COCHIN PORT TRUST

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OIL SPILL DISASTER CONTINGENCY PLAN

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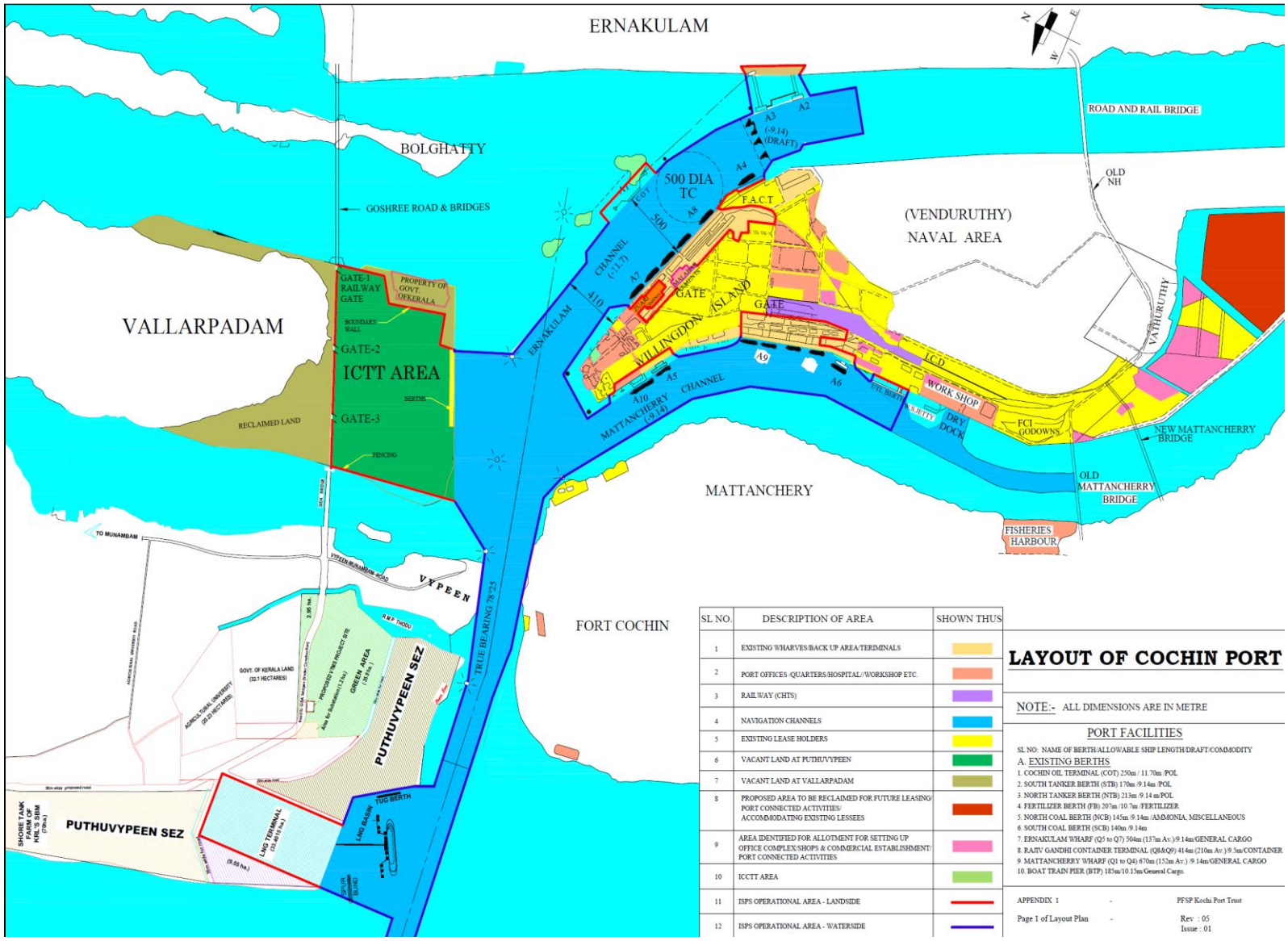


SL NO.	DESCRIPTION OF AREA	SHOWN THUS
1	EXISTING WHARVES/BACK UP AREA/TERMINALS	
2	PORT OFFICES /QUARTERS/HOSPITAL//WORKSHOP ETC.	
3	RAILWAY (CHTS)	
4	NAVIGATION CHANNELS	
5	EXISTING LEASE HOLDERS	
6	VACANT LAND AT PUTHUVYPEEN	
7	VACANT LAND AT VALLARPADAM	
8	PROPOSED AREA TO BE RECLAIMED FOR FUTURE LEASING/ PORT CONNECTED ACTIVITIES/ ACCOMMODATING EXISTING LESSEES	
9	AREA IDENTIFIED FOR ALLOTMENT FOR SETTING UP OFFICE COMPLEX/SHOPS & COMMERCIAL ESTABLISHMENT/ PORT CONNECTED ACTIVITIES	
10	ICCTT AREA	
11	ISPS OPERATIONAL AREA - LANDSIDE	
12	ISPS OPERATIONAL AREA - WATERSIDE	

LAYOUT OF COCHIN PORT

NOTE:- ALL DIMENSIONS ARE IN METRE

PORT FACILITIES

SL NO: NAME OF BERTH/ALLOWABLE SHIP LENGTH/DRAFT/COMMODITY

A. EXISTING BERTHS

1. COCHIN OIL TERMINAL (COT) 250m / 11.70m /POL
2. SOUTH TANKER BERTH (STB) 170m /9.14m /POL
3. NORTH TANKER BERTH (NTB) 213m /9.14 m/POL
4. FERTILIZER BERTH (FB) 207m /10.7m /FERTILIZER
5. NORTH COAL BERTH (NCB) 145m /9.14m /AMMONIA, MISCELLANEOUS
6. SOUTH COAL BERTH (SCB) 140m /9.14m
7. ERNAKULAM WHARF (Q5 to Q7) 504m (137m Av.)/9.14m/GENERAL CARGO
8. RAJIV GANDHI CONTAINER TERMINAL (Q8&Q9) 414m (210m Av.)/9.5m/CONTAINER
9. MATTANCHERRY WHARF (Q1 to Q4) 670m (152m Av.) /9.14m/GENERAL CARGO
10. BOAT TRAIN PIER (BTP) 185m/10.15m/General Cargo.

APPENDIX 1 - PFSP Kochi Port Trust

Page 1 of Layout Plan - Rev : 05
Issue : 01

PREFACE

The Oil Spill Contingency Plan (OSCP) outlines the steps required for the management of responses to marine oil spills that are the responsibility of the Cochin Port Trust. A Contingency is an event, which may happen, the timing of which is obscure or unknown. Oil Spill Contingency Plan is a set of instructions to help CoPT to ready itself in response to any contingencies related to marine oil spill incident / accident in their area of operation. This OSCP has been specifically made for Cochin Port Trust for their port operation at Cochin, Kerala. It takes care of their range of present activities, expansion plans and the local weather and other natural conditions.

The Plan has been with guidelines provided by

1. OISD-GDN-200, Oil Industries Safety Directorate (OISD), GOI;
2. Section II of Manual on Oil Pollution, 1995 edition, International Maritime Organization (IMO) and
3. A guide to Contingency Planning for spills on water, Volume Two, IPIECA report series, 2nd edition, March 2000 of International Petroleum Industries Environment Conservation Association (IPIECA). The chapter scheme of this plan has been taken from this IPIECA manual.

In addition, the details on shoreline cleanup has been taken from the

1. SHORELINE COUNTERMESURES MANUAL for the TROPICAL COASTAL ENVIROMENTS by Hazardous Materials Response and Assessment Division of National Oceanic and Atmospheric Administration (NOAA), US Government and,
2. Option for separation and disposal of oil and debris are as per Section IV of Manual on Oil Pollution, IMO, 2005 edition

Detailed modalities have been developed to effectively respond to any accidental oil spill arising from operational activities at the Cochin Port and it should be read in conjunction with the National Oil Spill Disaster Contingency Plan (NOS-DCP), Regional Oil Spill Disaster Contingency Plan (West) (ROS- DCP) and District Disaster Management Plan (DMP) for Kerala.

The Plan is in three parts:

PART- I STRATEGY SECTION

This part consists of preparation for action. It includes oil spill scenarios, response objectives and strategies response organization and details of available response equipments. This section is designed to help responders understand, in advance, as what is expected of them to minimize pollution of the environment.

PART- II ACTION AND OPERATIONS SECTION

This section includes specific instruction for responders, on how to do and what to do in response to each type of oil spill incident, once an oil spill occurs. This is to ensure that response action gets underway promptly, and in an orderly manner.

PART- III DATA DIRECTORY SECTION

This part includes all the data necessary to implement the total plan and includes information on statutory regulations, training and competence desired and level achieved, types of oil handled, oil spill response general decision tree, areas of operation, shoreline cleanup technique, list of suggested marine OSR equipments, list of shore cleaning equipment, emergency control room communication network, reporting format and contact details of relevant officials etc. This is arranged for quick reference by responders while taking emergency action.

ABBREVATION & ACRONYMS USED

DMP	- Disaster Management Plan
ECR	- Emergency Control Room
ERP	- Emergency Response Procedure
ESI	- Environment Sensitivity Index
CoPT	- Cochin Port Trust
ERT	- Emergency Response Team CoPT
IC	- Incident Controller
IMO	- International Maritime Organization
IPIECA	- International Petroleum Industry Environmental Conservation Association
KSPCB	- Kerala State Pollution Control Board
LCC	- Local Contingency Committee
MOEF	- Ministry of Environment and Forest. NIO- National Institute of Oceanography
MMD	- Mercantile Marine Department
NCMC	- National Crisis Management Committee
NOAA	- National Oceanic and Atmospheric Administrative
NOS-DCP	- National Oil Spill Disaster Contingency Plan.
OISD	- Oil Industries Safety Directorate
OPRC	- The International Convention on Oil Pollution Preparedness, Response And Cooperation, 1990
OSC	- On Scene Co-coordinator / Commander
OSCP	- Oil Spill Contingency Plan
OSD	- Oil Spill Dispersant
OSR	- Oil Spill Response
POLREP	- Pollution Report

TABLE OF CONTENTS

STRATEGY

ACTION AND OPERATIONS

7 INITIAL PROCEDURES
- 7.1. Notification of oil spill to concerned authorities
- 7.2. Preliminary estimate of response tier
- 7.3. Notifying key team members and authorities
- 7.4. Manning control room
- 7.5. Collecting information (oil type, sea/wind forecasts, aerial surveillance, beach reports)
- 7.6. Estimating fate of slick (24,48 and 72 hrs)
- 7.7. Identifying resources immediately at risk, informing parties

8 OPERATIONS PLANNING
- 8.1. Assembling full response team
- 8.2. Identifying immediate response priorities
- 8.3. Mobilizing immediate response
- 8.4. Media briefing
- 8.5. Planning medium term operations (24,48 & 72 hr)
- 8.6. Deciding to escalate response to higher Tier
- 8.7. Mobilizing or placing on standby resources required
- 8.8. Establishing field command post and communication

9 CONTROL OF OPERATIONS
- 9.1. Establishing a management team with experts and advisors
- 9.2. Updating information (sea/wind/weather forecasts, aerial surveillance
- 9.3. Reviewing and planning operations
- 9.4. Obtaining additional equipment, supplies and manpower
- 9.5. Preparing daily incident log and management reports
- 9.6. Preparing operations accounting and financing reports
- 9.7. Preparing releases for public and press conferences
- 9.8. Briefing local and government officials

10 TERMINATION OF OPERATIONS
- 10.1 Deciding final and optimal levels of beach clean up
- 10.2 Standing down equipment, cleaning, maintaining, replacing
- 10.3 Preparing formal detailed report
- 10.4 Reviewing plans and procedures from lessons learnt

DATA DIRECTORY

MAPS/ CHARTS

1. Coastal facilities, access roads, telephones, hotels etc
2. Coastal charts, currents, tidal information (ranges and streams), prevailing winds
3. Risk locations and probable fate of oil
4. Shoreline resources for priority protection
5. Shore line types
6. Sea zones and response strategies
7. Coastal zone and response strategies
8. Shore line zones and cleanup strategies
9. Oil and waste storage/ disposal sites
10. Sensitivity maps/ atlas

LISTS

1. Primary oil spill equipment
2. Auxiliary equipment
3. Support equipment
4. Sources of equipment
5. Experts and advisors
6. Local and national government contacts

DATA

1. Specification of oils commonly traded
2. Winds and weather
3. Information sources

ANNEXURES

A. Oil Spill Report Form
B. Check list for Port Control on activation of CPOS DCP
C. Drills and Training Record
D. Approved Garbage collectors in Cochin Port
E. Approved waste oil reprocessing firm
F. Approved Oil Spill Dispersant suppliers
G. Guidelines for the use of Dispersants
H. Important Telephone Numbers
I. Port limit maps.
J. POLREP Message Format

Appendix 1. Net Environmental benefit analysis / Environmental Sensitivity
Appendix 2. Single Point Mooring
Appendix 3. Important updates

PART 1

STRATEGY

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

The purpose and objective of this oil spill contingency plan is to

- Establish procedures to follow in the event of any oil spill contingency in the CoPT area of operation.
- Provide a reference document with information, to support the procedures.
- Provide a basis for suggesting and imparting training to the relevant personnel in relation to one specific emergency/contingency i.e., Oil Spill Contingency.

- Ensure that the procedures are in consistent with NOS-DCP.
- Identify protection and cleanup actions.
- Protect the interests of CoPT.

Prevention of accidental oil spillage is the first priority of CoPT, as it shares the national concern for the protection of the natural environment from oil spills. CoPT is committed to integrate ways to identify oil spill risks, prevent oil spill, and implement appropriate contingency plan for spill response and cleanup actions into its plans and operations. CoPT shall protect human health & safety, habitat & cultural resources, rare or endangered flora & fauna, commercial resources, recreational and amenity areas.

To achieve this, CoPT's policy is to:

- Respond immediately to any spill incident, with the objective of protecting human life and to minimize environmental impacts.
- Work and consult with appropriate government bodies, and the local committees to address any issues relating to oil spill in a timely manner.
- Provide adequate training and information to enable employees and contractors to understand and enact environmental responsibilities in the prevention and response to oil spill.
- Develop emergency plans and procedures so that incidents (accidental releases) can be responded to in timely manner.
- Develop and maintain management system to identify, control and monitor risks and to comply with statutory regulations and industry guidelines.
- Ascertain that each identified employee is responsible for the implementation of this policy in association with specific duties. This includes contractors and employees.

Whilst the procedure outlined in this document are to be followed to the maximum possible extent during any oil spill, variation based on sound management/engineering judgment and operational experience may be authorized by CoPT's On Scene Commander (OSC) who will be in complete control of an emergency situation.

Oil Spill Classification of Tiered Response

The Oil Spills are always unpredictable and different situation requires different response. The severity of oil spill incident is largely based on the quantity of oil-spilled, its distance from the shore, i.e., location and its timing. If there is a big spill close to coast, the number of outside agencies involved and urgency of their notification increases. The resources required and the degree of organization needed to deal with an oil spill, increase with size of spill and the proximity

to the shore. Based on the past experience of the oil spill, the strategy and the guidelines for dealing with different sizes of oil spills, Tier wise classifications of resources have emerged, as per which NMPT will take action as given below:

Tier 1 (Within Port's capability)

Tier-1 is concerned with preparedness and response to a small spill within the capability of an individual facility or harbour authority. 700 tons is often cited as the upper limit of Tier 1, however the circumstances of the spill and the surrounding environment will determine the actual level of response preparedness.

The Combat Agency will generally be able to respond to and clean up a spill utilizing local resources. In cases where additional resources are required, these will generally be available from the local port authority or from adjacent industry operators under mutual aid arrangements or locally from the Indian Coast Guard.

Tier 2 (Beyond Port's capability)

Tier–2 is concerned with preparedness and response to a spill that requires the co-ordination of more than one source of equipment and personnel. For a tier-2 response, assistance can come from a number of entities within a port area or from sources outside the immediate geographic area. Tier-2 describes a wide range potential spill scenarios and deals with operational spills upto 10,000 tons.

The resource of the Combat Agency will need to be supplemented by other local, regional and national resources

a) Inform Indian Coast Guard, DHQ-4, Cochin Station.
b) Mobilisation of equipment from neighboring organizations like Mangalore Port, and Goa Port.
c) Mobilization of Coast Guard Air Craft's (fixed wing air craft as well as rotary wings air craft for aerial application of Oil Spill Dispersant (OSD) and monitoring of spill movement.
d) Mobilisation of Oil Spill Response equipment on board Coast Guard vessels at Cochin.

For (a) Mutual Aid Programme will have to be explored. For (b) & (c), Coast Guard and port authority will need to be informed immediately at the time of spill, so that they can start preparing for the operation to be under taken and minimize the time taken.

Tier 3 (Beyond National Resources)

Tier-3 is concerned with a major spill requiring the mobilization of all available national resources and depending upon the circumstances will likely involve mobilization of regional and international systems. It deals with the spills of more than 10,000 tons.

The Combat agency will require local, regional, national and possibly international assistance. International resources will be facilitated by the Statutory Agency through the Ministry of External Affairs.

Once the spill is beyond control of local resources as given above, Coast Guard Headquarters, Delhi may be contacted to augment its resources to combat oil spill of any mega magnitude. The response time in this case may be about 36-48 hrs in OSR equipment reaching the nearest airport and be ready for custom clearance.

STRATEGY

1 INTRODUCTION

This section details the responsibilities of personnel who will collectively combat oil spill. Only those duties specified to oil spill are listed, which will be in addition to their normal duties. Their duties must be observed in conjunction with the general emergencies duties listed in Disaster Management Plan of Cochin Port.

1.1 Authority

Following the directives of the NOS DCP and the DOS DCP this local contingency plan is prepared to combat oil spills within Cochin Port.

A) Chairman, CoPT

- Assume overall in charge of situation and leader of ECT
- Proceed to Emergency Control Room (ECR)
- Evaluate the state of situation.
- Inform Board of Trustees and Partners
- Ensure other protocol and regulatory requirement are taken care of
- Nominate a media coordinator, if required.
- Depending upon the spill size, arrange mobilisation of resources from national agencies such as Coast Guard etc.

Immediate:

- Start personal log of events
- Establish the following information:
  - Time spill occurred
  - Position and shape of spill / slick
  - Visual appearance and apparent thickness of oil
  - Percentage cover of the various thickness of oil
  - Speed and direction of oil slick
  - Weather condition and sea state.
- Investigate the source of leak / spillage
- Co-ordinate with Deputy Conservator etc in drawing a strategy and dealing with the situation.
- DC to Contact the tugs/boats and request response to spill
- Inform higher authority.

B) Deputy Conservator, Cochin Port Trust is the pre-designated On Scene Commander (OSC). As circumstance require:

- Determine whether the incident can be handled by resource available at the jetty control room vessel or will require activation of ERT.
- Work with the Harbor Master to reduce or prevent further oil spill without compromising on safety.
- Instruct a boat (mooring boat etc) to take sample of spilled oil, if possible for analysis and evaluation.
- Initiate loading/unloading/operational shut down depending on the condition/situation.
- Utilise the harbour craft to monitor the spillage of oil by giving suitable instruction/ directions.

Use harbor craft Venad for containment & collecting oil using OSR Equipment. Survey the area to confirm cleanup has been begun satisfactorily.

As circumstance require:

- Call ERT personnel as per duty roaster
- Proceed to jetty Control Room / Emergency Control Room
- Confer with the Chairman and determine the most effective method of dealing with the spill.
- Commence slick movement tracking operation
- Ensure appointment of an Officer (MMPC) and mobilization of vessel / craft with suitable equipment.
- Mobilize shore cleanup team, if required.
- Seek help from State Administration for shore cleanup as required
- Consider the use of external technical assistance if the emergency is major (e.g. Vessel rupture etc.)
- Consider requesting help from other ports
- Initiate Mutual Aid Assistance Scheme, if such pact exists between different organizations (i.e ports, oil companies, etc.)
- Request Coast Guard to take over the situation under NOS-DCP, if it seems beyond control.
- Consider requesting Private agencies (national) in this field for assistance / contract for cleanup.
- Security system is to be strengthened and briefed about the requirement / operation

General:

Maintain close liaison with the following as appropriate

- Chairman
- OSC
- Prime Contractor (i.e. Boat, Tug, Man power, Transport etc)
- Government Agencies (Coast Guard, Indian Navy, Administration etc)
- Board of Directors /Partners.
- Ensure surveillance continues until oil slick considered no longer hazardous.
- Ensure detailed recording of log of events carried out
- Both safety & security of men is above the material - is to be kept in the mind always.
- Personnel not connected with the operation / OSR work are not to be permitted at the site of spill

Initial action in the event of spill

- Receive brief from person, who first noticed the oil spill.
- Assess the situation & take appropriate steps to
  - Establish the source of leak spill
  - Reduce / prevent further leak / spill
  - Deal with spill.
- Post an oil spill observer, who will continuously monitor the direction of oil spread
- Muster the ECT and mobilize them to handle OSR equipment. Raise alarm and stop the operation as necessary.
- Report immediately to the Chairman
- Initiate initial pollution report
- Handle any associated emergency with wider implication in accordance with CoPT disaster management plan

- If the leak / spill is continuing & large, assess the
  - Risk to life and the port installation
  - Size and consequences of the spill
  - Ability of the organization to handle the spill
- Request support from external resource
- Instruct the designated tug / vessel to act in consultation with OSC

C) Master of Port Vessels / Skippers of the Tugs

Action in the event of being notified of an oil spill:

- Monitor the spillage and keep the OSC informed of the situation.
- Load & activate OSR equipment and ERT and coordinate with them to deploy OSR equipment, as required.
- Depute personnel to assist ERT.
- Coordinate with OSC and Master/Skipper of other vessels for the deployment of equipment for containment and recovery of oil etc.
- Establish the following information.
  - Position and Shape of spill / slick
  - Visual appearance (thickness) of the oil.
  - % cover of the various thickness of oil
  - Speed and direction of spill / slick
  - Update status to OSC
  - Co ordinate activities with any other support vessel or craft available in the area
  - Ensure other vessel / craft (e.g. local fishing boat, or craft etc) do not move into the area under concern.
  - Record and update local weather condition to OSC

D) Harbour Master

Immediate:

- Start personal log of events
- Receive brief from Deputy Conservator
- Mobilize boat / crafts, vehicle, transport equipment / vehicles etc.
- Brief skipper/ operator of the boat, drivers of the vehicles etc on requirement
- Ensure Operation Room (Communication center) manned round the clock
- Monitor all the VHF and telephone conversation
- Keep monitoring/plotting the position of oil slick, as reported from time to time
- Not to say anything about the spill/slick to outside persons without permission of the authorities.
- Coordinate movement of senior officers to the incident spot i.e transport, stay, flight tickets etc.

General:

- Mobilise cleanup team and equipment as advised by ECT
- Procure supplies, equipment, manpower etc as required
- Arrange for contracted vessels to be equipped with any required equipments, i.e. chemicals, cleaning material etc
- Arrange necessary boarding/lodging arrangement for any party/personnel arriving from outside in connection with oil spill incident
- Liaise with OSC and ERT on resources availability and progress of cleanup operations Medical dept be informed for possible casualty and their type i.e. oil burns, drowning, etc.

E) Traffic Manager

Immediate :

- Start personal log of events
- Receive brief from Deputy Conservator
- Proceed to ECR and assess the situation
- Stop all cargo operation, if required
- Establish Contact with all own departmental personnel and direct them of requirement arising.
- Advise Deputy Conservator on logistics matters which are likely to be affected by oil spill
- Arrange return of cargo to safer place, if required
- Arrange return of non-essential equipment, vehicles etc away from jetty area
- Completely drain out the manifold/pipelines of F.O./HSD etc
- Assess requirement of water and land transport and accordingly take action
- Precautionary method to be adopted for the shore cleanup as advised by Deputy Conservator.

