscosity, debris capability, and to some extent, low water content. However, this puts further stress on the importance of the transfer pump's performance. But there is no doubt that "above water" feeding combinations are good choices in difficult oil spill operations with weathered and debris laden water-in-oil emulsion.

Vortex Skimmers:

This principle creates a vortex in the central zone of the skimmer, by rotating and evacuating water through the bottom of the recovery chamber, using a large diameter propeller pump or paddle wheel. Thereby water and oil is "dragged" towards the skimmer, and simultaneously a centrifuge function is created, which tends to allow for the build up of an increased oil layer in the center of the vortex. The oil is sucked by a pump or recovered via a simple weir at the center. A different way of creating the vortex is to let a forward movement force oil and water tangentially into a circular chamber. The water escapes through the bottom, and the oil is sucked away from the increased oil layer at the center of the vortex.

Viscosity range: Up to a maximum of about 5000 cSt this principle may work as intended. But increased viscosity will disable the circulating water's ability to bring the oil along.

Water content: Relatively low, provided absolutely calm conditions.

Debris: The vortex may be severely disturbed by the presence of debris. The vortex inducing propeller pump or paddle wheel will very soon be jammed up with debris.

Operating conditions: Absolutely calm and clean conditions. More like a laboratory situation... But for such condition the paddle wheel vortex principle may be the only skimmer which will have any effect in static mode. The principle was popular in the earlier years of oil spill response history.

Weir Skimmers:

This is the most simple of all the principles. Actually, all it does is the same as when the cook skims the fat off the soup, using a table spoon. The weir lip may be adjusted vertically up/down hydraulically, or the entire skimmer may be air ballasted up/down by dragging water out of - or into - one of the floats. A few have manual adjustment. However, the most common adjustment is by means of a self adjusting weir lip, which floats higher or lower depending on the pumping rate.

Weir skimmers may be free floating skimmers, mounted on a crane, hand held, or built into combination skimmers as described above. A special combination is the weir boom, where a weir, a hopper, and a transfer pump is integrated in the apex section of a boom. There are also designs with two or more weirs built into the boom.

Combinations where the weir skimmer is the basis for attachments of different cassettes with disc sections, bristles, or other feeders are also available, offering a versatile concept.

A weir skimmer may have an internal transfer pump mounted in or under the weir hopper. Or transfer of recovered oil may be handled by an external suction pump or a vacuum unit.

Viscosity range: As a free floating dynamic weir skimmer, preferably placed in the apex of a V sweep, efficient skimming will seize at about 30-40,000 cSt, dependent on the design of the weir lip. Additional mechanical feeding may expand the viscosity range up to 50-100,000 cSt. Free floating lumps of almost solid oil may also be recovered, provided they can pass the weir lip and enter the intake of an appropriate transfer pump.

Water content: Weir skimmers will – especially at open sea - recover more water than most other skimmers, but over a longer term their simplicity and reliability still make them recover more oil than other skimmers.

Debris: Big debris may obstruct the oil's flow to the weir or may clog the transfer pump or suction intake. Depending on the type of transfer pump, medium and smaller size debris will not affect the skimmer.

Operating conditions: Due to small size and weight, when compared to recovery capacity, this principle will allow skimming in up to 12 m/sec wind speed and a significant wave height of 2 to 2.5m. In general you can say that an open sea weir skimmer will work as long as the containment boom can hold the oil. Weir skimmers are the most widely distributed skimmers for open sea and near shore skimming, and over the last few years they have become quite common in land spill clean-up operations and in waste oil pit-cleaning, as it is convenient that responders may push or shovel oil sludge directly into the hopper.

The limitations that poor weather and rough seas impose on operations at sea are seldom fully appreciated. Handling wet, oily, slippery equipment on vessels which are pitching and rolling is difficult and can place personnel at risk. Winds, currents and wave action seriously reduce the ability of boom to contain and of skimmers to recover oil. In practice, the most efficient recovery of oil is achieved only under calm conditions. When containment and recovery is attempted it is important to select equipment that is suitable for the type of oil and the prevailing weather and sea

conditions. Efforts should target the heaviest oil concentrations and areas where collection will reduce the likelihood of oil reaching sensitive resources and shorelines. As the oil weathers and increases in viscosity, clean up techniques and equipment will need to be re-evaluated and modified. For example, the types of pumps and skimmers may need to be changed.