As Circumstance Require:

- Inspect the shoreline structure affected/likely to be affected by oil spill/slick
- Ensure equipment likely to be used for shore cleanup are kept ready for use (i.e. pick axe, showels, dumper vehicle, empty gunny/ cement bags etc)
- Availability of above equipment is to be suitably listed.

General:

- Assist Deputy Conservator in all respect

F) CE (Mechanical) and CE (Civil) Immediate:

- Start personal log of events
- Receive brief from Deputy Conservator
- Mobilize all manpower of the dept on duty
- Advise Deputy Conservator any danger to the mechanical equipment on machinery from oil spill.
- Breakdown/maintenance team to be briefed about the incident
- Breakdown/maintenance teams to be told to be available at all times to attend defects/assist ERT as and when required.
- Ensure and confirm all mobile units, cranes, forklifts, tankers, and tractor etc are operational.
- Establish contact on VHF/telephone with all ECT members.

As circumstance require:

- Provide lighting arrangement at the worksite
- Portable petrol /diesel driven gensets be made available on crafts on required basis.
- Check all fire equipment about their service ability and reach ability.

General:

- Assist / Advise ERT in all technical matters
- Advise safe working parameters of the technical equipment to the ERT /OSR team personnel.
- Advise ERT/ OSR Team

Coordinating Committee

The callout system for an oil spill incident is identical to any other emergency as contained in disaster management plan of CoPT. Emergency Control Team (ECT) will arrange mobilization of additional resource like Emergency Response Team (ERT) as and when, required.

Emergency Control Team

The ECT will Compromise of the following members:

A) Chairman (Alternate: Deputy Chairman)

B) Deputy Conservator (Alternate: Harbour Master)

C) Harbour Master (Alternate: Manager Marine Pollution Control)

D) Manager Marine Pollution Control (Alternate: Dock Master)

E) Chief Fire Officer (Alternate: Fire Officer)

F) Deputy Commandant, CISF (Alternate: Assistant Commandant)

G) Chief Medical Officer (Alternate: Dy. Chief Medical Officer)

H) Secretary (Alternate: Sr. Deputy Secretary)

I) Traffic Manager (Alternate: Sr. Deputy Traffic Manager)

Statutory Requirements, Relevant Arrangement

MARPOL 73/78

India has ratified the International Convention for the prevention of Pollution from Ship, 1973 and the Protocol of 1978 relating to the convention, which is generally known as MARPOL 73/78.

The term "Ships" includes fixed or floating off shore installation or structure engaged in gas or oil exploration, exploration or production activities or unloading or loading oil.

Annex 1 of MARPOL 73/78 comprises of regulation for the prevention of pollution by oil. Regulation 21 stipulates "Special requirement for drilling rigs and other platforms". Briefly, these requirements are:

Installation of oil filtering equipment to ensure that any oily mixture discharges into the sea after passing through the system has an oil content not exceeding 15-ppm.

Maintenance of an oil record book as specified in appendix-ii of annexure 1 of MARPOL 73/78 Prohibition of discharged of oil or oily discharges with oil content exceeding 15 ppm (without dilution)

An approved "shipboard oil pollution emergency plan" to be carried on board.

International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC), 1990

International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC) was adopted in London on 30 November 1990 and entered into force on May 13, 1995. As of February 1, 1998, 37 states have submitted their ratification instruments. Even before the OPRC Convention entered into force, its provisions on cooperation were effectively put into practice on a provisional basis to respond to the oil pollution caused by the 1991 War in the Persian Gulf.

The OPRC Convention provides an international framework for cooperation in combating and responding to major incidents or threats of oil pollution. The Convention strives:

- to prevent marine pollution by oil, in accordance with the precautionary principle;
- to advance the adoption of adequate response measures in the event that oil pollution does occur;
- to provide for mutual assistance and cooperation between States for these aims.

The Parties to the OPRC Convention are required to establish measures for dealing with pollution incidents, either nationally or at a regional and global level, in cooperation with other countries. The convention calls for the establishment of stockpiles of oil spill combating equipment, for the conduct of oil spill combating exercise, and for the development of detailed plans for dealing with pollution incidents. Parties must require that ships, offshore units, and seaports under their jurisdiction have oil pollution emergency plans. Such plans are required for:

- oil tankers of 150 gross tons and above, and other ships of 400 gross tons and above;
- any fixed or floating offshore installation or structure engaged in gas or oil exploration, exploitation, production activities, or loading or unloading oil (the operators of offshore

units could have arrangements similar to oil pollution emergency plans, however, these must be coordinated with national systems for responding promptly and effectively to oil pollution incidents).

- any seaport and oil handling facility that presents a risk of an oil pollution incident.

Parties to the convention are required to provide assistance to others in the event of a pollution emergency and a special Annex to the Convention provides for the reimbursement of any such provided.

Merchant Shipping Act 1958

Require oil operators to clean up any oil spill from off shore petroleum operations whether at sea or ashore.

Part XI-A refer to the prevention and containment of pollution of the sea by oil and applies to tankers of 150 tonnes gross or more, other ships of 500 tonnes gross and more offshore installation. The provision for prevention of pollution refers to prohibition as to discharge of oil or oily mixture, equipment to prevent oil pollution, oil record book, inspection and EEZ control and information regarding contravention.

Environment Protection Act 1986

Ministry of Environmental and Forest (MOEF) while granting environmental clearance to oil gas projects requires oil operators to establish oil spill control capabilities.

Under section 6 and 25 of environment Protection Act, 1986 the Government of India has stipulated discharge standards for several industrial activities, operations and process, including the drilling and gas extraction industry, where standards for liquid effluent for offshore and onshore facilities (require marine disposal) have been fixed.

Water (Prevention and Control of Pollution) Act, 1974

The state pollution control board is empowered to prohibit discharge of pollution matters in the sea or tidal water as per the CPCB laid norms.

Coast Guard Act

The Coast Guard is the national coordinating authority for marine oil spill, and under the Act: All spill are required to be reported to the Coast Guard.

When Spills are reported, the coast Guard will respond as follows

Monitoring the movement of spill as long as CoPT is in control of situation

If CoPT is not capable, or delays response action, then the Coast Guard will take remedial measure, response action at cost to the company.

1.2 Coordinating committee

Following authorities or their executive representatives will constitute the LCC (Cochin Port) under the Chairmanship of the Chairman, Cochin Port Trust

- Deputy Conservator
- Coast Guard Monitor
- Kerala State Pollution Control Board

The LCC may co-opt additional members to the committee relevant to the particular case such as Oil Companies, Kerala Police etc. so as to better co-ordinate the response to that particular spill.
The committee shall be the decision making body in all matters relating to combating the oil spill.

1.3 Statutory requirements

1.4 Mutual aid

Among the agencies that can assist CPT in a Tier II oil spill are :

- Coast Guard
- BPCL-Kochi Refinery.
- Indian Oil Corporation Ltd.
- Hindustan Petroleum Corporation Ltd.
- Indian Navy
- Kerala State Pollution Control Board

1.5 Geographical limits

The plan applies to the water areas of Cochin Port (See plan in Annexure – L) within the limits of Tier 1 response level.

"Oil Spill Contingency Plan for Single Point Mooring" (SPM) prepared by BPCL-KR, issued on 26th June 2008, covers the TIER-1 oil spill response plan for SPM including off shore operations carried out by BPCL-KR.

1.6 Interface with ROSDCP and NOSDCP

This plan provides the basic structure of a response to an oil spill contingency in Cochin Port, consistent with the objectives of the NOS DCP and DOS DCP (Kerala & Lakshadweep).

PART - I

STRATEGY

CHAPTER - 2

RISK ASSESSMENT

2. RISK ASSESSMENT

Identification of Activities and Risks

CoPT is witnessing an increasing change in terms of volume of traffic in the last couple of years. Type of ships calling to the port has also increased. However type of risks identified in the Oil Spill Risk Analysis (OSRA) remains more or less the same i.e. spill risk due to bunkering, pipeline rupture, collision/grounding or various other reasons.

Collision:
Definition: This plan relates to a collision between two vessels within NMPT Port limit. This includes navigation channels, areas adjacent to navigation channels, harbors, berths, anchorages and areas immediately adjacent through which vessels will navigate whilst approaching the port or in which they may anchor whilst awaiting berthing instructions.

Aim and Objectives of the plan: Site Main Controller will have control of the incident. Precautions to be taken to preserve the safety of the vessel(s) in the interim and measures to be taken for the prevention of environmental damage as well as safety of crews onboard vessel(s).

Immediate Action: In the event of a collision between two vessels within the port limits, the following action should be taken:

- MMD to be informed
- The VTMS in-charge should be informed of the incident.
- The movement of all other vessels in the port should be stopped and alternative orders issued as necessary.
- Immediately contact the emergency services and request the standby of all functional services that may be of assistance.
- Determine the extent and seriousness of any injuries sustained by the vessels crews, and arrange medical assistance if necessary.
- Ascertain the details of the incident, including the location of the vessels, proximity to the navigation channel and the condition of the vessels in relation to hull damage and watertight integrity.
- If either vessel is in danger of sinking, determine action to be taken including moving it to a place where it can rest on the bottom, clear of the navigation channel.
- CoPT Port vessels should be directed to proceed to the location of the incident as necessary. Whilst on standby they should keep all nearby vessels clear of the area.

Safety Issues: The need to evacuate passengers and/or crew should be conferred with the Masters.

Additional Actions:

- Determine whether any form of pollution of the sea has occurred or is likely to occur. The oil pollution containment equipment should be deployed as necessary. In the event of pollution refer to the CoPT OSCP.
- Liaison with the State should occur to ensure appropriate pollution control measures are in place or on standby in the event of a spill greater than 10 tonnes occurring.

- If the vessel(s) were under pilotage at the time, assess the need for another pilot(s) to be assigned to the vessel(s) to complete the movement, if practicable.
- The tug owner's representative should be promptly advised and requested to place the tug crews on immediate standby.
- Confer with the Master(s) on the need for the vessel(s) to be allocated alternative berth(s) taking in to account the extent of the damage and the risk of moving the vessel.

Authorities to inform:

- MMD must be notified of the incident.
- Coastguard must be notified of the incident.

Post Emergency Actions:

- Review the effectiveness of CoPT Ports Emergency Response Plans.
- Inform alerted agencies that the incident is over.

Pipeline Leakage

Master of the Tanker Should:

- Raise alarm and shut off the ship transfer pump immediately.
- Shut off the isolation valves on the pipelines.
- Activate emergency procedures.

Terminal personal at the berth should:

- Shut off an isolation valve in the pipeline.
- Inform the terminal in charge.
- Activate Oil Spill Contingency Plan.

Fuelling of Vessels

Master of the Vessel Should:

- Raise alarm and shut off the ship transfer pump immediately.
- Shut off the isolation valves on the pipelines.
- Activate emergency procedures.

Fuelling Vessel should:

- Shut off an isolation valve in the pipeline.
- Inform the terminal in charge.
- Activate Oil Spill Contingency Plan.

There is at all times a fire tender at the jetty. Hose can be laid and water curtain can be activated.

The Incident Controller will reach to the affected site of emergency and assess the situation. Any person affected should be shifted to the Cochin Port Hospital.

2.1 Identification of activities and risks

Activitity	Risk	Likelyhood
Loading / Discharging oil cargo	1 Overflow from tanks while topping off. 2 Leak from burst hose or loading arm 3 COW line rupture during crude oil washing 4 Pressure surge causing pipe line joints to leak due to sudden closure of valves 5 Failure to drain loading arms completely prior disconnecting.	Med Low/med Low Low Low
Bunkering	1 Leak from bunker hose bursting 2 Over flow from bunker tanks	Low Low
Navigation	1 Vessel grounding and rupturing cargo tanks , bunker tanks 2 Collision between vessel causing rupture of oil/ bunker tanks	Low Low
Mooring operation	1 Leak from hydraulic system of mooring winches 2 Tug impact in the vicinity of bunker tanks damaging shell plating	Low Low
Tank cleaning	Accidental discharge of oily water	Low
Reception of MARPOL-Annex1 (oily water/ waste oil)	Leak from hose	Med

Types of oil likely to be spilled

- Crude oil
- Petroleum products
- Lube oil
- Bunker oil

Crude oil is mainly handled at the SPM from 2008 onwards. Quantity of Crude oil imported is around 10 MMTPA. Therefore COT has been refurbished to handle more of refined products and Furnace Oil of M/s. BPCL after their IREP. NTB and STB also handle refined Products. CoPT handle about 35 lakh Metric Tons of Products per annum. We expect to handle more products after the commissioning of IREP. The products mainly handled are:

- Naphtha / LAN
- Motor Spirit / MS

- Diesel Oil / HSD
- Kerosene / SKO

Q4 is used for handling chemicals like Benzene, Methanol and Ethylene Di Chloride (EDC).

The main hazards of the tanker operation are: Fire, Oil Pollution, Environmental pollution and toxicity.

Preparedness in emergency:

Each tanker berth is capable of fire fighting and Oil Spill Response as per CoPT Disaster Management plan. Dock Master and CFO conduct regular fire drills at the tanker terminals. Manager Marine Pollution Control (MMPC) is in charge of Oil Spill Response, assisted by CFO. SE (M) supervises the technical / mechanical aspects of these terminals.

Probable fate of spilled oil

Spilled oil is likely to be carried by the predominant tidal stream and during slack water wind will have major effect on the drift of the slick.

During ebb tide major part of oil slick will flow out along the channel through vypin gutt and drift south or north along the coast depending on the prevailing coastal current/ counter current at that time. A small part will be carried by eddies in the harbour and accumulate in slack areas like north part of Quay-10, between Dufferin point and Malabar point, between Mattancherry channel mouth and Coast Guard jetty, near ICTT etc. The spilled oil would be contained and collected effectively by deploying Oil Booms and Skimmers of sufficient capacity. Subsequently, recovered oil would be collected in the OSRV‟s tank on which the OSR equipments are mounted. Any oil spill inside the harbor shall be collected in 10T capacity flex barge.

The oil spill which goes over the shallow water area/mangroves will be collected manually in low water/ebb tide, as the mangroves are easily walk able and oil soaked mud can be easily collected by shovels /scrapers. These can be disposed of later as per KSPCB guidelines.

Black oils (crude/ furnace oil) tend to accumulate in harbour and remain for a longer period, where as white oils (diesel/kerosene/naphtha) are likely to disperse faster by currents and weathering.

Part of the oil slick drifting to sea will accumulate on the beaches south of Vypin along with floating debris and water hyacinth.

It has already been established that the likelihood of oil spill taking place is due to Pipeline Rupture, Bunkering or Grounding /Collision. The spill is likely to move along with the current/wind direction upstream depending upon the tide conditions, location of spill and weather state at that time. In this context following oil spill scenarios have been examined:

South West Monsoon Conditions:

SW monsoon begins in Cochin around 1st June every year. The approach roads and outer channel is severely affected by wind and swell. Heavy squalls are also experienced during the 3 months succeeding June. The location of the Port makes the port waters and adjacent backwater system into one unit where effluents brought in through the river systems and from ships berthed in the harbour merge together. In addition, due to the semi-diurnal change of tides, for one quarter of the day, the waters are transported inland with the flood tide and thereafter the water flows into the sea with the ebb tide for about the same duration. Hence a spill inside the port can spread inland and at the same time outward to sea, due to the tidal

movement. The ebb currents are very strong due to the excess river discharge flowing through the port to the sea. Therefore the oil slick will be moving out to sea very fast.

North East Monsoon Conditions:

At this time of monsoon the weather conditions are not that vigorous and shipping operations will continue without any disruptions. Wind speeds would also be quite comfortable as compared to South West monsoon periods. However behavior of oil slick with the tide conditions would more or less remain the same and deployment of Oil Spill Response equipments would be much easier.

Month wise wind and current diagram are placed at **Appendix** .

Development of Oil spill scenario with worst case discharge.

Since crude oil handling to the tune of 15.5 MMTA has been shifted to SPM, oil pollution hazard is considerably reduced. The risk of grounding and collision while navigating through shallow restricted waters which is shared by Ship yard, Navy, Coast Guard, fishery, numerous ferry and barges is reduced to zero.

Oil spill scenarios:

- Tankers loading furnace oil/ products at COT/NTB/STB by overflow of tanks
- Rupture/ leak of loading hoses/arms
- Rupture of cargo lines on deck during discharge
- Oil leaking to ballast tanks through flanges of ballast pipe lines passing through oil tanks (old generation tankers)

Shore line sensitivity mapping

Map showing sensitive areas i.e. Beaches, Resorts, Marina, Mangroves, Fishing harbor, Boat jetties etc. Refer to Appendix-1.

Shore line resources

Refer to annex-L

Special local considerations

Consideration to be given to the damage which may arise to fishery as it is the livelihood of large sections of people who are members of fishermen’s organizations with leverage of political parties. Fishing harbor, Bolgatty Island, Fort Cochin beach are prone to cause environmental damages.

PART- 1

STRATEGY

CHAPTER - 3

RESPONSE STRATEGY

3. RESPONSE STRATEGY

3.1 Philosophy and Objectives

The Port Management desires to have an upward growth in its business, year after year with good and clean environment, safety of personnel and material, safe navigation, safety of ships in harbour, safety of marine flora and fauna, safety and protection of marine life etc. In order to achieve all these objectives, a dedicated and continuous effort is required. Oil Spill Response readiness is one of them. This preparedness needs both physical as well as mechanical efforts in terms of trained manpower and investment in costly and specialised equipments.

CoPT's objective in Oil Spill Response Strategy is very clear in this aspect:

"The endeavour is to contain and recover as much oil as possible in the shortest possible time, so as to minimize the physical and environmental damage to the society and natural resources."

The objectives of this Contingency Plan are:

- To develop appropriate and effective systems for the detection and reporting of spillage of oil.
- To ensure prompt response to prevent, control and combat oil pollution.
- To ensure that appropriate effective response techniques are employed to prevent, control and combat oil pollution, and dispose of recovered material in an environmentally accepted manner.
- To ensure that response actions are consistent with objectives of public health and welfare.
- To ensure that complete and accurate records are maintained of all expenditure to facilitate recovery of costs.

3.2 Limiting and adverse conditions

During strong tides containing boom may not be effective. Strong ebb and flood tides are experienced during spring tides. Skimming may be hindered due to the presence of water hyacinth and floating objects. Opposing tides and winds in the afternoons cause wavelets large enough to make skimming difficult. Weather and Time play very important role in conducting the Oil Spill Response activities. However other factors also play important role in OSR operation:

South West Monsoon period – Day time.

During this time, the weather will be rough. High swell, strong winds, heavy rains, low visibility etc would make OSR operations difficult to carry out efficiently. It is likely that all these conditions may not come together all the time, but such conditions should be expected to go and reappear any time. Stormy weather conditions may prevail for two to three days continuously and would hamper the operations severely.

South West Monsoon period - Night time

Here the working conditions will be much more difficult and risky in nature as safety observer would have difficulty in keeping check on safe working practices being followed by everyone involved in the operation. It should not be forgotten that all the weather conditions prevailing at the day time would also be in the night time with an added disadvantage of low visibility.
Detection of oil spill in the night/dark hours is also a difficult task, especially in adverse weather conditions. It will become more difficult to appreciate the direction of movement of the oil slick.

3.3 Oil Spill response in off shore zones
Off shore oil spills emanating from SPM operation is addressed by "SPM oil spill contingency plan"
Trajectory of spilled oil will be governed by the seasonal currents and winds. Spill can be tackled by deflecting boom and usage of OSD by tugs fitted with spray arms

3.4 Oil spill response in coastal zones
Coastal counter current is likely to govern the flow of oil slick along the coast and onshore wind may cause the oil to land on beaches and the shore protection walls built using rocks

3.5 Shore line oil spill response
District administration has major role in organizing volunteers and fishermen's organizations for coastal cleanup

3.6 Storage and disposal of oil and oily waste
Facilities of recyclers registered with Cochin Port will be used for collection, transportation and final disposal of recovered oil and oily waste. Garbage collectors also may be able to assist using their dinghies for disposal of waste not suitable for recycling.

Annexure D & E lists all recyclers and garbage collectors.

PART- 1

STRATEGY

CHAPTER - 4

EQUIPMENTS

4. EQUIPMENTS

4.1 Marine oil spill response equipments

The Oil Spill Response Equipments proposed to be used are - Four 20 TPH brush type Skimmers with power pack and pump, 900 meters of Oil Spill Booms, 500 meters Shore Sealing Booms, 500 meters Absorbent Booms and absorbent pads. At the time of Oil Spill OSRV can be moved quickly to the site of incident. Same ORSV can be used as a floating storage tank for the oil recovered through the skimmer. Annual equipment return is to be rendred to Central Coordinating Authority, Viz the Director General Indian Coast Guard {for Director (FE)}with a copy to the Local Coast Guard Authority.

Oil spill combat equipments are listed in Resource list**.**

4.2 Inspection, Maintenance and testing

All Inspection, Maintenance and Testing are to be carried out as per OEMs manuals /directives supplied along with the equipments. To be carried out periodically to ensure readiness all the time.

4.3 Shoreline equipment, supplies and services

Pollution control board and District Administration provide equipment and manpower for deploying shoreline equipments.

PART- 1

STRATEGY

CHAPTER - 5

MANAGEMENT

5.MANAGEMENT

5.1 Crisis Manager and financial authorities

Over all In Charge : Chairman
(In his absence) : Dy. Chairman

- Establish emergency control center
- Convene Local Contingency Committee
- Co-ordinate with outside agencies
- Approve information to Press.

Deputy Conservator will be the OSC in the event of Oil Spill Response Operations / Exercises. Manager, Marine Pollution Control is the Pollution Response Officer to oversee all the events and also routing all his requirements of men and material including watercrafts, vehicles, cranes etc. to DC/ HM.

MMPC will be at the oil spill scene to assess the situation on the spot and therefore would be responsible for –

- Requisitioning of manpower for Security Guards or Casual labours for works as required on land based and on water borne operations.
- Safe and Effective deployment and recovery of OSR equipment.
- Effective deployment of trained team of Oil Spill Response personnel and their turnaround in duties.
- Effective and Safe deployment of trained manpower.
- Ensuring that Oil Spill Combat is carried out round the clock, if possible, till it completes.
- Preparing the duty roster of OSR personnel and ensure that every one has understood his part of duty to be performed.
- Ensuring that each duty watch is suitably turned around as per demand of the situation.

He should be always be in communication/ touch with his team /teams, as well as with ECR and DC by means of VHF/ Mobile phone or messenger, if required.
He will further -

- Ensure that each Team leader is equipped with suitable communication equipment.
- Assess the oil spill scenario and declare it as Minor Oil Spill or Major Oil Spill or Tier l, Tier ll or Tier lll.
- Assess the requirement of consumable items like, Sorbent pads, Sorbent Booms etc. and alert DC for further procurement action indicating approximate time when the items are required at the site.
- Ensure that all the actions carried out are suitably logged by the Team Leader in a proper format. (This would assist in analyzing the efficiency of both men and machine as well as determine scope for further improvement in OSR activities.)

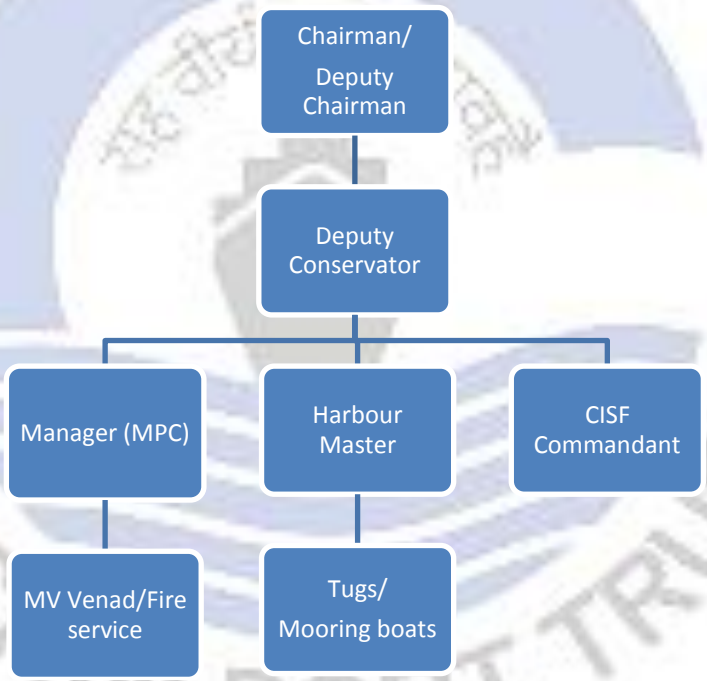
The OSC would be responsible for safe recovery / return, accounting of all items provided to his OSR team. Harbour Master is designated as Incident Controller (IC) and will act in consultation with Deputy Conservator. The OSC will ensure that his OSR team members are in possession of essential Safety/Working gears i.e. Life Jackets, Raincoats, Torches,

Lifelines, Lifebuoy, etc. On completion of each OSR Operation / Exercise, the OSC will prepare a written report and submit it within 24 hours to DC for debrief/discussions at the level of management or as decided. The report should project the true picture of the operations carried out, highlighting all the achievements and failures as well. The lessons learnt must also be honestly projected so as to improve upon, by including them into training curriculum and also apprise individuals of their mistakes /short comings.

5.1 Financial Authorities

The Financial Authorities of CoPT is as per the existing organization structure. At the time of the crisis, the need of the hour will be understood and requirements of OSC /ERT will be met at a faster rate than normal. Since all Head of Departments (HODs) would be available, immediate on the spot approval will be accorded.

5.2 **Incident Organization Chart**



5.3 Man Power availability

Following personnel are available on-site/ call
Crew of flotilla (Tugs/ Buoy laying vessel)
Mooring crew under Mooring Foreman
Fire service personnel

However, various departments providing assistance of forklifts, vehicles, cranes etc. for movement of men and material; would provide necessary manpower and their replacements, as required, so as to continue the OSR operations uninterrupted.

5.4 Availability of additional manpower

Additional manpower can be utilized by calling leave reserve pool. Security Personnel available for security duties may be made available for such emergencies without compromising on security duties. Also, any number of casual laborers can be made available.

5.5 Advisors and experts

Following organizations may be consulted

1. Company of Master Mariners of India
2. Institute of Marine Engineers
3. Mariners Society

5.6 Training/ Safety schedules and drill/ exercise programme

Oil pollution drill to be conducted as per quality manual of Cochin Port Trust
Oil pollution drill/exercise to be conducted every six months
Periodic training to be imparted to crew of tugs/ mooring boat/ fire service etc on IMO level 1, 2 and 3 courses conducted by Coast Guard.

PART- 1

STRATEGY

CHAPTER - 6

COMMUNICATIONS

6.**COMMUNICATIONS**

6.1 Incident Control Room and facilities

Port Control/ VTMS function as control room in case of oil pollution

6.2 Field Communication equipment

The Deputy Conservator will designate a Marine VHF Channel for exclusive use of the Pollution Response Operations and Port Control will notify the same. All communications on the marine side will be by VHF and on the shore will be by telephone (Fixed / Mobile / PABX). VHF and Intrinsically safe hand held walkie talkies using marine frequency band for all marine craft operating in the hazardous areas. Mobile phones may be used only in safe locations as appropriate.

6.3 Reports/incident logs

Log of events to be maintained in the control room.

PART- 2

ACTIONS AND

OPERATIONS

CHAPTER - 7

INITIAL PROCEDURES

ACTIONS AND OPERATIONS

7. INITIAL PROCEDURES

The moment oil spill takes place or is detected**,** immediately the time and place of the spill started and stopped should be ascertained from the originator of the oil spill. The information about diameter of pipe, rate of pumping /flow of oil would help in determining the quantity of oil that has spilled into water. In case, accident is due to collision the sounding of the tank would talk about the quantum of oil spilled into the water and then only magnitude of spill could be established.

7.1 Notification of oil spill to concerned authorities

The Key Team Members are – Deputy Conservator, Harbour Master, Manager Marine Pollution Control, Chief Fire Officer and other HODs. These members can be informed over Phone /Mobile phone, and same be also logged at ECR.

- Regular patrols of the water areas of the port are to be carried out to detect any pollution.
- All craft in Cochin Port are required to report the sighting of any oil spill to the Port Control.
- Any oil spill which is noticed within Cochin Port is to be informed to the Port Control on Marine VHF Channel 16 / 15/ 14 or by land line telephone 91 484 2666468/ 2667105.
- On receipt of information of an oil spill, the personnel on duty at Port Control, are to record the details of the information in the Oil Spill Report Form (Annexure - A.)
- Thereafter they are to inform the Deputy Conservator of the spill.
- The initiation of the plan will be on the verbal orders of the Deputy Conservator on the basis of the Oil Spill Report.
- On the decision of the Deputy Conservator to activate the CPOS DCP the Port Control will notify all the various personnel and crafts as per checklist given in Annexure – B.
- A Pollution Report as per the POLREP message format (Annexure – M) is to be sent to the Coast Guard as well as D.G. Shipping Mumbai.

7.2 Preliminary estimate of response tier

There is no mathematical co-relation of quantum of oil to inventory holdings however for administrative and operational reasons an ad-hoc definition is made as follows:

Tier One	Small	Can be contained by Cochin Port Trust
Tier Two	Medium	Cannot be contained by Cochin Port Trust and requires assistance of an outside agency
Tier Three	Large	May require assistance from various outside resources possibly international.

7.3 Notifying key team members and authorities

Among the agencies that can assist CoPT in a Tier II oil spill are :

- Coast Guard
- BPCL-Kochi Refinery.
- Indian Oil Corporation Ltd.
- Hindustan Petroleum Corporation Ltd.
- Indian Navy
- Kerala State Pollution Control Board
- Approved waste oil recylers.

7.4 Manning control room

Control room will be manned 24 hrs by competent personnel. VTMS operator to log events. One officer from Marine department may be also deputed to the control room.

Port Control, Cochin Port Trust.

Marine VHF (Ch 16/15/14)	:	'Cochin Port Control'
VTMS	:	91 484 2666468
	:	91 484 2582525
Telephone Direct Line	:	91 484 2667105
Telephone PABX	:	91 484 258 2515
Inmarsat Mini M (Voice)	:	762834463
(Fax)	:	762834464
(Data)	:	762834465

7.5 Collecting information

Control room collect all relevant information using all available means of communications. The moment oil spill is reported /intimated to the various departments, the action by

1. Marine department will provide all the relevant data for that day to ECR ie. Tide conditions at that time, Tide timings, Current, Wind direction /speed, Weather forecast, Vessel movements, Vessel position in harbour, Water crafts availability for pollution response activities. Relevant Navigation Charts and any other important data /information available may also be provided. Also number of Security personnel available at that time will be made available.
2. Traffic department to provide information regarding availability of type and number of vehicles available for transportation of men and equipments. Also number of Casual labours available at that time will be made available.
3. Fire department to indicate readiness about FIRE CONTINGENCY including OIL FIRE and also number of spare Life Jackets available. They must also be ready for combating oil pollution.
4. ECT to ensure that no individual is working / supervising / observing OSR operations / Exercise without Life Jackets "ON".
5. OSC is to collect following information immediately in case of oil spill:
    - Time of oil spill occurred.
    - Position with reference to prominent land mark and also if possible in latitude and longitude.
    - Visual appearance, apparent thickness of oil and extent of area covered.
    - Percentage covers of various thickness of oil.

- Existing weather condition and weather forecast
- Current and tide conditions
- Immediate availability of support vessel, equipment and manpower.
- Estimate oil spill trajectory and likely area and time of its landfall.

7.6 Estimate of fate of slick

Local contingency committee assess the drift of oil slick taking into account the prevailing weather conditions , seasonal currents ,counter currents ,wind and sea conditions.

7.7 Identifying resources immediately at risk

The resources immediately at risk can be mangroves adjacent to the port area, landing areas leading to river to the interior parts of the land, and the mangroves on either side of the rivers. Depending upon the place of spill, the resources at risk will be found out. Assessment of risk especially fishery, aqua culture and tourism to be done immediately with participation from stake holders.

PART- 2

ACTION AND OPERATIONS

CHAPTER - 8

OPERATIONS PLANNING

8. OPERATIONS PLANNING

8.1 Assembling full response team

On getting the information of oil spill, the CFO should be informed to bring the response team and equipments. The team should be assembled at one muster point and explained about the action needed and assign task to various small groups.

8.2 Identifying immediate response priorities

Depending on the situation and amount spilled the following response to be made

Oil spill combating will generally consist of the following phases (not necessarily in that order):

1. Information of spill
2. Stopping the source of the spill
3. Controlling the spilled oil (Collection or deflection)
4. Recovery, transportation and storage of the spilled oil
5. Mitigation / clean up of the remaining oil.
6. Record keeping of the equipment and personnel used and collection of a sample of the spilt oil.

8.3 Mobilising Immediate response

- Personnel on duty on the tanker berths and / or at the source of pollution to take immediate steps to minimize and stop the leakage of oil onto the water. Dock Master to oversee.
- Manager Marine Pollution Control along with a Mooring Foreman to proceed to site of the oil spill with the Pollution Control Boat, to assess to extent of the spill and evaluate the pollution response strategy and advice the Deputy Conservator. Restrictions on shipping movements as well as that of other craft also to be enforced if required.
- Harbour Tug fitted with Oil Boom to mobilize and move to location of Oil Spill other tugs to stand by for instructions with their engines ready.
- M/V Venad to mobilize and position at the location of the oil spill preparing all her pollution response equipment for deployment.
- One Mooring boat with Crew to be mobilized and sent to the location of the oil spill.
- Chief Fire Officer / Asst. Pollution Control Officer to mobilize stock of oil spill dispersant and portable sprayer from fire station to the jetty nearest to the oil spill site. Also to arrange for the additional equipment stored at Q4 and NCB to be brought to the site as and when required.
- The Tug and one mooring boat to deploy the boom as per the instructions of the Manager Marine Pollution Control
- M/V Venad to carry out skimming / dispersant spraying operations as directed by the Manager Marine Pollution Control.
- Other crafts and personnel to be utilized in mopping up operations / dispersant spraying operations.
- Oil recovered by portable skimmer to be stowed in drums/ portable tanks and as and when required to be transported ashore by transferring from M/V Venad to another craft by using the lifting crane.

- Storage of recovered oil can also be done on board water barge Jala Prabha if required. Another alternative is to store the recovered oil ashore into Pits earmarked for the purpose.
- Disposal of the oil to be arranged through the approved waste oil recycler. (Particulars in Annexure – E)
- The spread of spilled oil to the shoreline to be contained by deployment of sorbent booms and any oil that has reached the shore to be cleaned up using shoreline cleaning methods.
- Port Control to maintain a log of all operations and any information on equipment used / acquired during the operations

8.4 Media briefing

If the pollution attracts the media to the port, only Chairman or person authorized will issue / release information to public and press.

8.5 Planning medium- term operations

It depends on the type and area of pollution. SPM area has its own procedures to be adopted and it is away from harbour. Inner harbour risks are mainly due to tank overflow or leakage. Collision can also cause damage to tanks causing in heavy spill. A specific plan to be made in case if the operations are going to take long time at intervals of 24 hrs, 48 hrs and 72 hrs

8.6 Deciding to escalate response to higher tier

Normally the pollution for tier-1 is max up to 700ts, if it is much more, then a call on next level to be made by DC. Depending on the scale of oil reaching the shoreline, adequate number of personnel to be mobilized to clean up the shoreline with appropriate equipment. Personnel to be drawn from Fire, Marine, Civil (Sanitary) etc. If additional personnel are necessary assistance of outside agencies such as Kerala State Pollution Control Board / Coast Guard / Navy etc. to be sought. Adjacent ports also may be able to help by sending their resources.

8.7 Mobilizing or placing on standby resources required

If some equipments are expected to be needed more than stored, these should be mobilized from outside agencies as early as possible. A team to be made for getting and keeping as standby when needed.

8.8 Establishing field command post and communications

It is important to have experienced command team to oversee and advice the operating team leader. They must have hand held VHF radios to ensure proper communication.

PART-2

ACTION AND OPERATIONS

CHAPTER – 9

CONTROL OF OPERATIONS

9. CONTROL OF OPERATIONS

9.1 Establishing Management team with experts and advisors

Over all In Charge : Chairman
(In his absence) : Dy. Chairman

- Establish emergency control center
- Convene Local Contingency Committee
- Co-ordinate with outside agencies
- Approve information to Press.

On Scene Commander : Deputy Conservator
(In his absence) : Harbour Master

- Overall in charge of the Pollution Response operations.
- Arranges for assistance from outside agencies if and when the need develops.

Pollution Response Officer : Manager, Marine Pollution Control
(In his absence) : Dock Master

- Supervise the cleanup operations on site and report to Deputy Conservator
- Mobilize all available craft and personnel
- Arrange oil spill dispersants, booms, and skimmers.
- Mobilize personnel and authorized garbage and waste oil removers.

Marine Fleet Coordinator : Harbour Master
(In his absence) Manager, Marine Pollution Control

- Mobilize crafts, tugs and personnel
- Arrange boats for any eventuality
- Rearrange shipping movements as situation develops.

Tanker Berths Safety Coordinator: Dock Master
(In his absence) Duty Pilot

- To proceed to the polluting vessel and take steps to minimize / stop the source of oil spill.

Welfare and Media Coordinator : Secretary
(In his absence) : P.R.O.

- In charge of welfare measures to affected persons as well as personnel involved in oil spill response operations.
- Arrange dissemination of information to the press as well as issue of cautionary notices.

Security and Transport Coordinator : Dy.Commandant C.I.S.F.
(In his absence) : Asst. Commandant

- In charge of evacuation, traffic and crowd control.

Materials Coordinator : **Sr. Dy. Materials Manager**
(In his absence) Asst. Materials Manager

- In charge of procurement of additional equipment for pollution response.

Medical Coordinator : **Chief Medical Officer**
(In his absence) : Sr. Dy. CMO

- Arrange first aid stations, ambulance and treatment of causalities if any.

Health and Safety

A person designated by the OSC is to advice all personnel prior to commencing work in response operations on health and safety precautions in hazardous environment.

9.2 **Updating Information (sea /wind /weather forecasts, aerial surveillance, beach reports)**

VTMS, (Port Control) is entrusted the responsibility of providing initial information pertaining to wind direction & speed, water current, tide position at the time of oil spill, high water & low water timings, sea condition, swell /wave heights, weather forecasts & existing weather warning, navigational warnings, any Coast Guard or Naval aircraft or helicopter sighted /in contact, any other relevant information available. The moment information about OIL SPILL is received all these data / information are to be provided to ECR,.
This information is to be automatically updated as and when received. Regular inputs must be obtained from local sources regarding health of the surrounding coastal areas.

9.3 Reviewing and Planning Operations

The ongoing operations should be assessed and reviewed as and when the ECT considers it necessary or suggested by OSC. This is necessary to upgrade the level of operations or scale down the operations due to different prevailing factors /compulsions. Review of operations is an ongoing process and accordingly the planning is to be reoriented to maximize the utilization of men and machinery without compromising on safety of both. Here operational rest to men and machinery should also be kept in mind because response teams can be rotated at regular intervals but continuous running machinery also needs rest after certain stipulated continuous running hours. Periodical review to be carried out by LCC

9.4 **Obtaining additional equipments, supplies and man power**

Harbour Master should give the necessary instructions to Sr. Dy Materials Manager for procurement or obtain the same from oil companies on an emergency basis.

9.5 **Preparing daily incident log and management reports**

Port Control will be informed on the daily activities and the VHF operators to make log book entries of daily activities. Preparing Daily Incident Log and Management Reports

The log sheets are to be filled then and there only, as filling it later, one may miss vital information. However at the end of the day, preferably time ending at 2000 hours starting from 2001 hours of the previous day, (Or it may be from 0801 hours to 0800 hours of the previous day) a Daily Summery Of Events is to be prepared and submitted to the leader of

ECR, who in turn would prepare the report consulting all the members of the ECR and forward it to management.

This report should cover following aspects:

(a) number of manpower deployed
(b) equipments deployed
(c) weather conditions encountered
(d) amount of oil recovered from sea
(e) amount of oil transferred from pontoon to land for storage /disposal
(f) difficulties encountered
(g) lessons learnt

9.6 Preparing Operations Accounting and Financing Reports

This will be done by Finance and Legal Department. As one of their member is always in the ECR they would find it easier to take stock of the situation and prepare the accounts and reports on a day to day basis.

9.7 Preparing Releases for Public and Press Conference

As already mentioned earlier, only Chairman or person authorized will issue / release information to public and press.

9.8 Briefing Local and Government officials

Consequent upon releases cleared by Chairman, local and government officials are to be briefed by the PRO or any other person authorized to do so.

PART- 2

ACTION AND OPERATIONS

CHAPTER - 10

TERMINATION OF

OPERATIONS

10. **TERMINATION OF OPERATIONS**

10.1 **Deciding final and optimal levels of beach clean up**

The level of beach clean-up required is of significance importance, as normally these are frequently used by public or inhabitants, hence more prone to criticism and leading to public outcry. The pollution response operations will be terminated when the desired level of restoration of the site or beach cleaning has been achieved. The Deputy Conservator will be the final authority to decide when to terminate the response.

10.2 **Standing down equipments, cleaning, maintaining, replacing**

The Deputy Conservator is the deciding authority to order standing down equipments after surveying and inspecting the cleanliness of the polluted areas. Once the Pollution Response Operations are over, the equipments and machineries are to be accounted for, consumables are to be accounted for, checked for their serviceability and then stored in their respective places.

10.3 **Preparing formal detailed report**

After the operations are complete, the MMPC will prepare a detailed report covering all the aspects of the oil spill cleanup, which will include success and failures as well, lesson learnt, recommendations about equipments, man power, plans etc. The report will be forwarded to Deputy Conservator for submission to ECT.

10.4 **Reviewing plans and procedures from lessons learnt**.

On completion of the cleanup a review of the procedures followed to be made and corrective measures for the next incident to be planned from the mistakes committed, error in planning made during the cleanup. The lessons learned to be incorporated in corrective measures to be adopted in future. The ECT should carryout deliberations on the report received from OSC and give its recommendations for putting it to Management for necessary action, such as upgrading this OSCP. The plan shall be updated annually and revised every five years. The revised plan is to be submitted to Indian Coast Guard for approval in accordance with Para 4.5 of NOS-DCP.

10.5 **Record keeping and preparation of claims.**

In order that claims may be processed with minimum delay, it is essential that accurate records are maintained to support claims. It should be noted that claims should be based on expenses actually incurred, that these are made as a direct result of an incident, and that the expenses incurred are reasonable. In the case of economic loss, documentation supporting the claims should demonstrate how the claim has been calculated. The following aspects are to be considered during response operations, and preparation of claims:-

- delineation of the area affected describing the extent of pollution and identifying areas most heavily contaminated. This may be best presented as a map or chart accompanied by photographs;
- summary of events including a description of the work carried out in different

areas and of the working methods chosen in relation to the circumstantial evidence linking an oil pollution with the ship involved in the incident (e.g. chemical analysis);

- labour costs (numbers and categories of labourers, rates of pay, hours worked, total costs etc);
- dates on which work was carried out (weekly or daily costs); and
- material costs (consumable materials, fuel utilized, food, shelter, etc.).

Preparation of claims shall be guided by the manuals, guidelines etc. published from time to time by the International Oil Pollution Compensation Funds (IOPC Funds) such as the claims manual and guidelines for claims in the fisheries and tourism sector.

Claims are to be forwarded to Director General of Shipping, Mumbai or as directed by Director General of Shipping, Mumbai with a copy to local Coast Guard.

10.6 Operational Readiness:

The Manager, Marine Pollution Control is to ensure readiness of personnel and equipment at all times. He is responsible for maintaining the operational status of equipments and for conducting their trials at frequent intervals. Training of personnel in Pollution response operations should be conducted periodically.

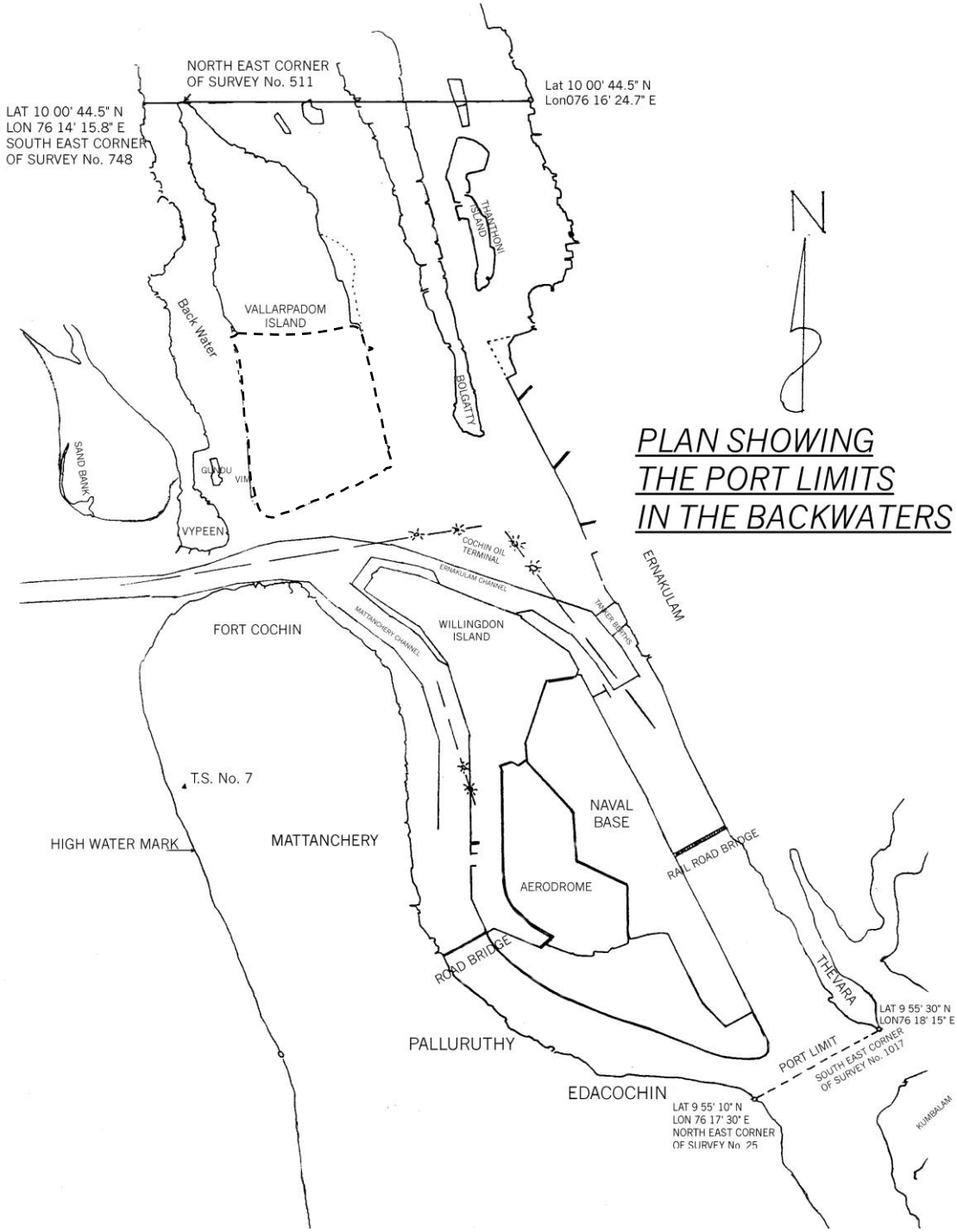
PART - 3

DATA DIRECTORY

CHAPTER 1

MAPS AND CHARTS

PLAN OF COCHIN PORT SHOWING THE PORT LIMITS



1. Shoreline zones and clean-up strategies Sand Beaches - Description

The beach is generally flat and sandy, and in fauna are scarce.