CHAPTER 12

CLEAN-UP PROCEDURES

When an incident occurs the following equipment will be deployed:

- Try to identify the source and stop the source of the spill,
- Deploy booms around the oil slick. Tying booms end to end to each other to the desired length. Ensure sufficient space around vessel to contain the oil, not too close to vessel.
- If spill is from a vessel;

At the berth; Boom off vessel around the outside (seaside) of vessel from stern to bow. Anchor or secure the booms with rope to the nearest bollard (at the bow and stern) on the quayside and lower boom to water level. Allow a bit of slack for tide movement. If oil moved along quayside to other vessels, they must be boomed in as well. All efforts to concentrate on preventing it from spreading into lagoon and/or the mussel farms. In such a case the mussel rafts to be boomed in.

On Anchorage;

- o **Saldanha anchorage-** Boom oil slick, where possible. If spill is too big, boom of entire vessel. All efforts to concentrate on preventing it from spreading onto mussel farms. In such a case the mussel rafts to be boomed in.
- o **Langebaan anchorage-** Boom oil slick, where possible. If spill is too big, boom of entire vessel. All efforts to concentrate on preventing it from spreading into lagoon.

OIL SPILLED ON QUAYSIDE/LAND

- o Mainly absorbents will be used to clean up any oil spilled on the quayside.
- o Precaution must be taken to prevent oil from spilling over into sea.
- o An absorbent boom to be used along quayside edge and drains to prevent oil from moving.

SPILL IN THE CONTAINMENT AREA (UP TO APPROX. 7 TONS)

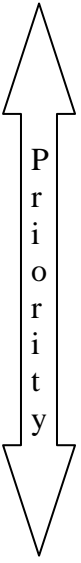
- o Use small pollution boats "Duiker" to deploy absorbent materials onto oil slick.
- o If too much oil to be cleaned up, oil skimmer equipment to be used.
- o Additional booms can be deployed for extra security.
- o Pollution boat, "Sysie" to patrol around the affected area to monitor the containment for any leaks.
- o They will also observe for any oil that might have not been contained in containment area.

OIL SPILL LARGER THAN 7 TONS

A spill where the quantity upfront known to be more than 7 tons or on inspection found to be above that limit will be contained as far as possible using booms available. The priority being to stop the source of the spill. Immediately notify Port Control of size of spill and that additional resource is required. This spill will then go onto the next Tier where the JOC under leadership of SAMSAs and DEAT will mobilize additional resources. In the mean time the Port Authority will contain and recover as much oil as possible with resources at hand. All efforts to concentrate on preventing it from spreading into lagoon and/or the mussel farms. In such a case the mussel rafts to be boomed in.

CHAPTER 13

PRIORITIES FOR PROTECTION

Priority	SUMMARY OF CONSIDERATIONS FOR SETTING PRIORITIES FOR RESPONSE ACTIONS				
	High	ECOLOGICAL IMPORTANCE			
		ESTUARINE ENVIRONMENT; Langebaan Lagoon-RAMSAR site)			
		ISLANDS-Bird Colonies	RECREATIONAL IMPORTANCE		
		ROCKY HEADLANDS	YACHT CLUBS; SLIPWAYS; MARINAS	COMMERCIAL IMPORTANCE	
		BEACHES	WATER SPORTS	MUSSEL FARMING	
			HOTELS RESORTS CARAVAN PARKS	FISH FACTORIES	MILITARY IMPORTANCE
			WATERFRONT RESTAURANTS BOAT CHARTERS		SAS SALDANHA
	Low		RECREATIONAL BEACHES	PORT WORKING	SPECIAL FORCES REGIMENT LANGEBAAN

CHAPTER 14

TERMINATION OF CLEAN-UP OPERATION

The decision to terminate the clean-up operation lies with different authorities depending on the magnitude of the spill.

- **Tier 1**-Transnet National Ports Authority in close liaison with DEAT & SAMSA.
- **Tier 2**- DEAT & SAMSA in consultation with the JOC.
- **Tier 3**- DEAT & SAMSA in consultation with the JOC.

Particular attention should be given to:

- Standing down and cleaning-up equipment in readiness for future accident.
- Re-ordering consumed materials.
- Preparing a detailed report on the operation.
- Reviewing the contingency plan.

CHAPTER 15

TRAINING

The Port Authority is responsible for updating and maintaining this plan on a regular basis. In addition, it must ensure that the plan is communicated to all relevant roles players and that key staff members receive necessary training. All crew members of vessels need to undergo regular competency and fitness assessments. In addition they need to be trained on oil spill containment and cleanup techniques. All shore side personnel are to receive relevant training on the cleaning of oil spills on land, beaches, rocky shores and other relevant mediums.

CHAPTER 16

EXERSIZING AND DRILLS

In order to evaluate a plans effectiveness and practicality it needs to be tested under real time circumstances. We therefore endeavour to have annual simulation exercises to test our plans, responses and effectiveness.

CHAPTER 17

REFERENCES

1. South Africa's National Contingency Plan for the Prevention and Combating of Pollution from Ships and Offshore Installations.

APPENDIX A



Port of Saldanha

PRESS STATEMENT

An oil spill of and estimatedtonnes of
Occurred at.....hrs. on the (date).

First indications are that the spillage resulted from
.....
.....
.....

The spill is currently moving in adirection.

It is currently estimated that the following consequences will ensure as a result of the spillage:-

- 1) TheOil will dissipate naturally and there is no immediate threat.
- 2) TheOil will reach the shoreline at an estimated time ofhrs.
The beaches which may be affected are
.....
The likelihood of further spillage is
.....
- 3) The oil slick is drifting in adirection and at present
the beaches are not affected.

Our Oil Spill Contingency Plan was activated immediately to address the problem and every effort is being made, in conjunction with the DEAT, SAMSA, Transnet National Ports Authority and the Local Municipality, to reduce the impact on the environment.

Further information can be obtained telephonically through our Corporation.

PRO.....at telephone No.

A Media Information Centre has been set-up at the.....

Contact At..... for further information/updates.

Port of Saldanha

Environmental incident notification

Attention: _____
 Tel: _____
 Fax: _____
 Cc: _____
 Tel: _____
 Fax: _____

Item	Detail
Date & Time	
Incident reported by	
Released substance	
Estimated quantity	
Likely source of spill	
Persons injured, died	
Wind speed, direction	
Approximate sea surface area covered by spill	
Visual damage to equipment, vessel, infrastructure noted	
Brief description of incident:	
Immediate containment actions taken:	
Other remarks:	
Further action:	
Transnet National Ports Authority informed the following parties and authorities:	
Compiled by: Name: Designation: Signature: Date:	