- Predicted Oil Impact

• Large oil accumulation would cover entire active beach face.
• Light oil accumulation would be deposited as oily swashes along the upper intertidal zone.
• Oil would accumulate in any wrack that may be present.
• Penetration of oil into the beach can be up to 10 cm; burial would be minimum.
• Asphalt pavements can form under heavy accumulations; pavements change the nature and stability of the substrate and thus its biological utilization.
• Shorebirds resting / feeding on these beaches may be oiled.
• Biological effects include temporary declines in beach organisms, which may also affect feeding shorebirds.

- Recommended Response Activity

• Beaches are the easiest to clean.
• Clean up should concentrate on removal of oil and oiled wrack.
• Sand removal should be minimized to avoid erosion problems; sediment removal activities should commence only after all the oil has come ashore.
• Manual cleanup, rather than use of road graders and front-end loaders, is advised to minimize volume of sand removed and prevent grinding the oil deeper, depending on the size of the oiled area.
• Techniques which wash oiled sand into the lower intertidal and sub tidal should be avoided.

- Sheltered Tidal Flats - Description

• Sheltered tidal flats are not common, because of the small tidal range.
• They are composed predominantly of mud, but may contain sand and / or gravel, and are sheltered from wave and tidal energy.

- Predicted Oil Impact

• Oil would most likely to be transported across the tidal flat and deposit along the high tide line in the accumulated wrack deposits.
• Very heavy accumulations can cover much of the flat surface, but penetration would not occur into the water-saturated sediments of the flat, except possibly into burrows at the high-tide line.
• Long term contamination of muddy tidal-flat sediments is possible in areas of high suspended sediment through the sorption of the oil on these particulates.
• Oil stranded at the high-tide line or mixed into the sediments may persist for many years; natural removal is very slow.
• Organisms living in and on the sediments would be impacted.

- Recommended Response Activity

• These environments are high-priority areas necessitating the use of spill protection devices such as boom to prevent or minimize oil impact.
• Foot traffic on oiled tidal flats should be prohibited.
• If cleanup is necessary, it should be restricted to the upper reaches of the high-tide swash line or be conducted from boats.

- Passive cleanup efforts such as deployment of sorbent boom can be used to recover oil as it is removed naturally, but they must be changed frequently to be effective.
- Any cleanup should be supervised closely to minimize the mixing of oil into the sediment during the cleanup effort.

2. Response Options

Inherent advantages and drawbacks of available response options are assessed and considered to allow for informed selection of the optimum response strategy or strategies. For example, the benefits of physical removal of oil from a shoreline include:

- removal of oil from the impacted environment;
- prevention of the remobilization of bulk oil to another area, thereby reducing the potential for further contamination;
- reduction of secondary impacts on animals that utilize the shorelines; and
- if non-aggressive methods are used, minimal impact on shore structure and shore organisms.

However, drawbacks include:

- it can be labour intensive;
- significant waste storage capability is required;
- it may cause further damage to the environment due to aggressive removal methods (e.g. sand removal and cleaning) impacting the shoreline and shore organisms; and
- it may cause additional environmental damage as a result of heavy equipment and high foot traffic.

3. Optimizing the response strategy

The key objective of planning for, and executing, a response is to implement those techniques that, at any moment in time, have the greatest net benefit.

Example:

In an offshore marine incident, treating or recovering as much oil as close to the source as possible, before it has had a chance to weather and spread out, will have the greatest benefit. As the oil weathers and spreads out, other response options will be less effective, increasing the chances of more oil reaching sensitive areas and the shoreline, and potentially crossing jurisdictional boundaries and borders.

To supplement this priority-driven approach, other response measures can be implemented further away from the sources which are likely to have the greatest chance in those circumstances of improving the response outcomes.

Near shore operations would be carried out in areas of high priority to reduce potential impacts, and shoreline protection measures would generally be put in place where their success in protecting agreed priority sites is feasible.

On affected shorelines, oiling conditions to be systematically confirmed so that responders can determine priorities for clean-up and select the cleaning techniques that would achieve optimal results while minimizing further damage.

As an oil spill scenario continues to evolve and response measures have a positive effect, the remaining concentrations of oil will continue to be reduced. For each part of the response, there comes a time when continuing with a particular response action offers marginal or no benefit and needs to be terminated, and in some cases other response options may be used instead.

The hallmarks of an effective response strategy are:

- being clear on the aims of the clean-up;
- understanding when the actions being taken have achieved as much as feasibly possible in the circumstances; and
- recognizing when continuing with the clean-up will potentially cause more harm than good.

4. Keys to Success

- Appropriate participation by all stakeholders
- Participants must take the process seriously
- Evaluate the data or expert opinions objectively
- Apply the thresholds consistently

5. Specifications of oils commonly traded

Arabian medium and light crude
Bombay high crude
High speed diesel
Motor Spirit
LSHFHSD
Naphtha
ATF
Furnace oil

6. Dispersants:

GENERAL CONSIDERATIONS ON DISPERSANT APPLICATION AT SEA

(Bio remediation liquid will be replacing OSD.)

1. For an effective treatment, the dispersant must be applied to the oil
    a. In sufficient quantities to account for product losses, and
    b. By means of a spray, to obtain uniform distribution of dispersant over the oil and good dispersant / oil contact.
2. This can be achieved by suing specialized equipment that has been routinely serviced.
3. The quantity of concentrated dispersant required is proportional to the amount of pollutant to be treated. Typical Dispersant to oil rations vary from 1:10 to 1:20 for concentrate dispersant, and 1:1 to 1:3 for hydrocarbon – based dispersant. The manufacturer's recommendations should be referred to when determining the proper dispersant ratio.
4. However, it is very difficult to determine the quantities of oil to be treated in a given area since oil spilled at sea can quickly spread to occupy large areas over which there is considerable variation in thickness.

+

5. The fineness of the spray is an important parameter for ensuring even distribution and maximum dispersant / oil contact. Obtaining the correct spray fineness will prevent:
    a. Large dispersant droplets from sinking and thus being lost in the water beneath the slick. Dispersant which are denser than seawater or which are water-based types tend to sink.
    b. Droplets which are too fine from being deflected from the targeted oil by the wind.
6. Drops with an average diameter of 400 – 700 μs are usually recommended.
7. Concentrate dispersant can sometimes be applied pre-diluted in seawater. However, neat application is strongly recommended, as it is more efficient.

A list of Oil Spill Dispersant suppliers are given in Annexure – I, who can arrange supply of additional dispersant if the need arises.
The stock of dispersant is of Type III (concentrate) and needs to be applied without dilution, in the form of a spray, directly onto the oil. Information on the use of dispersant is given in Annexure - J. The decision on the usage of dispersant will come from the Local Contingency Committee. Bio- remediation liquid once procured will be used instead.

7. Night Vision Capability:

Two no. of night vision binoculars are available with the C.I.S.F.
Pilot boats and Patrol Boats are equipped with searchlights.

Approaches to Cochin Port and Harbour. Ref BA Chart 2004, 2045

CURRENT AND TIDAL DATA OF CoPT

Tidal Information Cochin

Tide levels in meter (m) with respect to Chart Datum as given below are considered:

Mean Lower Low Water	+0.29m
Mean Higher Low Water	+0.56m
Mean Sea Level	+0.64m
Mean Lower High Water	+0.79m
Mean Higher High Water	+0.92m

Tide flow charts of Cochin Harbour

Calculated flow velocity for Spring and Neap Tides in maximum Ebb and Flood flow as given below:

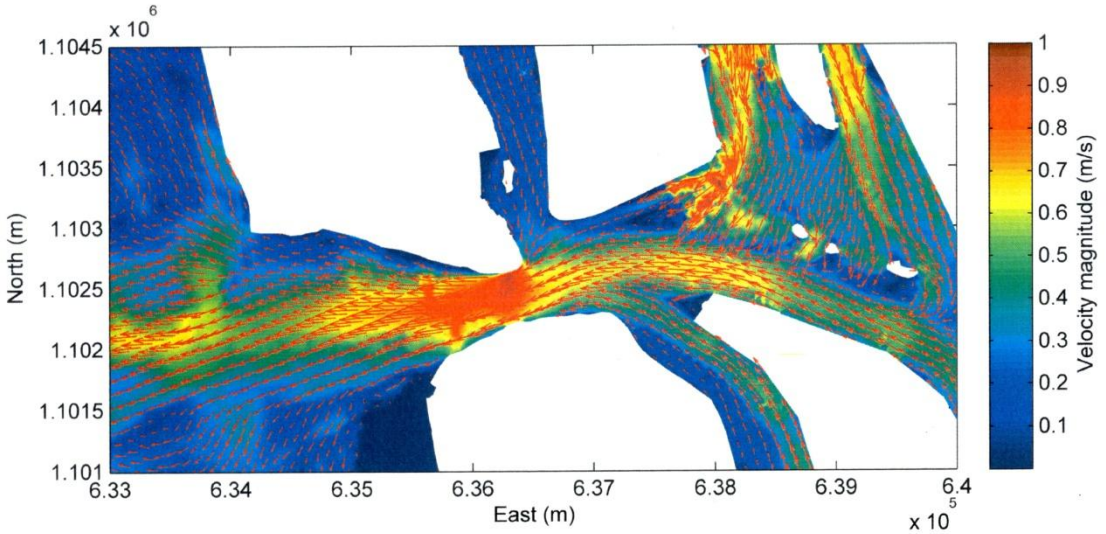


Figure 41 : Calculated flow velocity field for spring tide maximum ebb flow – harbor area

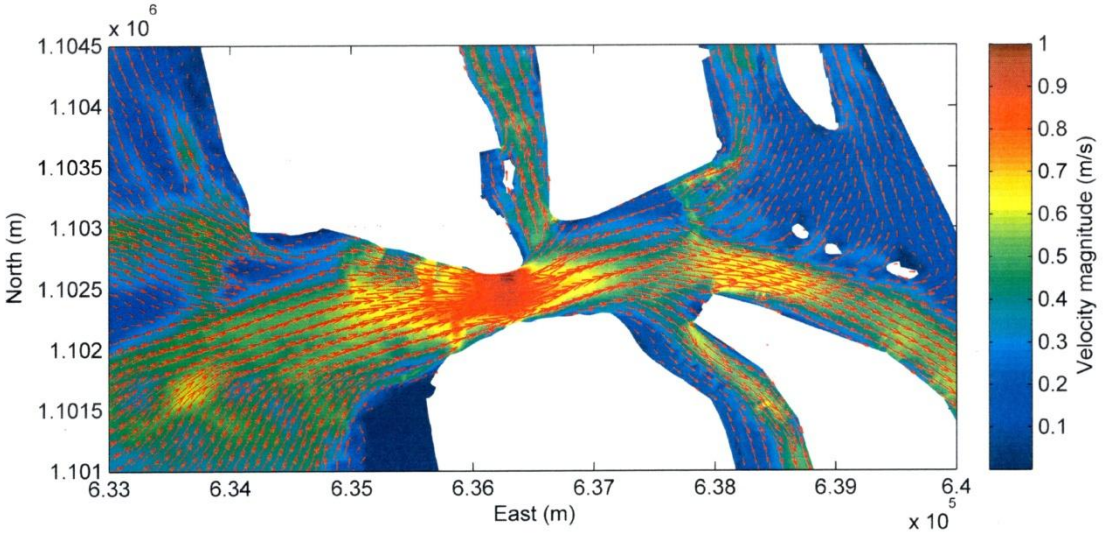


Figure 42 : Calculated flow velocity field for spring tide maximum flood flow– harbor area

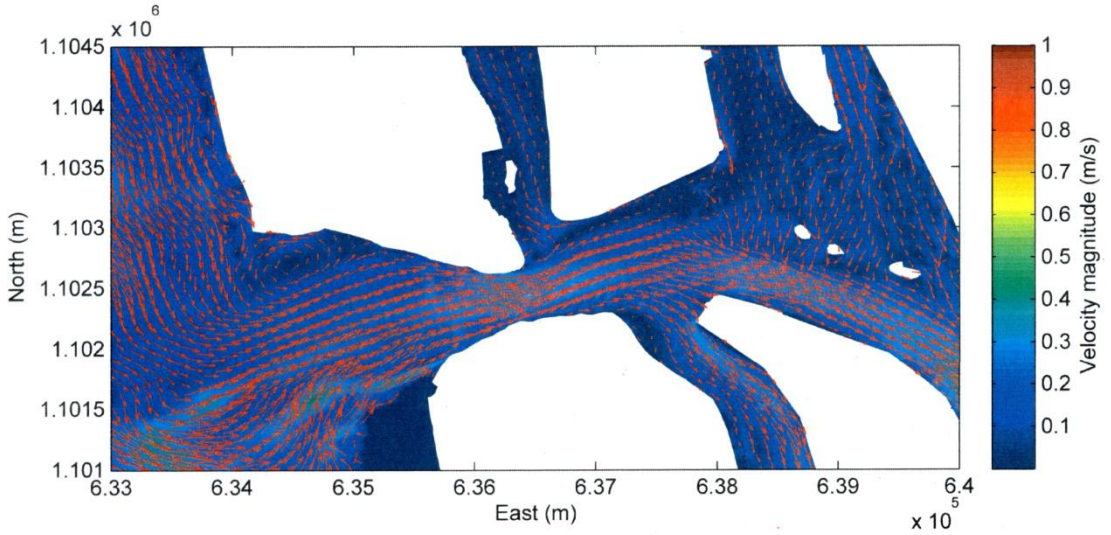


Figure 43 : Calculated flow velocity field for neap tide high tide flow – extreme calm– harbor area

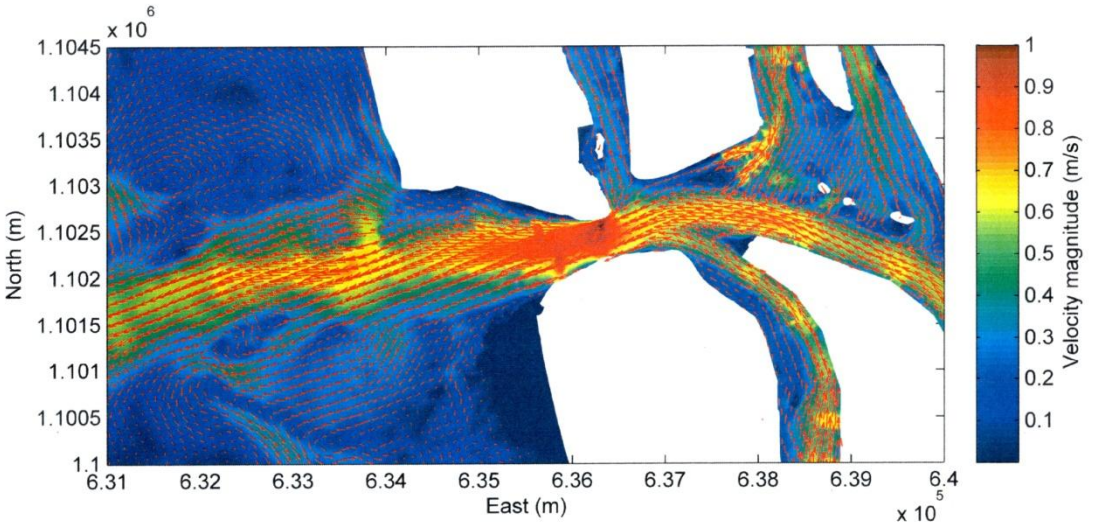


Figure 44 : Calculated flow velocity field for tide with influence of waves– harbor area

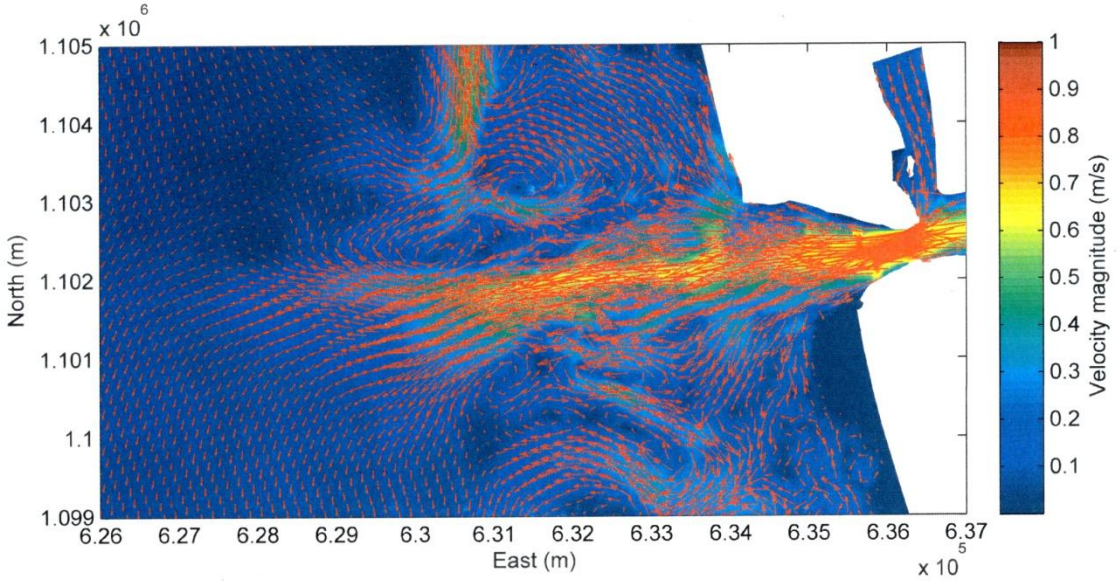


Figure 45 : Calculated flow velocity field for spring tide maximum ebb flow – navigation channel area

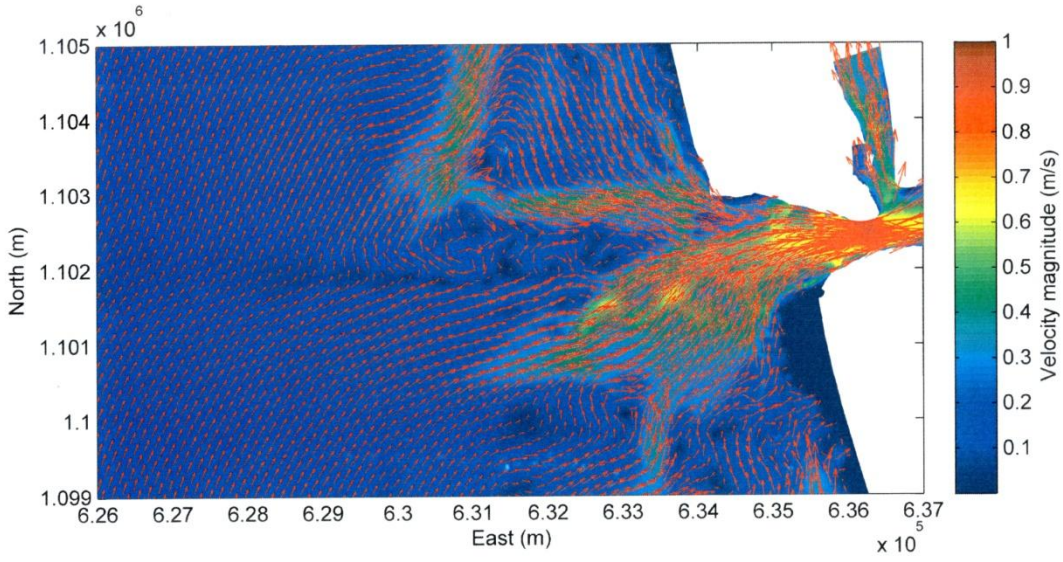
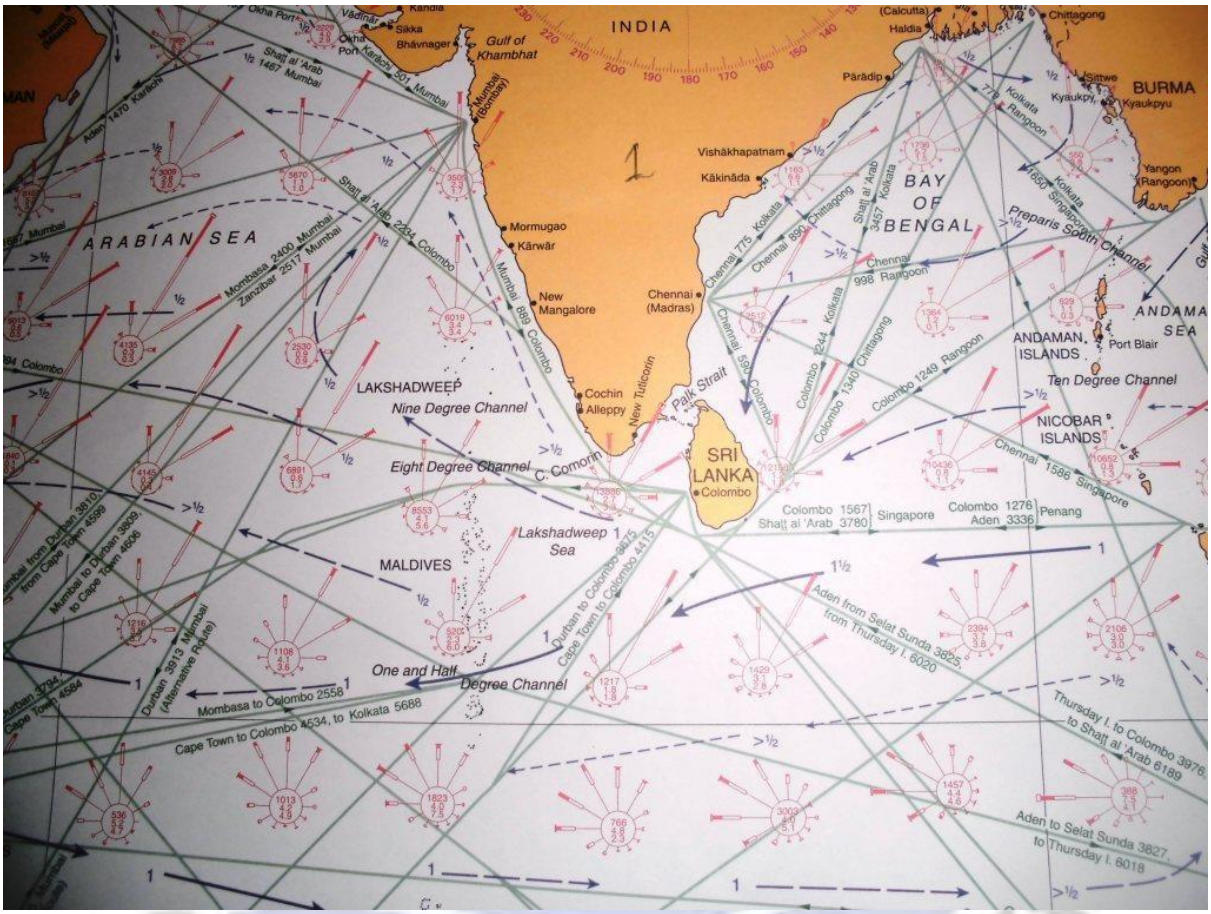


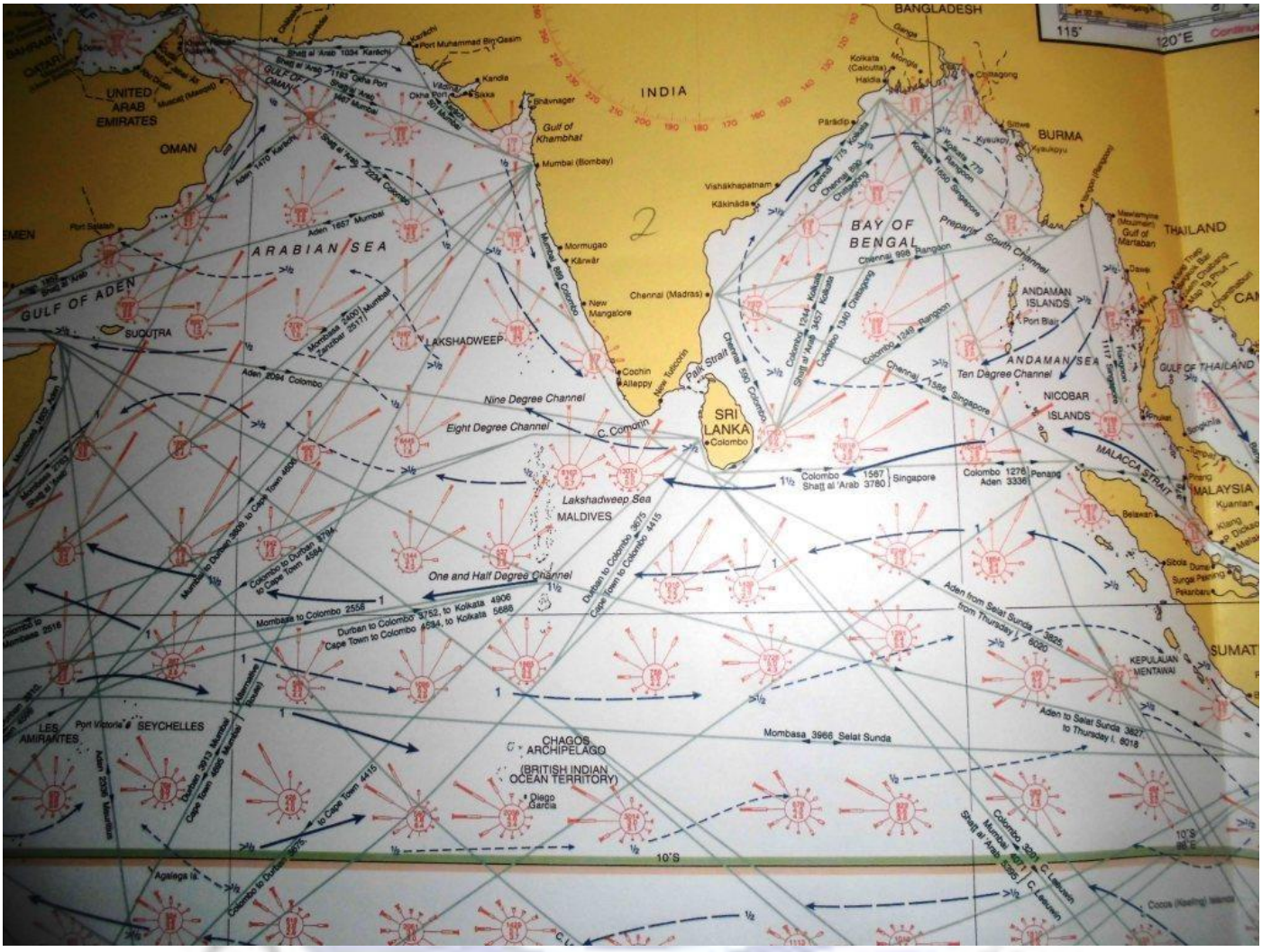
Figure 46 : Calculated flow velocity field for spring tide maximum flood flow– navigation channel area

Month wise wind and current diagram for Cochin

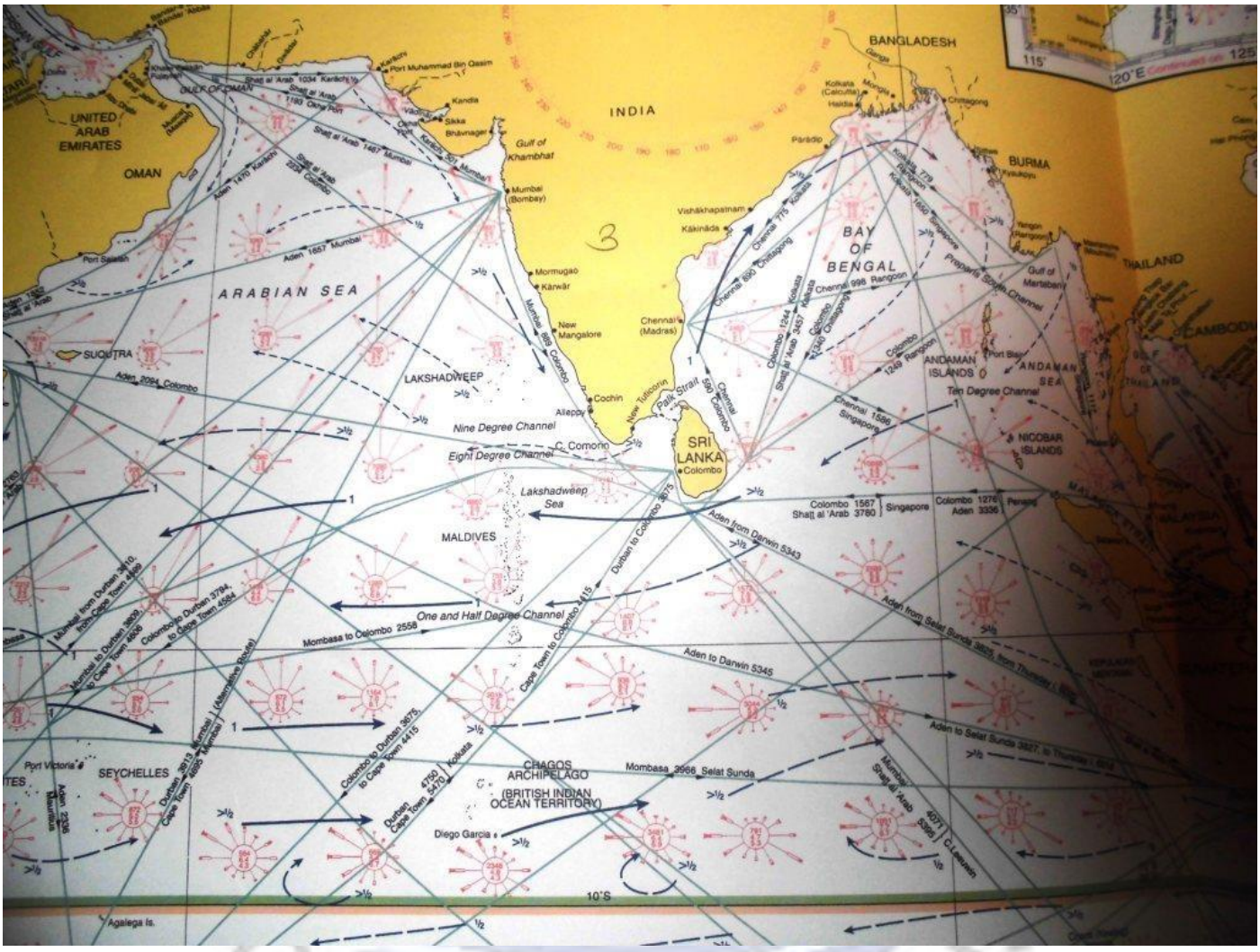
January:



February



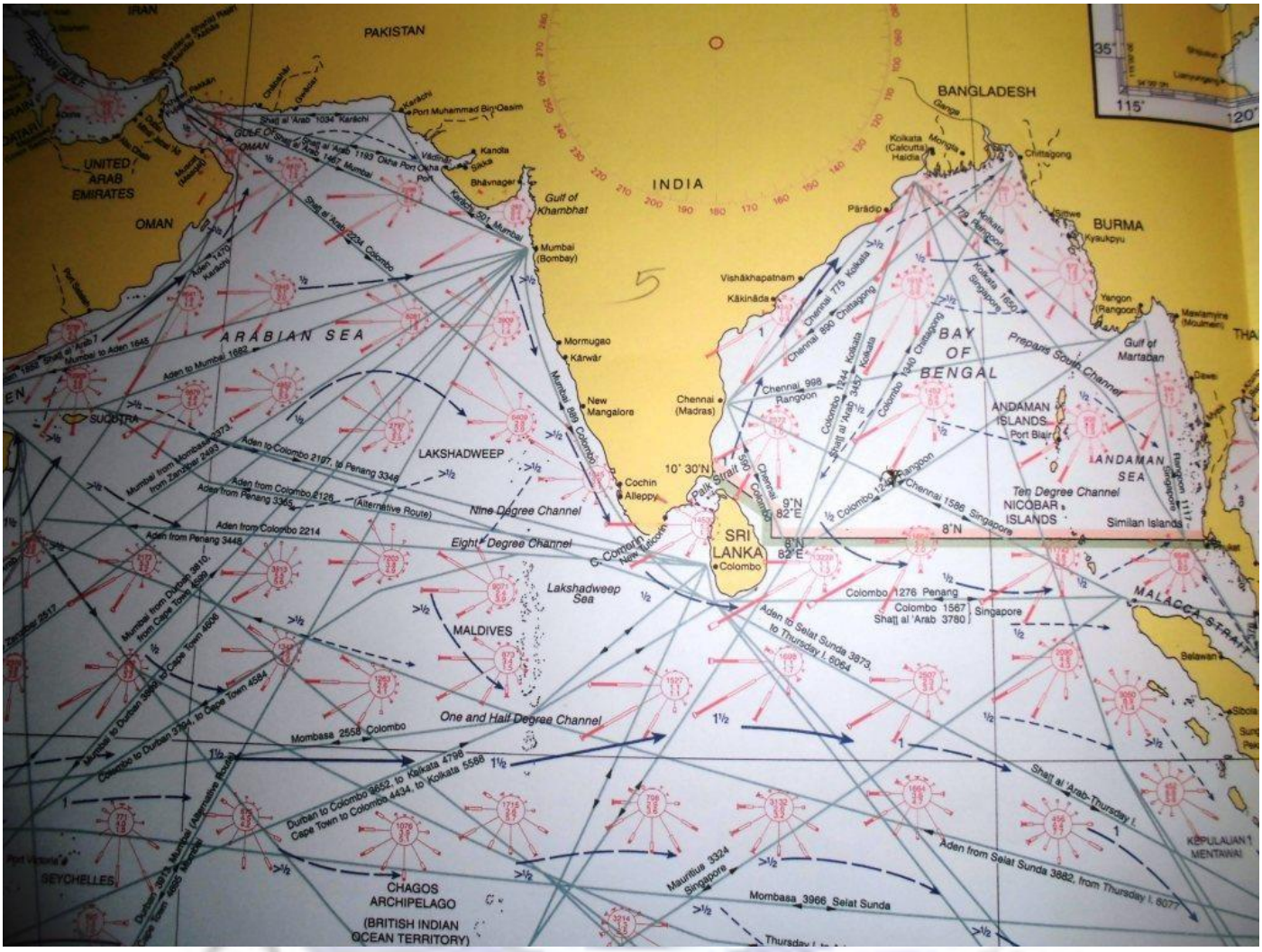
March



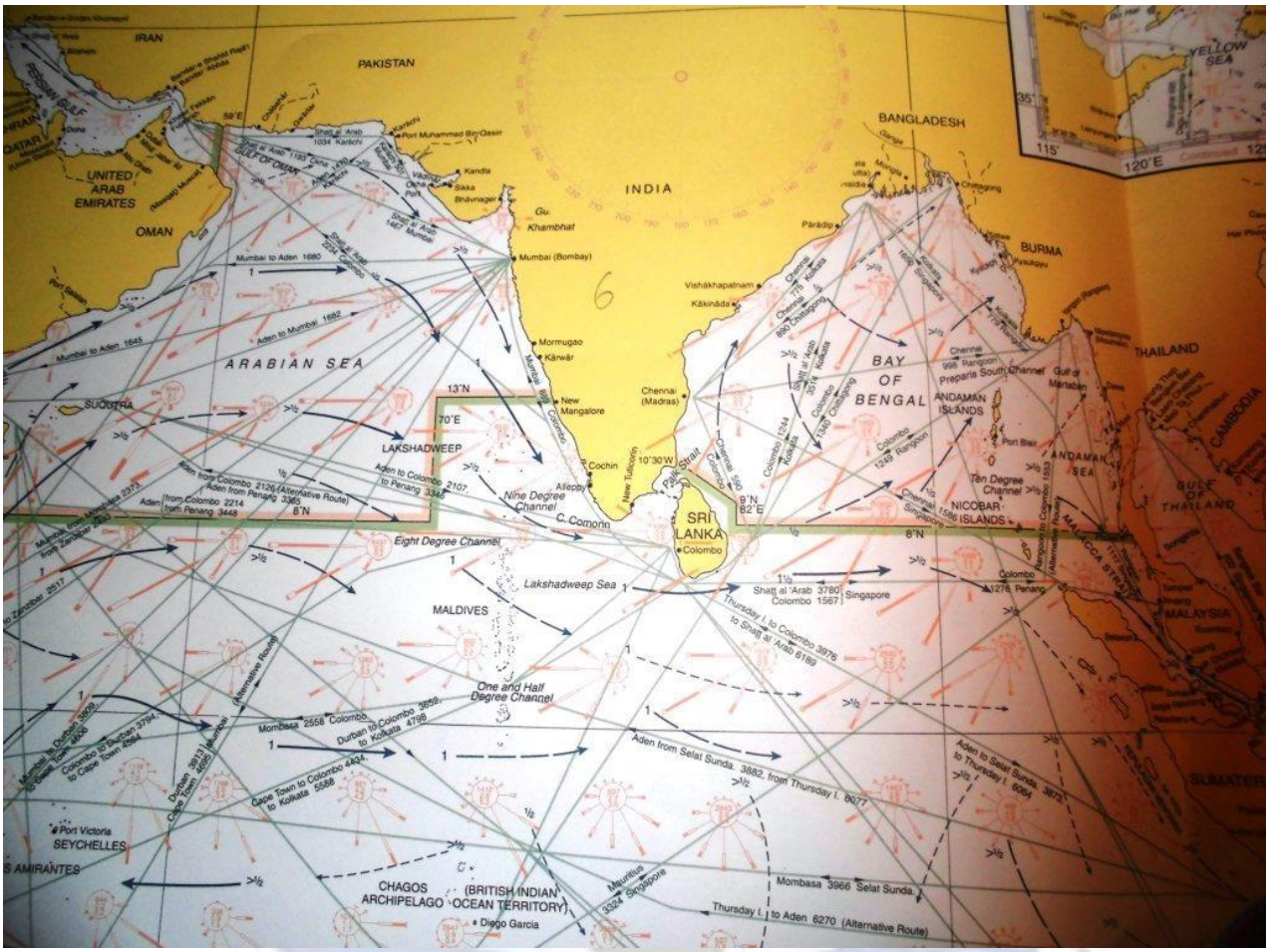
April


CHINA
IRAQ
KUWAIT
IRAN
PAKISTAN
PERSIAN GULF
BAHRAIN
QATAR
ARABIA
UNITED ARAB EMIRATES
OMAN
GULF OF OMAN
INDIA
BANGLADESH
BURMA
YEMEN
ARABIAN SEA
GULF OF ADEN
SOCOTRA
SOMALIA
LAKSHADWEEP
Nine Degree Channel
Eight Degree Channel
Lakshadweep Sea
MALDIVES
SRI LANKA
BAY OF BENGAL
ANDAMAN ISLANDS
Ten Degree Channel
NICOBAR ISLANDS
ANDAMAN SEA
MALACCA STRAIT
THAILAND
CAMBODIA
MALAYSIA
SUMATERA
KEPULAUAN MENTAWAI
One and Half Degree Channel
SEYCHELLES
LES AMIRANTES
CHAGOS ARCHIPELAGO
(BRITISH INDIAN OCEAN TERRITORY)
Diego Garcia
Agalega Is.