APPENDIX C

CLIMATE & WIND DATA

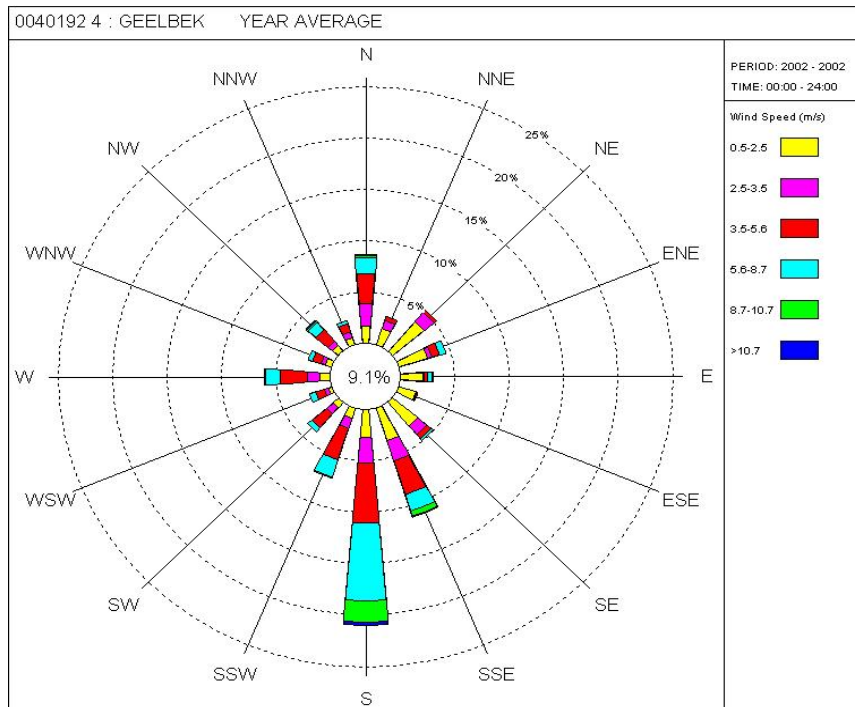
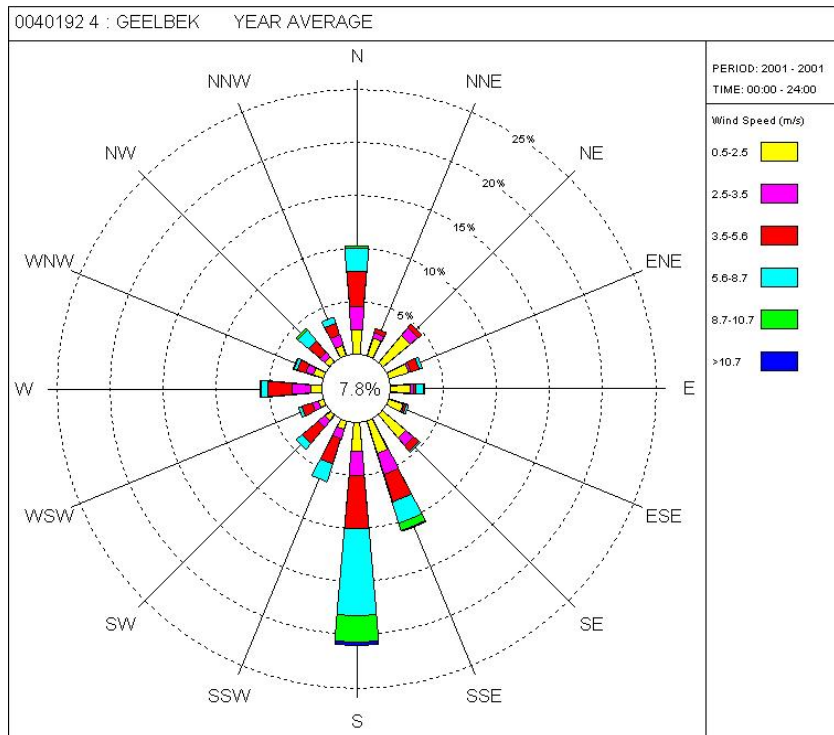
The climate of the west coast is mild to cool and is strongly influenced by the cold Benguela Ocean current. The area has a semi-arid Mediterranean climate and a mean annual temperature of 17°C with temperatures rarely reaching more than 30°C in the summer. The area has an average rainfall of approximately 330mm p.a. with 70% of the rain falling between April and September. The months of December, January and February experience on average less than 10mm each.