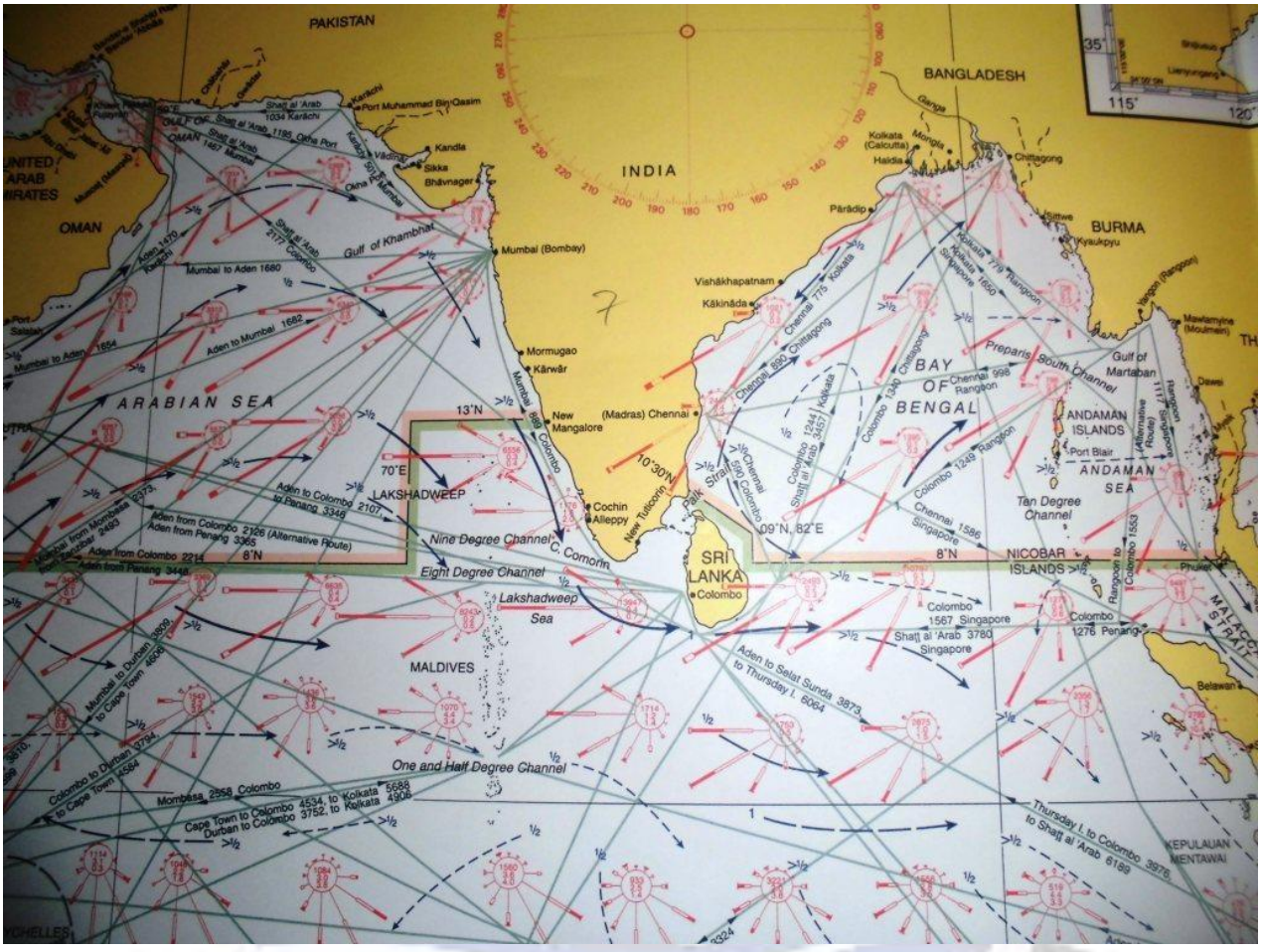
May



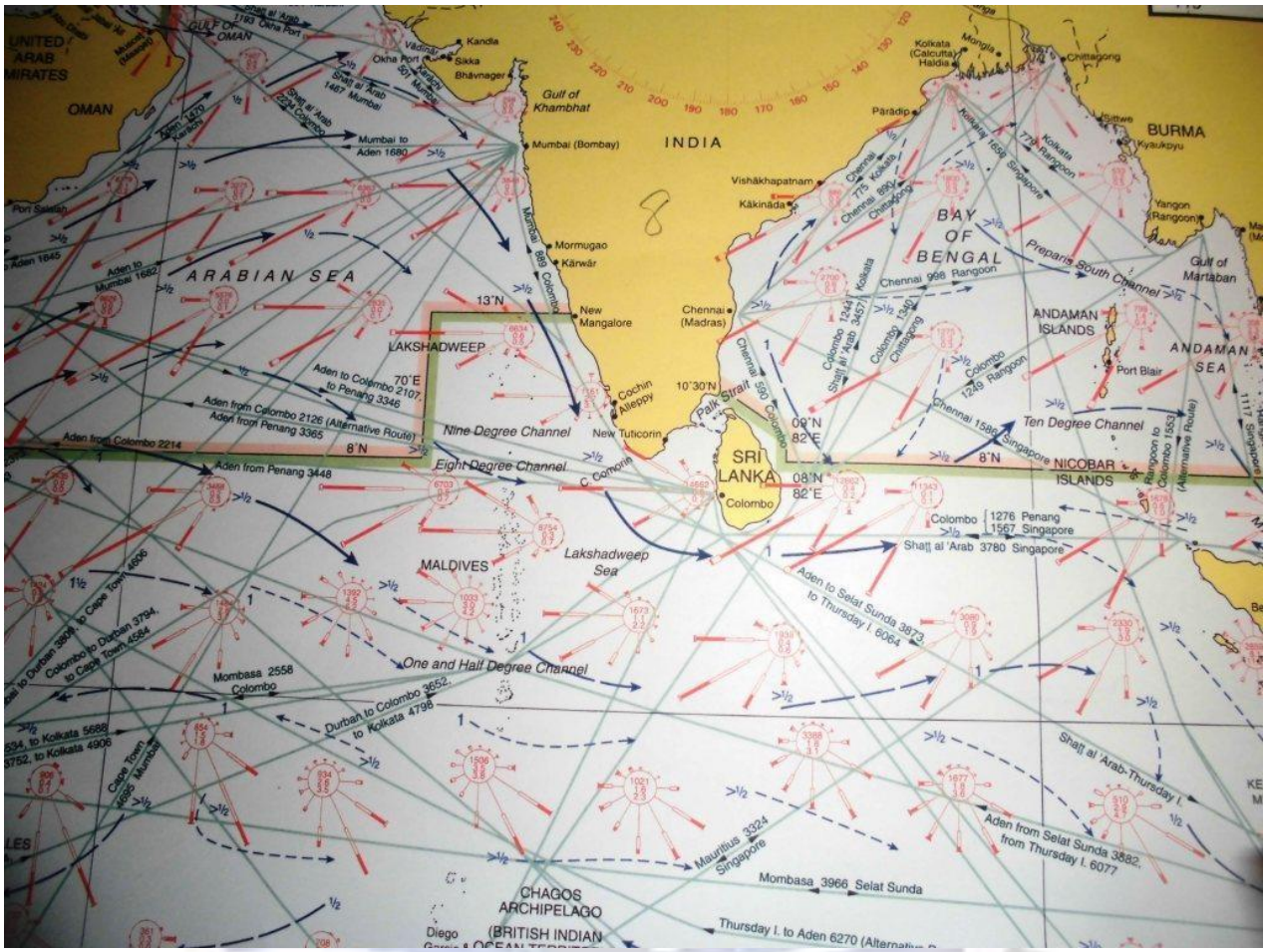
June



July

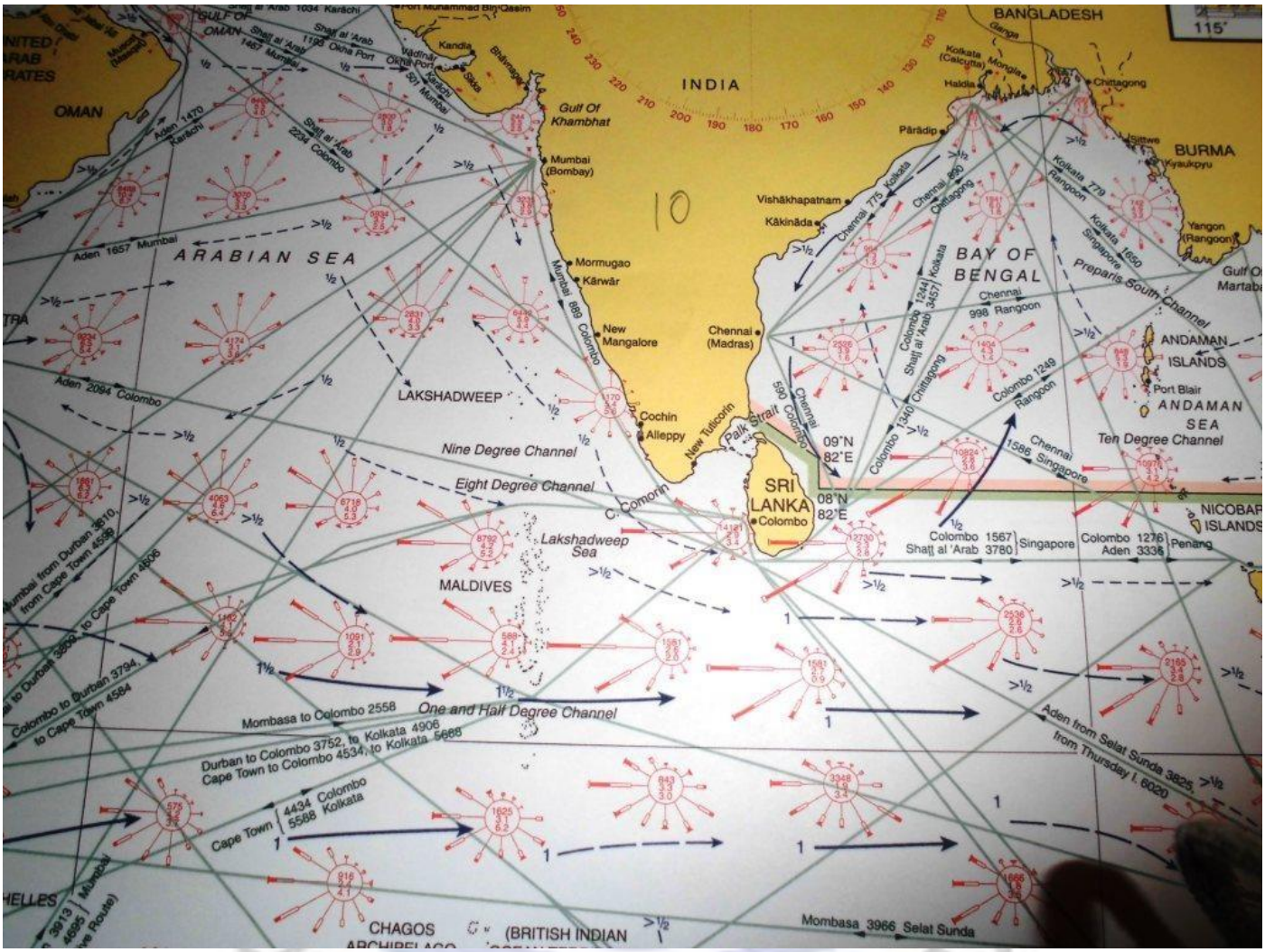


August



September

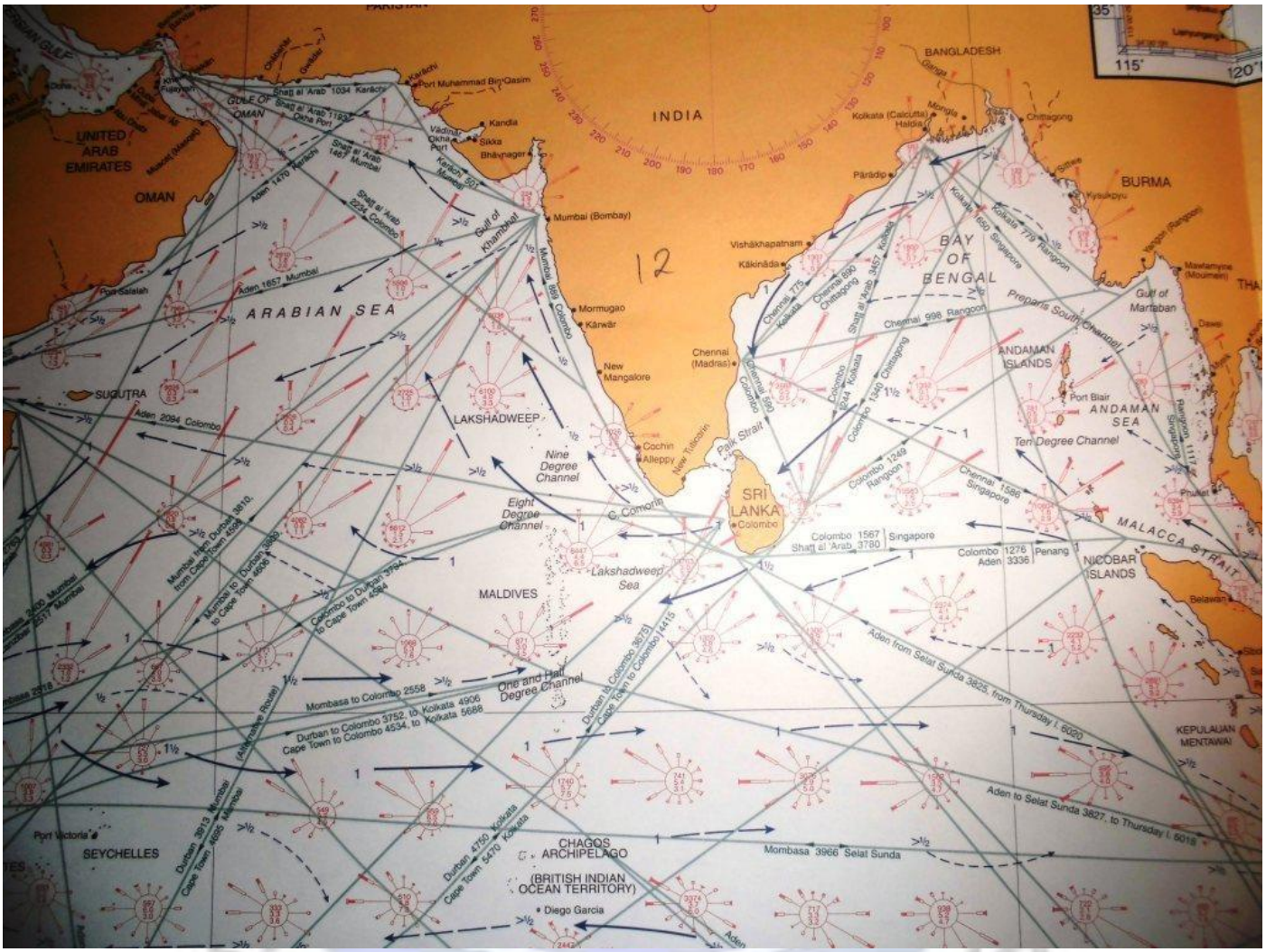
October



November


INDIA
BANGLADESH
BURMA
OMAN
ARABIAN SEA
BAY OF BENGAL
Gulf of Khambhat
Gulf of Martaban
LAKSHADWEEP
MALDIVES
Lakshadweep Sea
SRI LANKA
ANDAMAN ISLANDS
ANDAMAN SEA
NICOBAR ISLANDS
Nine Degree Channel
Eight Degree Channel
One and Half Degree Channel
Ten Degree Channel
Palk Strait
C. Comorin
10°30'N
9°N
8°N
82°E
Mumbai (Bombay)
Mormugao
Kārwār
New Mangalore
Cochin
Alleppy
New Tuticorin
Colombo
Chennai (Madras)
Vishākhapatnam
Kākināda
Pārādip
Haldia
Kolkata (Calcutta)
Chittagong
Yangon (Rangoon)
Narcondam I.
Barren I.
Port Blair
Similan Islands
Mombasa to Colombo 2558
Durban to Colombo 3752, to Kolkata 4906
Cape Town to Colombo 4534, to Kolkata 5688
Durban to Colombo 3675
Cape Town to Colombo 4415
Colombo 1567 Singapore
Shatt al 'Arab 3780 Singapore
Colombo 1276 Penang
Aden 3336 Penang
Aden from Selat Sunda 3825,
from Thursday I. 6020
Mombasa 3966
CHAGOS ARCHIPELAGO

December


INDIA
BANGLADESH
BURMA
ARABIAN SEA
BAY OF BENGAL
UNITED ARAB EMIRATES
OMAN
SUQUTRA
LAKSHADWEEP
MALDIVES
SRI LANKA
ANDAMAN ISLANDS
NICOBAR ISLANDS
ANDAMAN SEA
SEYCHELLES
CHAGOS ARCHIPELAGO
(BRITISH INDIAN OCEAN TERRITORY)
Diego Garcia
Nine Degree Channel
Eight Degree Channel
One and Half Degree Channel
Ten Degree Channel
Lakshadweep Sea
Palk Strait
MALACCA STRAIT
Gulf of Khambhat
Gulf of Martaban
Karachi
Mumbai (Bombay)
Kandla
Mormugao
Kārwār
New Mangalore
Cochin
Alleppy
Colombo
Chennai (Madras)
Vishākhapatnam
Kākināda
Kolkata (Calcutta)
Haldia
Chittagong
Pārādip
Port Blair
Penang
Singapore
Rangoon
Aden
Mombasa
Durban
Cape Town
Port Victoria
KEPULAUAN MENTAWAI

PART - 3

DATA DIRECTORY

CHAPTER - 2

RESOURCE LISTS

&

DATA SHEETS

RESOURCE LISTS

1. Primary oil spill equipment.

RESPONSE EQUIPMENT HELD WITH COCHIN PORT TRUST

Item	Amount	Location
Harbour Boom (18")	300 m. (On drum)	On Tug (M/V Baali)
	200 m. (in 15 m sections)	Container at Q4, Mattancherry Wharf
Ocean boom	600 m (200mx 3)	On board SPM support v/l
	900 m	On reels in container at BTP /Q4
Sorbent Boom (5")	300 m (in 10 ft. sections)	In container at Q4
Sorbent Pads (10" x 17")	1000 Nos	In container at Q4
Oil Spill Dispersant (Type III)	10,000 Ltr	Fire Station
Dispersant Applicators	5 Nos	Fire Station
Portable Multi Skimmer (60 Cu.m/hr capacity)	1 No	Fire Station
Portable Multi Skimmer (20 Cu.m/hr capacity)	3 Nos	Fire Station
Portable Disc Skimmer (5 TPH capacity)	1 No.	M/V Venad
Flex Barge (10 Ton capacity)	4 Nos	Mattanchery wharf store
Beach Cleaning Equipment	5 Sets	Marine Response equipment store

Each set consists of following items:

Vacuum pump	1no
Vacuum Hopper	1no
Transfer pump	1 no
Lancer	1 no
Vacuum connecting hose	1 no + 1 spare
Hooper to Lancer hose	1 no + 1 spare
Hooper to Transfer hose	1 no + 1 spare
Transfer delivery hose	1 no
Back pack Sprayer with nozzle	1 no
Collapsible tank with rods and accessories	1 no

Inflatable booms with power packs and
Air filling pumps in containers 3 nos (Q4 berth - 1 and NCB – 2 nos)

Skimmer vessel "MV Venad"
(60 Cu.m/hr capacity)
Oil Storage Capacity 90 Tons M/V Venad
200 Tons M/V Jala Prabha (Water Barge)

IMO OPRC Level Trained Responders

DESIGNATION	LEVEL
Deputy Conservator	Level 2
CFO cum Asst Safety/ Pollution Control Officer	Level 1
DMF, Marine Dept	Level 1
AMF, Marine Dept	Level 1
Fire Officer	Level 1
Safety Inspector	Level 1
Sub Officer	Level 1
Sub Officer	Level 1
Sub Officer	Level 1
Leading Fireman	Level 1

Periodic training is scheduled for employees to meet the NOS-DCP recommendation.

2. Auxiliary Equipment:

Oil Spill Response craft: (Working Condition)
Harbour Tugs 4 Nos.
Offshore Tugs with spray arms 2 Nos.
Buoy laying cum skimmer vessel 1 Nos.

Work Boats: (Working Condition)
Mooring Boats 3 Nos.
Pilot Boats 2 Nos.
Pollution Control Boat 1 Nos.
Crew Change Boat 2 Nos.
C.I.S.F. Patrol Boat 2 Nos.

3. Support Equipment

Any additional workboat / barge / craft that may be required, is to be mobilized for oil spill cleanup and arranged by the General Marine Foreman from the License registration records of Cochin Port Harbour Craft Rules.

M/V Venad

Builders	Goodwill Engineering Works, Pondicherry.
Yard No.	015
Built	1996
Length Overall	32.86 m
Breadth Moulded	10.00 m
Draft	1.7 m – 2.1 m
Oily water storage tank	39.6 m^3 x 2 nos. (79.2 m^3 total)
Sludge / Recovery tanks	12.8 m^3 x 2 nos. (25.6 m^3 total)
Pumps	3 Nos. - Recovery / Transfer / Stand by
Type	Electric Rotary Screw (gear)
Capacity	1250 Lts. per min @ 20 m head each. (75 m^3 per hour)
Delivery	2 kg / cm^2
Recovery rate	60 m^3 per hour
Skimmers Main	Weir type between catamaran hull
Suction	Weir type for constrained places (Cap. 500 Lts. per min)
Oil spill dispersant tanks	3.3 m^3 x 2 nos.
O.S.D. pump	Centrifugal type
Capacity	6 m^3 per hr @ 10 m head.
Applicators	2 nos. Port and Starboard
Anchors	Stockless 480 kgs. X 2 nos.
Chain	Studlink chain (U2) 275 m 19 mm ∅
Main Engines	Kirloskar Cummins KTA 1150 M x 2 nos. 474 H.P., 1800 Rpm, 9kts.
Propulsion	Voith
Generators	Ashok Leyland ALHG 680 x 2 nos. 110 KVA 415V 50 Hz, 3∅
Harbour Generator	Ashok Leyland ALHG 370 x 1 no. 50 KVA 415V 50 Hz, 3∅
General Service Pumps	Centrifugal self priming - 3 nos. Bilge / Fire / Ballast
Capacity	30 m^3 per hr @ 30 m head.
Compressor	20 m^3 per hr, 7 Bar, 0.3 m^3 tank.
Oily bilge separator (E.Rm)	0.5 m^3 per hr.
Fresh water tanks	5.6 m^3 x 2 nos.
Fuel Oil tanks	6.1 m^3 x 2 nos.
Complement	19 persons.

DETAILS OF HARBOUR BOOM

300 m stowed AT Q9 and 200 m at Q4

Type	Globe Boom	
Model	ED 18 (Extra Duty 18")	
Total Ht.	18"	(45.72 cm)
Draft	12"	(30.48 cm)
Freeboard	6"	(15.24 cm)
Fabric Type	PVC coated polyester base 85 oz/sq yd.	
Section Length	15 m.	
Ballast type	Chain ¼ "	(6 mm)
Float Diameter	8"	(20.32 cm)
Tensile strength	28,800 Lbs.	(13,063.5 Kgs)
Weight per feet	1.6 Lbs.	(0.73 kg)
Volume per 100ft	34 cubic feet.	(0.96 m^3)
Fasteners	Stainless Steel Nuts & Bolts	
End Connectors	Aluminium Extrusions	
Floatation	Black molded high-density polyethylene (H.D.P.E) float shells closed cell foam filled.	
Seams	R.F. welded	
Colour	International Orange.	
Manufacturer:	Applied Fabric Technologies Inc. N.Y.	
Commissioned:	31st May 2003.	

Medium weight boom designed for emergency response and ease of handling

Suitable for moderate harbour with waves from 0.25m to 0.5m and strong currents of 1.75 knots or more and in strong sun conditions.

DETAILS OF OCEAN BOOM

900m in sections of 30mtr stowed on three reels holding 300mtr each, with power packs kept in Q4-1 and NCB- 2

Type:	Air inflatable ocean boom
Model	AIRMAX Deep Sea
Freeboard	600mm
Total height	1600mm
Ballast/ bottom tension sleeve	½" (12mm) Galvanized chain in double layer urethane fabric
Weight	7 Kg/mtr
Inflation Pressure	0.5 PSI @ 70 degree Fahrenheit
Fabric	28 oz (950 gsm) Polyurethane coated Polyester
Tensile Strength of fabric	120 N/mm (ASTM D-751)
Connector	ASTM universal slide

(1)

PORTABLE MULTI SKIMMER

Manufacturer		LAMOR
Commissioned		20/05/13.
Model		Minimax 60
Type		Brush, Disc & Drum
Discs		8 discs of Aluminium alloy in one bank
Dia		480 mm
Drive		Hydraulic driven
		Suction head 9 mtr
Dimensions	Length	1320 mm
	Width	1050 mm
	Height	640 mm
	Weight	80 kg.
Recovery rate		60 Cu.mtr/ hr.
Pump		Positive displacement self-priming pump
Power Pack		Hydraulic pump/ Diesel engine driven
Dimensions	Length	940mm
	Width	985 mm
	Height	780 mm
Hydraulic tank capacity		5 Lts.
Engine (Prime Mover)		Diesel
	Manufacturer	Hatz 1B30,air cooled Diesel engine 7.3kW 3600 rpm
	Model No.	LPP 7HA/C75
	S.No.	
Hoses	Hydraulic	10 m
	Suction	10 m
	Discharge	10 m

(2)

FLEX BARGE WITH PUMPS AND HOSES

Floating type (Inflatable cushion) Flex barge of 10,000ltrs capacity	4 nos
Bellow type Air Pumps	8 nos
Transfer pumps	4 nos
Spare Hoses	4 x 2 nos
Delivery Hoses	4 x 2 nos

(3)

PORTABLE MULTI SKIMMER

Make:		DESMI
Type:		Brush and Disc Multi Skimmer
Recovery rate:		20 M3/hr
Commissioned		2017
Dimensions	Length	930 mm
	Width	1320 mm
	Height	660 mm
	Weight	52 KG
Power pack		Hydraulic
Engine type:		Hatz Diesel Engine 10.05 HP
Transfer Pump		
Model:		Lobe Pump
Discharge capacity		35 M3/Hr
Hydraulic hoses		20 mts with quick release connectors

(4)

PORTABLE OIL SKIMMER

Manufacturer		BP India Ltd. Bombay
Commissioned		25/09/91.
Model no.		TD / 5 ST
		7.5 H.P. Test Pr. 45 kg/cm2
Type		Disc
Discs		8 discs of Aluminium alloy in one bank
Dia		300 mm
Drive		Hydraulic motor, 0 – 100 rpm.
Scrapers		9 nos. of PTFE Teflon.
Dimensions	Length	1280 mm
	Width	650 mm
	Height	410 mm
	Draft	250 mm
	Weight	65 kgs.
Floatation tanks		2 nos. Stainless Steel
Collection tank capacity		7 Lts. (approx)
Recovery rate		5 Tons per hr.
Pump		Positive displacement self-priming pump (5 Tons per hr)
Power Pack		Hydraulic Twin pump (Vickers/ Yuken)
Dimensions	Length	1250 mm + towing handle
	Width	700 mm
	Height	850 mm
Hydraulic oil Type		Enklo No. 68.
	Tank capacity	200 Lts.
Engine (Prime Mover)		Diesel
	Manufacturer	Greaves Cotton Company Ltd.
		7 (6.4) H.P. 1800 rpm

	Model No.	1533
	S.No.	09-14-26772
Hoses	Hydraulic	3/8” x 10 m
	Suction	10 m
	Discharge	10 m

(5)

SHORELINE CLEANUP EQUIPMENT 5 NOS

Make : Desmi Ro-Clean Agencies, Denmark
Commissioned: 2017

1. VACCUM PUMP

Model: Ro Vac Mini
Drive : 3.3 KW Diesel Engine fitted with spark arrester
Recovery capacity: 200LPM (12 M3/Hr)

2. VACCUM HOPPER

Material : Marine grade Aluminium
Capacity: 200lts
Fitted with removable grate to prevent debris from entering transfer pump.

3. TRANSFER PUMP

Model: Spate PD 75
Type: 4.1 HP Diesel Engine driven fitted with spark arrester, portable type on wheels
Capacity: 30 M3/hr

4. FAST TANK

Type: Semi Knock down kit (SKD) capable of assembling at site
Model No: TROILTANK
Material: PVC coated polyster
Capacity: 2 M3

5. BACK PACK TYPE OSD APPLICATOR

Model: Gloria Back Pack Sprayer
Power: Manually operated piston Pump
Capacity: 18 lts
Tank Material: PVC
Pressure: 3 Bar

4. Experts and advisors

Indian Navy, Indian Coast Guard. KSPCB, The Company of Master Mariners of India, Institute of Marine Engineers of India etc form the experts and advisors.