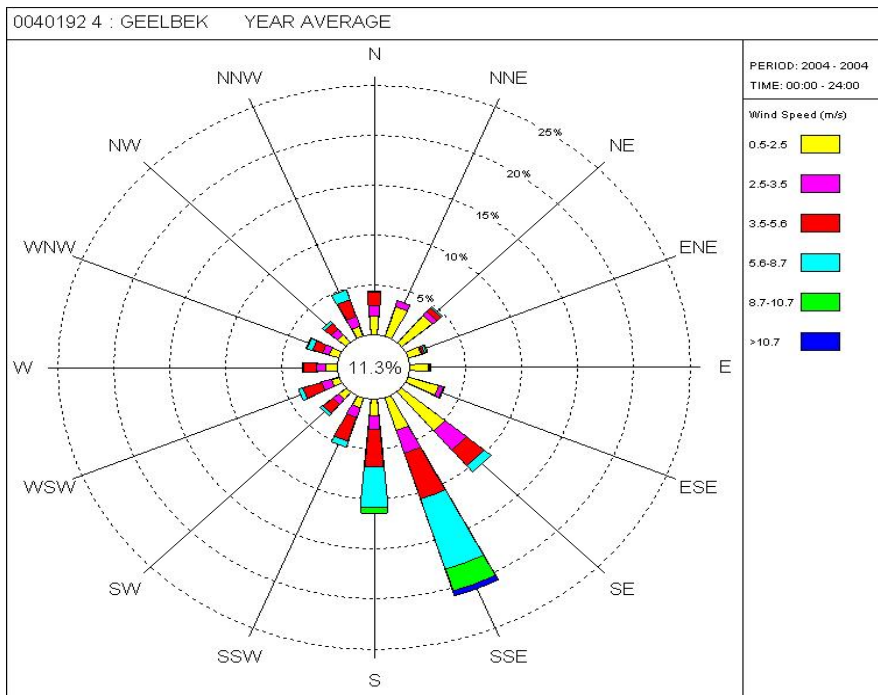
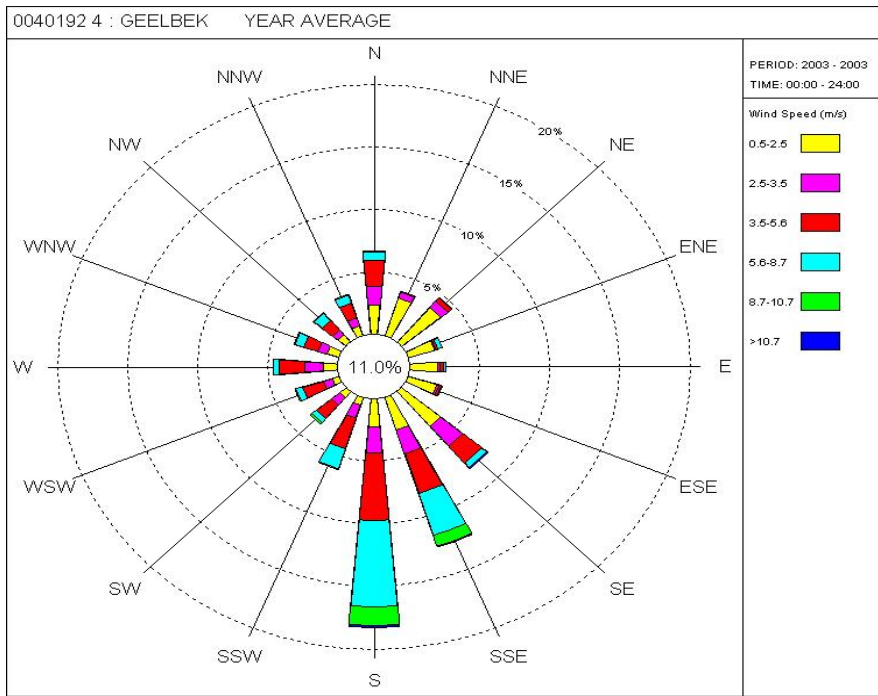
Coastal fogs caused by the interaction of cold marine air and warmer land air masses are common particularly in the autumn.

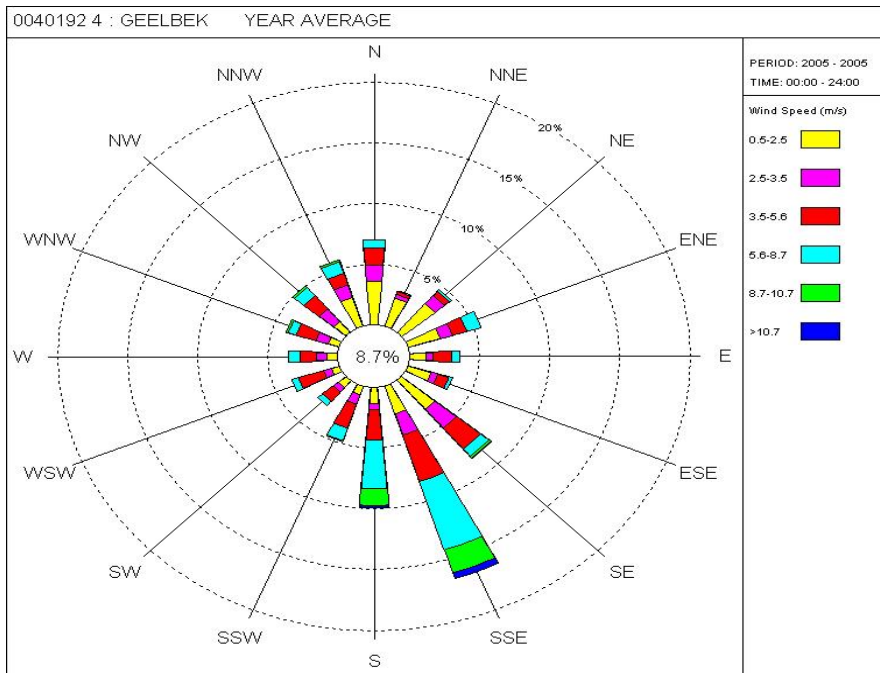
The wind pattern is dominated by strong south-westerly to south-easterly winds with northerly and north-westerly winds occurring more frequently in the winter.

Inversions occur during 50 – 60% of nights over the year, being most prevalent during the winter months (Tyson *et al.*, 1976). Although radioactive surface inversions typically occur during the night, in coastal areas this phenomenon may persist throughout the day due to sea breezes bringing in cool air. Over the west coast surface inversions occur throughout the day and into the afternoon approximately 10% of the year.

WIND DATA

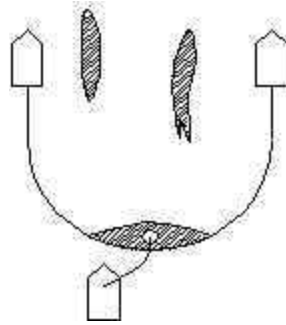




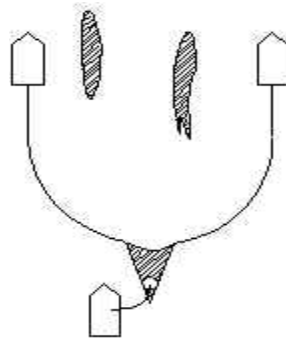


Annexure D

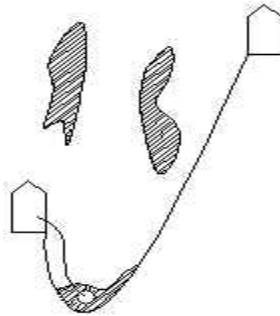
Oil spill response cleanup manoeuvring



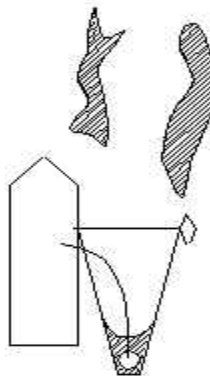
U Configuration



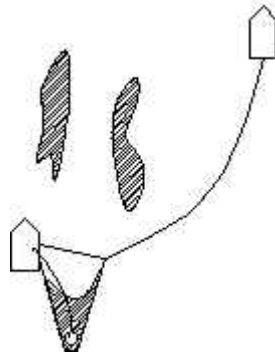
U+V Configuration



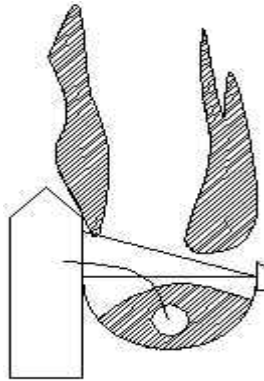
J Configuration



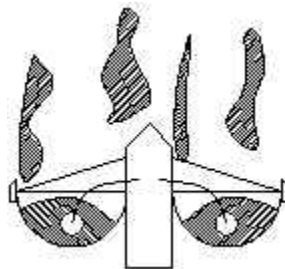
V Sweep



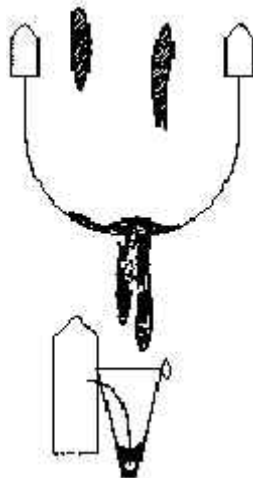
J+V Sweep



Single Vessel Sweep



Double Sweep



Open U + Single Vessel V

APPENDIX: E

MAP OF SALDANHA JURISDICTION

Transnet National Ports Authority jurisdiction is as per the attached drawing-SBH 195-A1-A6023. Transnet National Ports Authority after the receiving the initial report must inform the surrounding community and industries of the impending impact. The cleanup exercise will then commence in terms of this Oil Spill Contingency Plan.