5. Local and national government contacts:

As per important telephone numbers listed in Annexure H

Annexure – A

OIL SPILL REPORT FORM

Particulars of Person / Organization Reporting incident

a) Name :

b) Title :

c) Company :

d) Telephone Number(s) :

e) Date / Time of spill :

f) Spill Location :

g) Type and Quantity of oil spilt :

h) Response to spill, if any :

i) Any other information :

Date: Time: Name & Signature

Annexure – B

Check List for Port Control on activation of CPOS DCP

- Inform Manager Marine Pollution Control
- Inform C.F.O. cum Asst. Pollution Control Officer
- Inform Mooring Foremen (General)
- Inform M/V Venad
- Inform Harbour Tug fitted with boom (3 Hired Tugs of Ocean Sparkle)
- Inform Harbour Master
- Inform Dock Master
- Inform Marine Engineering Superintendent
- Commence a fresh log for recording all pollution response operations

Annexure - C

Records of the Exercises / Drills

Sr. No.	Date of Exercise / Drill	Drill / Exercise Name	Comments

Annexure - D

APPROVED GARBAGE COLLECTORS IN COCHIN PORT

1. K.A. HYDROSE & SONS,
   D.No. XXIV/ 1561-C,
   Coastal Building,
   Milnie Road,Willingdon island,
   Kochi-682003.
   Tel: 484-2669889, 2668668
   Mob: 98470 34122, 98470 36679 Fax: 484-3103363
   Email: contact@hydrosons.com

2. M/s MINAR ENTERPRISES,
   Darragh smail building,
   D.No. XXIV/1469,
   5th cross road, W/Island,
   Kochi-682 003.
   Tel: 0484-4012424,4020705
   Mob: 9846139669, 9995908000
   Email: mail@minarenterprises.com

3. T.M. AIYOOB & SONS,
   Earavely, Fort Kochi,
   Kochi-682 001
   Tel: 0484-2216081
   Mob: 98473 61482, 98463 06557

4. M.P. KUNJUMOHAMED,
   2/1088-A, Turuthy,
   Kochi-682 001
   Mob: 93492 52279, 98479 92709

5. ANCHOR MARINE SERVICES,
   24/440, 1st Floor, Jay Shree House,
   Marar Road,
   Willingdon Island,Kochi- 682 003
   Tel: 0484-2666945
   Mob: 98460 44586
   Fax: 0484-2666945
   E-mail: amsindia@hotmail.com

6. SEALINE SERVICES,
   1/930, Opp. Santa Cruz Ground,
   Kochi- 682 001
   Tel: 0484-2216560, 2215033, 2217595
   Fax: 0484-2215033
   Ee-mail: kapithan@eth.net

7. SEASHORE MARINE AGENCIES,
   Sidharth building, 2nd main road,
   Opp.Kinship house,
   Willingdon Island,
   Kochi- 682 003
   Tel: 0484-3013344 Fax: 6453344
   Mob: 98460 51737 / 9387801737
   E-mail: iqbalseashore@yahoo.com

8. LEGEND MARINE SERVICES,
   24/509, Essar Building,
   G.V. Iyer Road,
   Willingdon Island,
   Kochi-682 003
   Tel: 0484-2668885 Fax: 0484-3024200
   Mob: 98471 13233
   E-mail: legendmarine@gmail.com

9. T.M. ABOO & SON,
   H.No. 7/903 A,
   Panayapilly,
   Kochi-682002
   Mob: 98461 96853 / 99468 32424

10. B.A. ABDU & BROTHER,
    H.No. 2/1028,
    CP Thodu, Thuruthi,
    Fort Kochi- 682001.
    Tel: 9995475719 (Younes)

11. M/s B.H. Muhamad Ashraf &Sons,
    3/994, Old Police Lane,
    Kochi-682002
    Mob: 9995285991
    9061477787

12. M/s VEE YENS,
    Island Super Market Bldg.,
    Naval Road, W/Island,
    Kochi-682003.
    Mob: 93492 88055
    90376 41848

13. M/s EVERGREEN ENTERPRISES,
    13/763, Thakyavu Road,
    Karuvelipady,
    Kochi-682005
    Tel: 0484-2222003, 2221003, 2222181, 2211415
    Mob: 9895702005

14. M/s FIVE STAR ENTERPRISES,
    18/803B, Thoppukal House,
    Indira Nagar Road,
    Near DLB Quarters, Palluruthy,
    Kochi-682 006.
    Tel: 0484-3109692 Mob: 09895619725
    Email: shipstores03@yahoo.co.in

15. M/s P.J. JOHNSON & SONS,
    24/1401, Elixir Bldg.,
    Willingdon island,
    Kochi-682 003.
    Tel: 91-484-2667703
    Fax:91-484-2666667
    Mob: 9847045422
    Email: pjjandsons@gmail.com

16. M/s T.U. MOHAMED,
    Thaiparambil House,
    Koonamthai,
    Edappally, Kochi
    Tel: 0484-3207060

17. M/s ALTHAF & CO.,
    12/951, Panayapally Road,
    Kochi-682002. Tel: 98473 10685, 9447179483

18. M/s A. KAMARUDHEEN,
    12/951, Panayapilly Road,
    Kochi-2
    Mob: 9847310685, 9447179483

19. M/s KRISH MARITIME SERVICES,
    Achuthan Pillai Bldg.,
    Door no. XXIV/1375 (A),
    Venkatraman Road, W/Island,
    Kochi-682 003
    Mob: 9846044586, 8547033864

20. M/s TMS Services,
    Thaiparambil House,
    LHC 49, Koonamthai,
    Edappally, kochi-682024
    Mob: 9895339884

21. M/s SEA BIRD ASIA,
    3rd Room, Ground Floor,Handicraft Building,
    Indira Gandhi road, Willingdon Island,Cochin-682009

Annexure - E

APPROVED WASTE OIL REPROCESSING FIRM

1. M/s Cee Jee Lubricants,
   VI/592, Industrial Development Area,
   Edayar, Binanipuram P.O.,
   Aluva, Kochi-683502.
   Tel: 484-2558486, 2540305
   Fax: 484-2542410
   Email: ceejeelubricant@vsnl.net

2. M/s APJ Refineries Pvt Ltd,
   New Industrial Development Area,
   Kanjikode,Palakkad,
   Kerala-678 621
   Tel: 0491-2566595, 2566740
   Mob: 9995821648
   e-mail: info@apjrefineries.com

3. M/s Swaraj Petrochemicals,
   Industrial Developmental Area,
   Erumathala P.O., Aluva-683 105,
   Kerala.
   Tel; 0484-3208200, 3205196
   Mob: 9387888388

APPROVED SEWAGE COLLECTORS

1. M/s P.J. JOHNSON & SONS,
   24/1401, Elixir Bldg.,
   Willingdon island,
   Kochi-682 003.
   Tel: 91-484-2667703
   Fax:91-484-2666667
   Mob: 9847045422
   Email: pjjandsons@gmail.com

2. M/s T.M. ABOO & SON,
   H.No. 7/903 A, Panayapilly,
   Kochi-682 002.
   Mob: 9846196853, 9946832424

Annexure – F

APPROVED OIL SPILL DISPERSANT SUPPLIERS

Additional supply of Dispersant (Approved by N.I.O. Goa) can be arranged from the following firms:

Dispersant: Rochem OSD,(Type II/type III)
M/s ROCHEM(INDIA) PVT.LTD.,
101, Dheeraj Arma, Anant Kanekar Marg, Telefax: (0250) 2455357
Bandra (East), Mumbai- 400051

Dispersant: Spilcare – O
M/s SPILCARE – O METACLEAN PVT. LTD., Ph. 44 26200482
AB – 146, 3rd Main Road, Anna Nagar, Fax 44 26281457
Chennai. – 600 040.

Dispersant: Challenger – OSD EF III
M/s CHALLENGER CHEMICALS & POLYMERS PVT. LTD.,
No. 3, Balasundaram Layout, Ph. 422 2216224
New Sidhapudur, Fax. 422 2213181
Coimbatore. – 641 044.

Dispersant: Bio Remediation Liquid
M/s. BINT BIOTECH Ph. 011-26891761
8A, Vishwakarma Colony,
Pul Praladpur,
Mehrauli- Badarpur Road, New Delhi 110044

Annexure - G

GUIDELINES FOR THE USE OF DISPERSANTS

(Reproduced from the NOS DCP)

1. Once an oil spill occurs, time is of the essence, particularly in regard to the use of dispersant. Agreements and period approval for dispersant use are essential to facilitate a successful response. Spill response personnel are to seek Indian Coast Guard approval for use of dispersant prior use. To cut down on time which is the essence, each facility / response center should submit their Dispersant usage plan to the Coast Guard for sanction and approval. The type of dispersant to be stocked should also be vetted by the Coast Guard Headquarters.
2. The first step is to collect as much information as possible on the oil characteristics of the oil, and the current and predicted weather / wind conditions. A key question will be whether a shoreline or sensitive resource is threatened. If there is no threat, surveillance of the oil should continue, since it should always be borne in mind that conditions might change quickly.
3. If a sensitive resource is threatened, all response options in the contingency plan should be considered. Some options can be quickly eliminated due to size / location / weather / logistics. In some cases, one or more of the options may be appropriate to achieve the best possibility of minimizing the environmental impact of the spill. Different areas of the slick may be handled with different response techniques.
4. The anticipated effectiveness of each response technique should be considered in the net environmental benefit analysis. Based on the net environmental benefit analysis, one or more response options will be selected. If approvals are needed – for example, for use of dispersant or for in-situ burning – they must be obtained within hours. Therefore, a mechanism for approvals must be available in advance. Preparations to mobilize equipment and plans to carry out options that need approval should begin before the actual approval is obtained, to save time.
5. Four options are considered – that is, mechanical recovery, dispersant use, in – situ burning, and allowing the oil to come ashore. If this last option is chosen, consideration should be given to protecting sensitive shorelines by booming and to how the shoreline will be cleaned. The expected effectiveness (or range of effectiveness) for each option should be estimated, based on the available equipment, weather conditions and logistics of the spill.
6. Surveillance and monitoring of the effectiveness of the response options should continue throughout the operation. If the effectiveness is not as expected, the spill response should be modified to ensure that money, time and effort are not wasted.

Application:

7. Due to weathering of the oil there is a short time window during which dispersant works efficiently. This is generally in the order of 24 hrs to a few days (in case of any instantaneous release). Treatment operations should therefore start as soon as possible.
8. The efficiency of dispersant treatment is also closely related to the way the dispersant is applied. Poor treatment results have often been related to inappropriate application of dispersant.
9. The choices of the application method and the operations procedure have to be carefully considered.

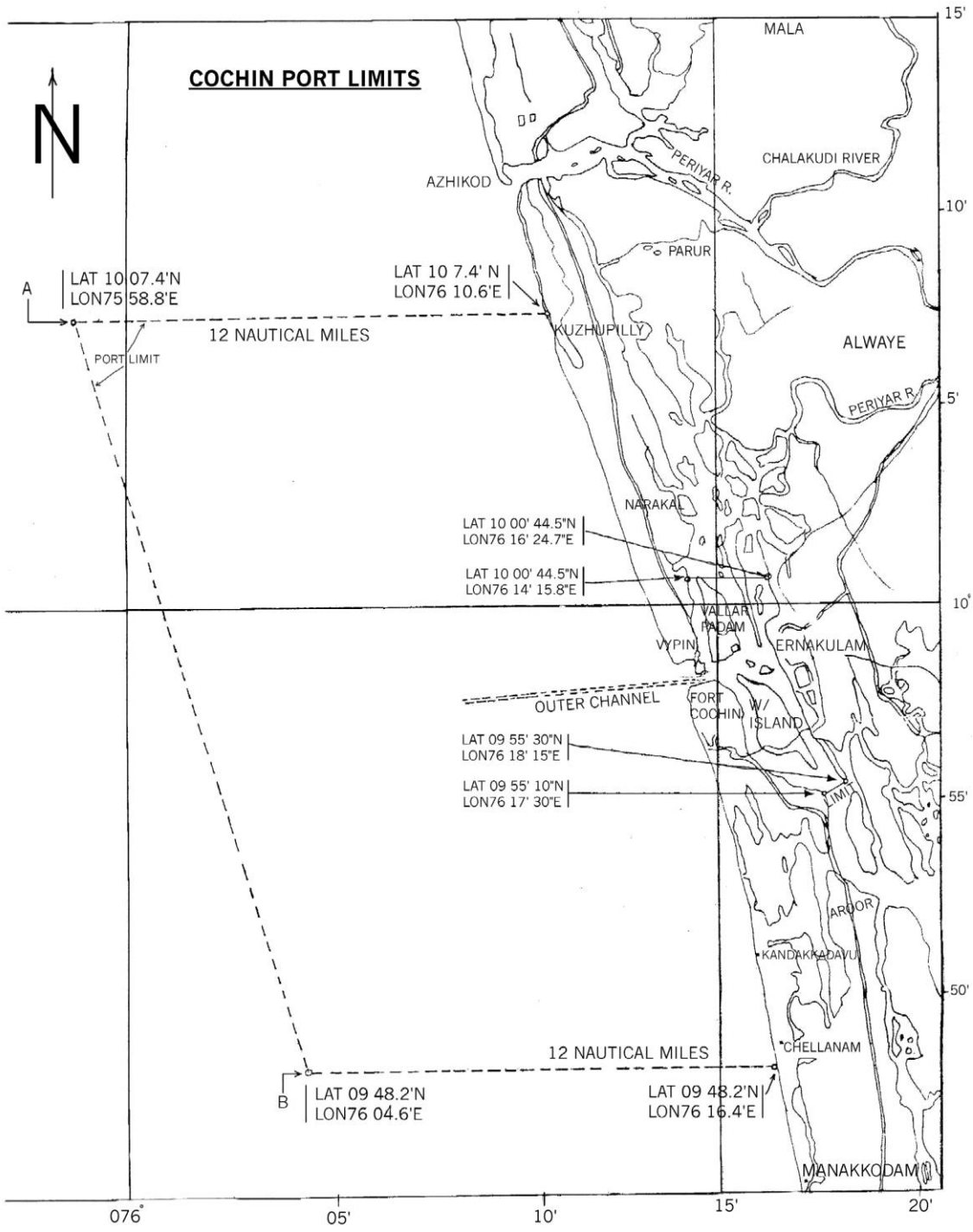
Annexure - H

IMPORTANT TELEPHONE NUMBERS

Coast Guard Operations Room	2218969 / 2217164
Indian Navy	2662552 / 2662466 / 2666851
Kerala State Pollution Control Board	2207783 - 86
Bharat Petroleum Corporation Ltd. (BPCL-KR)	2720992 / 2821700
Indian Oil Corporation Ltd.	2312601 / 2310392
Hindustan Petroleum Corporation Ltd.	2292582 / 2292583 /278 5344 / 2785366
Cochin Port Trust Fire Service	2666555 / 101 / 102
Cochin Port VTMS Control Room	2667105
C.I.S.F. Control Room, Cochin Port Trust	2666916 / 2171 (PABX)
Kerala Police - Harbour Police Station	2666005
Kerala Police – Fort Kochi Police Station	2215055
Customs House	2666861/ 862
Mercantile Marine Department (Port State Control)	2666104
Port Trust Hospital	2666403 / 123
District Collector	2423001
D.G. Shipping, Mumbai.	022- 25752040/1/2/3
- do- (Fax)	022 -25752029/35

Annexure – I

SPM area is within the Cochin Port limit.



Annexure - J

POLREP MESSAGE FORMAT

(See amplification in succeeding table)

Reference: IMO – 560 (1995)

Address From……. To .....…..

Date Time Group

Identification

Serial Number

Part I (POLWARN)	1.	Date and time
	2.	Position
	3.	Incident
	4.	Outflow
	5.	Acknowledge
Part II (POLINF)	40.	Date and Time
	41.	Position
	42.	Characteristics of pollution
	43.	Source and cause of pollution
	44.	Wind direction and speed
	45.	Current or tide
	46.	Sea state and pollution
	47.	Drift of pollution
	48,	Forecast
	49.	Identify of observer and ships on scene
	50.	Action taken
	51.	Photographs or samples
	52.	Names of other agencies informed
	53- 59.	Spare
	60.	Acknowledge
Part III (POLFAC)	80.	Date and time
	81.	Request for assistance
	82.	Coast
	83.	Pre-arrangements for the delivery
	84.	Assistance to where and how
	85.	Other agencies requested
	86.	Change of command
	87.	Exchange of information
	88.	Names and number of
	89.	Description of equipment
	90.	ETA and arrival information
	91.	Place of embarkation
	92,	Place of disembarkation
	93-98.	Spare
	99.	Acknowledge

CONTENTS	REMARKS
DTG (Date Time Group)	Day and time of drafting the telex (DTG). Always six figures. Can be followed by month indication The DTG can be used as a reference
POLREP BONN AGREEMENT / other NORDIC / BALTIC / DENGER	This is the identification of the report. “POL…" indicates that the report might deal with all aspects of pollution (such as Oil as well as harmful substances. "... REP“ indicates that this is a report on a pollution incident. It can contain up to three main parts: Part I (POLWARN) is an *initial notice* (a first information or a warning) of casualty or the presence of oil slicks or harmful substances. This part of the report is numbered from 1 to 5. Part II (POLINF) Is a detailed supplementary report to part I. This part of the report is numbered from 40 to 60. Part III (POLFAC) is for requests for-assistance from other Contracting Parties, as well as for operational matters in the assistance situation. This part of the report is numbered from 80 to 99.' BONN AGREEMENT is for identifying the agreement in question (other code words): "NORDIC" for the Copenhagen Agreement, 1971: ”BALTIC" for the Helsinki Convention, 1974: and “DENGER" for the Danish German Joint Maritime Contingency: Plan.1962) Parts I, II and III can be transmitted all together in one report or separately. Furthermore, single figures from each part can be transmitted separately or combined with figures from the two other parts. figures without additional text shall not appear in the POLREP. When part I is used as a warning of a serious threat, the telex should be headed with the traffic priority word “URGENT". (URGENT is optional under the Bonn agreement.) All POLREPs containing"' ACKNOWLEDGE figures *(5,60* or 99) should be acknowledged as soon as possible by the competent national authority. POLREPs for a specific incident shall always be terminated by a telex from the reporting State which indicates that no more operational communication on that particular incident can be expected.

CONTENTS	REMARKS
DK 1/1	Each single report should be easily identifiable and the receiving agency should be in a position to check whether all reports of the incident in question, have been received. This is done by using a nation identifier (DK.FRG, UK PO, FI, etc) followed by a stroke system, where the figure before the stroke indicated the incident to which the report refers and figure following the stoke indicates the actual number of reports which have been originated on the incident in question. POLREP BONN AGREEMENT DK 1/1 indicates1he first report from Denmark of the incident in question in the Bonn Agreement region. POLREP BONN AGREEMENT OK 1/2 will, in accordance with ,the described system, then indicate the second report from the same incident. If the pollution caused by the incident splits up into clearly defined patches - in this example two - the wording "POLREP BONN AGREEMENT 1 now splitting into POLREP B0NN AGREEMENT 2 and POLREP BONN AGREEMENT 3" should be indicated, in the last report on the incident identified by figure 1 preceding the stroke. The first reports on the two patches originating from the incident first reported will then be numbered POLREP BONN AGREEMENT.DK 2/1 and POLREP BONN AGREEMENT DK 3/1, and consecutive numbers after the stroke could then be used.

PART I (POLWARN)

CONTENTS	REMARKS
1 DATE AND TIME	The date of the month as well-as the time of the day when the incident too place or if the cause of the pollution is not known, the time of the observation should be stated with six figures. Time should be stated as GMT. for example 091900Z (i.e. the 9th of the relevant month at 1900 GMT)
2 POSITION	Indicates the main position of the incident in latitude and longitude in degrees and minutes and may, in addition, give the bearing of and the distance from a location known by the receiver.
3 INCIDENT	The nature of the incident should be stated here such as BLOWOUT, TANKER GROUNDING, TANKER COLLISION, OIL SUCK, ETC.
4. OUTFLOW	The nature of the pollution such as CRUDE OIL, CHLORINE, DINITROPEHENOL, etc. as well as the total quantity in tonnes of the outflow and / or flow rate, well as the risk of further outflow. If there is no pollution but a pollution threat the words NOT YET followed by the name of the substance, for example NOT YET FUEL OIL 'should be stated
5 ACKNOW'LEDGE	When this figure is used the telex should be acknowledge as soon as possible by the competent national authority

PART II (POLINF)

CONTENTS	REMARKS
40 DATE AND TIME	No. 40 relates to the situation described in figure 41 to 60 if it varies from figure 1
41 POSITION AND / OR and EXTENT OF POLLUTION ON ABOVE / IN THE SEA	Indicates the main position of the pollution in latitude and longitude in degrees and minutes may in addition give the distance and bearing of some prominent landmark known to the receiver if other than indicate-in figure 2. Estimated amount of pollution, (e.g. size .of polluted areas, number tonnes of oil spilled if other than indicated in figure 4, or number of containers, drums etc. lost). Indicates length and width of slick, in nautical miles, if not indicated in figure 2
42 CHARACTERISTICS OF POLLUTION	Gives type of pollution; e.g. type of oil with its viscosity and pour point, packaged or bulk chemicals, sewage. For chemicals, give proper name or United Nations Number, if known. For all, give also appearance, e.g. liquid, floating solid, liquid oil, semi-liquid sludge, tarry lumps, weathered oil, discoloration of sea, visible vapour. Any markings on drums, containers etc. should be given.
.43 SOURCE AND CAUSE OF POLLUTION.	e.g. from vessel or other undertaking. If from vessel state whether as a result of deliberate discharge or casualty. If the latter, give brief description. Where possible, give name, type, size, call sign, nationality and port or registration of polluting vessel. If vessel is proceeding on its way, give course, speed and destination.
44 WIND DIRECTION AND SPEED	Indicates wind direction in degrees and speed in m/s. The direction always indicates from where the wind is blowing.
45 CURRENT DIRECTION AND SPEED AND/OR TIDE	Indicates current direction in degrees and speed in knots and tenths of knots; The direction always Indicates the direction in which the current is flowing.
46 SEA STATE AND VISIBILITY	Sea state indicated as wave height in meters. Visibility in nautical miles.
47 DRIFT OF POLLUTION -	Indicates drift course and speed of pollution in degrees and in knots. and tenths of knots. In case of air pollution (gas cloud), drift, speed is indicated in m/s.
48 FORECAST OF LIKELY EFFECT OF POLLUTION AND ZONES AFFECTED	e.g. arrival on beach, with estimated timing. Results of mathematical model.
49 IDENTITY OFOBSERVER	Indicated who has reported the incident. If a ship, its name, home-port, flag and call sign must be given

/ REPORTER. IDENTITY . OF SHIPS ON SCENE	Ships on scene can also be indicated under this item by name, home-port, flag and call sign, especially if the polluter cannot be identified and the spill is considered to be of recent origin.
50 ACTION TAKEN	Any action taken for the disposal of the pollution.
51 PHOTOGRAPHS OR SAMPLES	Indicates if photographs or samples from the pollution have been taken. Telex number of the sampling authority should be given.
52 NAMES OF OTHER STATES AND ORGANI SATIONS INFORMED	
53-59	SPARE FOR ANY.OTHER RELEVANT INFORMATION (e.g. results of sample or photographic analysis, results of inspections of surveyors, statements of ship's personal, etc.
60 ACKNOWLEDGE	When this figure is used the telex should be acknowledge as soon as possible by the competent national authority.
80 DATE AND TIME	No. 80 is related to the situation described below, if it varies from figures 1 and / or 40.

PART III (POLFAC)

CONTENTS	REMARKS
81 REQUEST FOR ASSISTANCE	Type and amount of assistance required in the form of: - specified equipment . specified equipment with trained personnel . complete strike teams . personnel with special expertise - with indication of country requested.
82 COST	Requirements for cost information to requesting country of delivered assistance.
83 PRE-ARRANGEMENTS FOR THE DELIVERY OF ASSISTANCE	Information concerning customs clearance, access to territorial waters, etc. in the requesting Country.
84 TO WHERE ASSISTANCE SHOULD BE RENDERED AND HOW	Information concerning the delivery of the assistance, e.g. rendezvous at sea, with information on frequencies to be used, call sign and name of Supreme On-Scene Commander of the requesting country, or land-based authorities with telephone number, telex number and contact persons. - -
85 NAMES OF OTHER STATES AND ORGANIZATION	Only to be filled in if no .covered by figure 81. e.g. if further assistance is. later needed by other States.
86 CHANGE OF COMMAND	When a substantial part of an oil-pollution or serious threat of oil pollution moves or has moved into the zone of another Contracting Party, the country which has exercised the supreme command of the operation may request the other country to take over the supreme command.
87 EXCHANGE OF INFORMATION	When a mutual agreement has been reached between two parties on a change of supreme command, the country transferring the supreme command should give a report on all relevant information pertaining to the-operation to the country taking over the command.
88-89	SPARE FOR ANY OTHER RELEVANT REQUIREMENTS OR INSTRUCTIONS
99 ACKNOWLEDGE	When this figure is used the telex should be acknowledged as soon as possible by the competent National authority.

Appendix-1

NET ENVIRONMENTAL BENEFIT ANALYSIS (NEBA)

ENVIRONMENT SENSITIVITY DATA

NET ENVIRONMENT BENEFIT ANALYSIS

Cochin Port Trust

Some oil spill responses arouse little or no controversy. Consider oil stranded on the surface of a sandy beach of low biological productivity but high amenity value. If the oil is removed by physical methods with minimal removal of underlying sand, the cleanup provides an obvious benefit to the users of the beach and no obvious disadvantage from the biological point of view. However, in many cases a possible response to a spill is potentially damaging to the flora and fauna and/or their habitats, and the advantages and disadvantages of different responses need to be weighed and compared with the advantages and disadvantages of natural cleanup. Particular attention is paid to near shore dispersant spraying and shoreline cleanup.

Mangroves

Mangroves characterize the estuaries of many of the larger Indian rivers, which drain into the sea. This zone resides different types of flora & fauna. Mangroves form the chief plant growth along long stretches of coasts. Large mangrove thickets or forest on stilts, often grow in shallow waters along bays, lagoon sand river mouth. Cochin port has mangroves near COT. The thousands of stilt like roots catch silt, which piles up in the water. It slows down the current and helps settle the silt. They also aid in building up dry land. The roots form a breeding place for many fish and other marine life. Disturbance in the water composition directly affect the mangrove, which have fragile ecosystem. The loss of mangroves directly affects the diversity of marine life and indirectly human being.

Description:

- Mangroves are the most sensitive shoreline habitat to oil spill efforts.
- Mangroves forest can arrange in with from one to hundred of meter.
- Red (Rhizophore) and black (Avicennia) mangroves are the most common mangroves species.
- The sediment ranges from thin to thick layers of sand and mud, to muddy peat on bedrock, to a rubble veneer on bedrock.
- They can vary widely in the degree of exposure to wave and tidal energy, with expose forests along the outer shoreline and sheltered forests in bays and estuaries well-protected from physical processes.
- They can many storm swash lines of heavy wrack deposit into the forest.
- The mangrove roots support a rich diversity of attached animals and plants.

Predicted Oil Impact:

- As oil enters mangrove forests, their roots and associated epiphytic communities would be covered with a band of oil.
- Degree and type of acute mortality is oil-type dependent:
- Light oils (gasoline, jet fuel, No. 2 fuel oil) would have acute, toxic effects to both trees and intertidal biota.
- Crude oils / heavy refined products are toxic due to coating and sediment contamination.

- Oiling of sediments would occur if large quantities of oil were washed ashore; of particular concern are organic-rich sediments that are exposed at low tide.
- No. 2 fuel oil would have the greatest effects due to penetration; it can persist and remain toxic for many years if it penetrates burrows and prop root cavities.
- Persistence would be long term with heavy oil accumulations
- A beach boom fronting the mangroves would normally limit oil contamination to the seaward side of the boom, preventing oiling of forest interiors.

Recommended Response Activities

- These highly sensitive are very difficult to clean up and thus require the highest protection priority.
- Under most conditions, the best practice is to allow natural recovery, especially where nature cleaning can occur.
- Placement of sorbent boom along the mangrove forest fringe may reduce the quantity of standard oil significantly.
- Boom should be deployed in an attempt to protect the most sheltered areas where greatest persistence in likely.
- However, deployment is boom seldom effective with light refined oils because of the low viscosity of these products.
- Heavy accumulations should be skimmed or flushed with low-pressure water flooding, as long as there is NO disturbance or mixing of oil into the substrate. If substrate mixing is likely or unavoidable, it is better to leave the oil to weather naturally.
- Oily debris and wrack can a source of chronic shening and should be removed, taking care not to disturb the substrate.
- Vegetation should never be cut or otherwise removed
- Sorbents can be used to wipe heavy oil coating from prop roots in areas of firm substrate. Close supervision of clean up is required.
- Nutrient addition may be an option for treatment of residual oil contamination in mangroves sediments. Effectiveness would have to be evaluated case-by case.

Near shore dispersant spraying

With an oil slick approaching a shoreline, it is sometimes the case (especially in remote areas) that the only logistically feasible response is aerial dispersant spraying. Because the window of opportunity for dispersant use is typically only one to two days post spill, it is particularly important to consider the advantages and disadvantages of dispersants before a spill occurs. Such subjects as the following need to be addressed:

- Concentrations of dispersed oil that may be expected under a dispersant-treated slick in near shore conditions
- Toxicity of likely concentrations of dispersed oil to local flora and fauna
- Distribution and fate of the dispersed oil in water, sediments, and organisms
- Distribution, fate, and biological effects of the oil if not treated with dispersant—Will it harm shore habitats or wildlife? Not using dispersants is sometimes viewed wrongly as an option with no negative impact.

For some scenarios, there is a net environmental benefit in using dispersants.

Shoreline cleanup

Notwithstanding the best efforts to protect shorelines, it is often necessary to deal with oil on the shore and to decide on the best cleanup option. It is possible to distinguish two types of reasons for possible shore cleanup, one relating to the actual shore and the other to interacting systems. Interacting systems impinge on or use or are related to the shore in some way, but are not generally regarded as a permanent shore feature. Some examples of these are listed below:

- Bird colonies, with birds nesting above the intertidal zone but sometimes visiting it, or feeding in near shore water, which may receive oily runoff from a polluted shore
- Marine mammals, for example, seals that use the shore as a haul out and breeding area
- Near shore habitats, such as coral reefs, sea grass beds, and kelp beds, which may receive oily runoff from a polluted shore
- Salmon streams, which debouch over the shore, so that salmon entering a stream might have to swim over an oily shore at high tide
- Socioeconomic considerations, such as tourists, intertidal shellfish beds, and near shore aquaculture facilities that may receive runoff from a polluted shore

Following covers some possible shore scenarios, bearing in mind the above distinctions:

- Extremely oiled shore, no interacting systems. In a few cases, shore oiling may be so severe that predicted recovery times may be unacceptably long. It may therefore be decided to clean-up the shore even if there are no important interacting systems. If this decision is taken, it needs to be borne in mind that aggressive cleanup as a response to extreme oiling also can prolong recovery times.
- In some cases neither natural cleanup nor intense treatment will give the best environmental benefit. It seems likely that the greatest benefit would result from a moderate level of cleanup, one sufficient to remove most of the bulk oil, but gentle enough to leave the surface of the shore intact and to avoid churning oil into underlying sediments. This could be achieved by using small crews and avoiding the use of heavy machinery as far as possible. The appearance of the shore after such treatment is likely to be somewhat oily and therefore not optimal from an aesthetic viewpoint, but there are numerous examples of biological recovery taking place in the presence of weathered oil remnants.

The following two scenarios provide examples:

Scenario 1 - Consider a slick moving over shallow near shore water in which there are coral reefs of particular conservation interest. The slick is moving toward sandy beaches important for tourism. Dispersant spraying will minimize pollution of the beaches, but some coral species are likely to be damaged by dispersed oil. From an ecological point of view, it is best not to use dispersants but to allow the oil to strand on the beaches, from which it may be quickly and easily cleaned. If dispersants are used, damaged corals could take many years to recover.

Scenario 2 - Consider a stony shore with subsurface oil that is gradually leaching into near shore waters. Near the shore are shallow sub-tidal beds of shellfish that were used for food by local people before the spill. Biological recovery on the shore has started but the shellfish are tainted. It is predicted that some tainting will continue for up to five years, making the shellfish inedible for this period of time. Does this circumstance justify aggressive removal of the oil? From an ecological point of view, there is no justification,

because the recovery of the shore would be set back. Moreover, it is unlikely that there would be any ecological benefit to the shellfish populations, which can survive even though they are tainted. Cleanup would have to present a compelling economic benefit to override the ecological point of view.

Conclusions

- For some spill scenarios, near shore dispersant spraying can offer a net environmental benefit.
- For the shores, it is necessary to consider both the shore in itself and systems that interact with the shore in some way, such as bird and mammal colonies.
- For most cases of oiling, the evidence fails to provide any ecological justification for cleanup of rocky shores or salt marshes, provided that the only concern is for the shore itself (that is, shore habitats and closely associated plants and invertebrates).
- For extremely oiled shores, moderate cleanup could facilitate recovery, but aggressive cleanup is likely to delay it.
- In most cases of shore oiling where moderate cleanup is considered likely to reduce the threat to interacting systems, the evidence is that this cleanup will not make a significant difference to shore biological recovery times, within normal expectations of three and five years, for rocky shores and salt marshes respectively.
- When considering priorities for protection and cleanup, it should be borne in mind that ecological impacts can be both longer lasting and more difficult to repair than socioeconomic impacts.

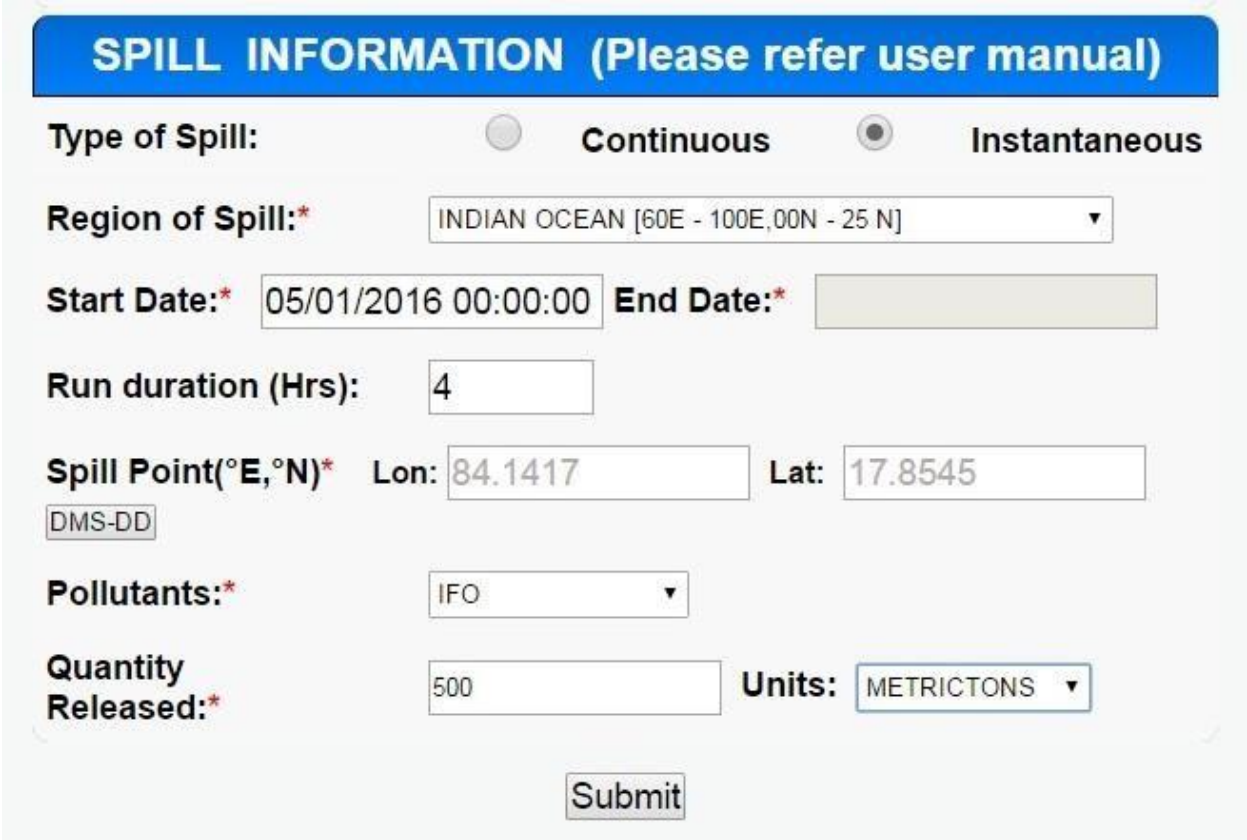
Important risk locations in COPT are:

- Fort Cochin beach near the entrance to inner harbour.
- Hotel Taj Malabar (Five star) facing the harbour area
- Bolghatty Island where a hotel and golf course is situated.
- Mangroves near COT berth, a breeding ground to variety of birds.
- Fishing harbours
- The ferry boat jetties and Jhankar Jetties and ramp.
- Inland waterways

Oil spill trajectory modeling

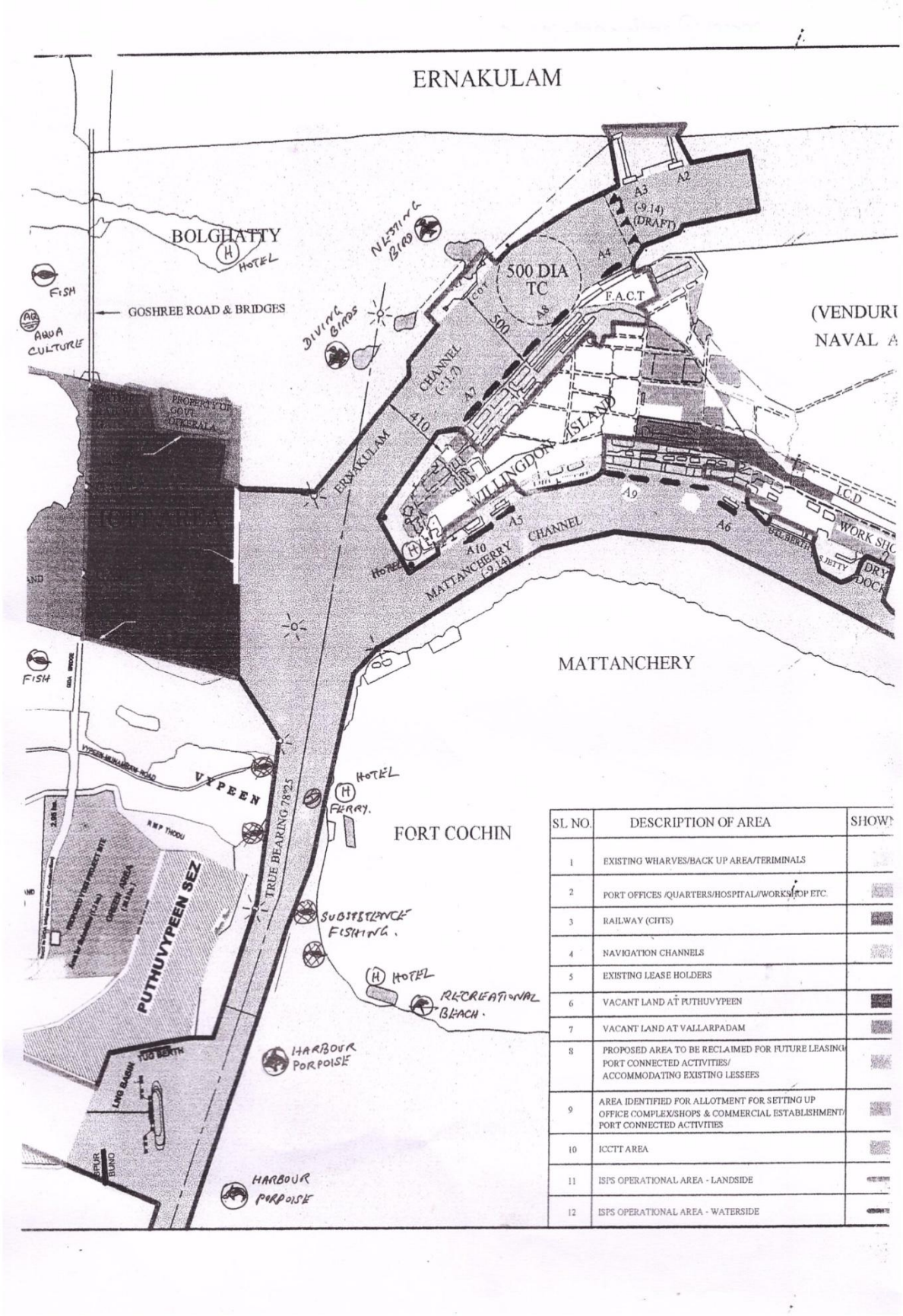
Oil spill models offer predictions of how oil with known properties may behave when released into water, based on various input parameters which include the oil properties, weather patterns, water currents and other data. Oil spill models are used to predict the geographic areas that may be affected in a given spill scenario, and to develop a spill response plan that addresses that scenario. If there is a spill, the model would then be updated to reflect the weather, water and other conditions that are encountered during the incident.
In India, ―Indian National Centre for Ocean Information Services‖ (INCOIS) provides ―Online Oil Spill Advisory‖ (OOSA) on their website http://www.incois.gov.in which is

easily accessible and available round the clock. Screenshot of INCOIS website used for trajectory on real time basis:



Sensitivity data

Sensitivity map provide the foundation for an assessment of those resources which may be affected by the spill trajectory. Sensitivity map includes baseline information, rivers and lakes, towns and villages, administrative limits, place names and roads, railways and main infrastructure. Shoreline types and their general environmental sensitivity to an oil spill, natural oil retention times on the shore and biological productivity of shoreline habitats. Typically, the least sensitive shorelines are exposed mud lands. Habitats affected by natural oil seeps may be less sensitive. A formal sensitivity index is adopted to represent the relative potential significance of sensitive shoreline areas. Shoreline type (grain size, slope) determines the capacity of oil penetration and/or burial on the shore, exposure to wave (and tidal) energy which determines the natural persistence time of oil on the shoreline; and relative biological productivity and sensitivity. Cochin Port shares the inner harbour with Indian Navy, Indian Coast Guard, Cochin Shipyard, ICTT (DP World), LNG, LPG berths and Fisheries. All these establishments can have adverse effects on their water area. Marine Drive walkways where local tourists enjoy fresh air and backwaters may get adversely affected in case of major oil spill. Sensitive ecosystems, habitats, species and key natural resources, such as prawns breeding grounds, kelp beds, and marine life such as pacific humpback dolphins, also birds and mammals. Sensitive resources that have commercial or recreational value, for example marinas, fishing areas, shellfish beds, fish and crustacean nursery areas, Chinese fishing nets, fish traps and aquaculture facilities. Sensitive Biological Resources & Socio Economic features in the Cochin Port Harbour Area:



SL NO.	DESCRIPTION OF AREA	SHOWN
1	EXISTING WHARVES/BACK UP AREA/TERIMINALS	
2	PORT OFFICES /QUARTERS/HOSPITAL//WORKSHOP ETC.	
3	RAILWAY (CHTS)	
4	NAVIGATION CHANNELS	
5	EXISTING LEASE HOLDERS	
6	VACANT LAND AT PUTHUVYPEEN	
7	VACANT LAND AT VALLARPADAM	
8	PROPOSED AREA TO BE RECLAIMED FOR FUTURE LEASING PORT CONNECTED ACTIVITIES/ ACCOMMODATING EXISTING LESSEES	
9	AREA IDENTIFIED FOR ALLOTMENT FOR SETTING UP OFFICE COMPLEX/SHOPS & COMMERCIAL ESTABLISHMENT/ PORT CONNECTED ACTIVITIES	
10	ICCTT AREA	
11	ISPS OPERATIONAL AREA - LANDSIDE	
12	ISPS OPERATIONAL AREA - WATERSIDE	

Appendix – 2

SINGLE POINT MOORING (SPM)

SINGLE POINT MOORING (SPM)

BPCL Kochi has a Single Point Mooring situated at Latitude 09 59.5 N and Longitude 076 02.3 E, 11.5 NM from the Puthu Vypeen shore.

A Single Point Mooring or Single Buoy Mooring is a self-contained Single Point offshore terminal / facility which provides the means for both mooring and transferring cargo of large Oil Tankers and is connected to a shore facility through sub-sea pipelines. SPMs can be installed in deep sea without the need for construction of jetties and they facilitate faster turnaround of vessels.

SPMs can handle large capacity Oil Tankers which require drafts of 20 Meters or more and cannot come into the Ports. They serve as a link between the offshore Tankers with the shore facilities and can handle large quantity of oil cargoes.

SALIENT FEATURES OF A SPM SYSTEM

All SPMs have a floating buoy anchored to the seabed through anchor chains secured on piles. This buoy has a floating hose system for cargo transport, comprising of floating hoses and sub-sea hoses. The floating hoses connect the Buoy and the Tanker's Manifold. The subsea hoses connect the SPM to the submarine pipelines through a Pipeline End Manifold (PLEM).

Major Components of BPCL's SPM System are:

1. **Buoy** :Buoy components include
   a) **Floating Buoy**: A circular welded structure which is subdivided into 6 radial and 1 central water tight compartment, separated by radial bulk heads, a chain hawser pipe integral with the six radial bulk heads. Six deck mounted pad eyes integral with water tight bulk heads for lifting the entire buoy.
   b) **Turntable** and Top Portion of the buoy from where the Mooring Hawsers are connected- one end with the buoy and other end on the Tanker's forward deck is capable of 360-degree rotation, turns along with Tanker due to current and wind effects.
   c) **Product Distribution Unit**: These are fixed and non-rotating parts of the SPM, located in the center and towards the bottom of the Buoy. The Buoy through Sub-Sea Hoses (flexible) is connected at the seabed to the PLEM Pipeline End Manifold, and from there, through the Seabed Pipeline (non-flexible), to the Shore Tank Farm.
2. **Anchoring System (Buoy Mooring System)**: Six stud link chains are connected to Anchors or Piles, which in turn connect the mooring to the seabed, while the chains are connected to the buoy with Chain Stoppers.
3. **Mooring System (Tanker Mooring System)** : A Tanker is moored to a buoy by hawser arrangement, which consists of Mooring Hawser, made of nylon ropes, Mooring Hawser Shackles, Mooring Chain, Support Buoy, Marker Buoy, Chafe chain Assembly etc.
4. **Product Transfer System**: Consists of floating Hoses, Sub-sea Hoses, Product Distributing Unit, Valves, Product Swivel to enable to the Tanker to rotate with respect to the mooring buoy.
5. **Support and Safety Equipment**: These include Brass Hammers, Brass Spanners for connecting Floating Hoses on the tanker manifold. Oil Companies are required to

engage divers for maintenance of Sub Sea components of buoys and PLEM valve operations.

6. **Oil Spill Contingency Plan**: As part of the oil spill mitigation program an internally approved contingency plan has been developed. The contingency plan and risk assessment of SPM has been made by BPCL-KR. "Oil Spill Contingency Plan for Single Point Mooring" (SPM) prepared by BPCL-KR, issued on 26th June 2008, and updated on 1st July 2013, covers the TIER-1 oil spill response plan for SPM including off shore operations carried out by BPCL-KR.
7. **The following equipments are readily available during an oil spill**:

VESSEL NAME	**OIL COMBATING FACILITIES IN THE VESSEL**
Maintenance vessel	Fitted with two extendable booms for spraying OSD
	Agni-I classification for fire fighting
	OSDs / Boom kept in this vessel
	Vessel utilized for laying Oil spill containment boom
Support vessel	Fitted with two extendable booms for spraying OSD
	OSDs are also kept in this vessel
	Vessel utilized for laying Oil spill containment boom
Smaller crafts	Used for tanker berthing operations and laying of booms
OIL SPILL CONTAINMENT EQUIPMENTS	**DETAILS**
Oil Spill Containment Boom Details:	3 booms of 200 meter length each (equivalent to 600 meter)
OSD	1200 litres (Stored in maintenance / support vessels)
OSD spraying booms	4 nos. (2 nos. each in maintenance / support vessels)

Appendix – 3

Important Updates

IMPORTANT UPDATES

(INTENTIONALLY LEFT BLANK FOR UPDATING BY THE HOLDER)