DISASTER MANAGEMENT PLAN

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6.0 ADDITIONAL STUDIES

In addition to the main EIA study, Disaster Management Plan (DMP) has been carried out and provided in subsequent sections.

6.1 PUBLIC CONSULTATION

After detailed deliberation, the Expert Appraisal Committee of Infrastructure-2 exempted the Public hearing is under section 7 (ii) of EIA Notification, 2006 for the proposed modification of Iron Ore Terminal to Coal Terminal as there is no change in approved capacity of the coal handling terminal i.e. 12 MMTPA.

6.2 DISASTER MANAGEMENT PLAN

Cyclone, Tsunami and Storm surge are the most destructive forces among the natural devastations. It causes instant disaster and burial of lives and destruction to entire coastal properties. The damage and loss can be minimized if appropriate preparedness plan is formulated. The following statutory guidelines are recommended by National Disaster Management Authority (NDMA) to minimize the impact due to Cyclone, Tsunami and storm.

- Developing sand dunes along the coast with shrubs or *Casuarina* trees for stabilization of the sand dunes (Tsunami Mound).
- Raising the ground level (above the design water level) with natural beach sand so as to rehabilitate the coastal region.
- Development of coastal forest (green belt) by planting casuarinas and coconut trees along the coastline to cover minimum of about 500 m width of the beach.
- Adopting natural beach nourishment to create steep beach face.
- Creation of sandy ramps at close intervals along the coast.

In addition to the guidelines by NDMA, it is also necessary to adopt various preventive actions in the coastal region of the project site.

Preparedness Plan

The preparedness plan shall contain details about: i) warning that should be given ii) Protective measures to contain the effect of surging water level and iii) Other precautionary measures to be taken. The following measures are the key aspects in the preparedness plan.

i) Coordination with International and National Agencies
ii) Vigilant online monitoring
Iii) Emergency Evacuation

Coordination with International and National Agencies

International: Following a series of Tsunamis that hit Japan and North America, an international Tsunami warning network was put in place in 1960s in regions around the Pacific Ocean. This network is administered by National Oceanic and Atmospheric Administration (NOAA), USA. NOAA comprises of hundreds of seismic stations worldwide, which can detect earthquakes that are precursors to Tsunami. This network also includes coastal tide gauges that detect local changes in sea level and sophisticated DART Buoys (Deep Sea Assessment and Reporting of Tsunamis buoys) in the Pacific basin, capable of detecting even a centimeter change in water depths in ocean. DART

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was introduced in 2003. This system consists of a pressure sensor anchored to the sea floor and a surface transmitter. When potentially dangerous seismic activity is detected, the network of DART buoys will detect the small change in the sea level.

Tsunami waves do not induce high surface elevation in Deep Ocean and hence their presence is not felt in Deep Ocean until they reach the shallow water close to coast. If any small yet potentially significant sea level change is noted following a seismic activity, the data are transmitted acoustically to the surface buoys and relayed by satellites to the warning stations. Computer modelling converts the data into a prediction of potential damages for the use of the members of the network.

National: After the 2004 Tsunami affected the Indian sub continent, the following organizations are involved on watch and cautioning the government and public in the event of possibility of occurrence of Tsunami. As a part of Tsunami hazard mitigation, warning systems have been established in India by the coordination of the following organizations.

a) Indian National Centre for Ocean Information Services (INCOIS), Hyderabad.
b) National Disaster Management Authority (NDMA), New Delhi.
c) Indian Meteorological Department (IMD), New Delhi.
d) National Institute of Ocean Technology (NIOT), Chennai.

Table 6.1 Contact details of International and National agencies

Organization	Address	Website	Contact Number
INCOIS	Ocean Valley, Pragathi Nagar (BO), Nizampet (SO), Hyderabad - 500090	www.incois.gov.in	+91 - 40 - 23886000
NDMA	NDMA Bhavan, A-1 Satdarjang Enclave, New Delhi, DL 110029.	www.ndma.gov.in	+91 - 11 - 26701700
IMD	MausamBhavan, Lodi road, New Delhi, DL 110033.	www.imd.gov.in	+91- 11 - 24699216
NIOT	Velachery – Thambaram main Road, Narayanapuram, Pallikaranai, Chennai 600100.	www.niot.res.in	+91 - 44 - 66783300
NOAA	1401, Constitution Avenue, NW. Room 5128, Washington,USA. DC 20230	www.noaa.gov	-

INCOIS in collaboration with NIOT has deployed DART buoys at 3 locations in the deep ocean along the fault plane of Andaman plate and Indonesian plate. The data

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transmission system has been effectively linked through satellite with 24 hours online monitoring at NIOT, Chennai.

The online monitoring is capable of raising alarm in case of instantaneous change in surface elevation exceeding centimeter which can be caused by the generation of Tsunami. IMD interacts with the above institutions and takes the responsibility of broadcasting the disaster through various Medias. In case of a Tsunami, the warning is usually broadcast based on the earthquake occurred in the nearby ocean. Irrespective of *definite occurrence* of Tsunami, the *possibility to occur* is also considered as equally vulnerable and accordingly the warning news is instantly flashed through Radios and TVs. The notification is followed by orders from the local Government Authorities on reinforcing evacuation, prohibition to enter the demarcated risky zone and mobilizing facilities for easier evacuation and augmenting medical facilities.

There are a variety of evacuation notification systems in case of Cyclone, Tsunami and Storm surge. They include sirens, weather radio, Emergency Alert System, Telephones, and Emergency Weather Information Network etc. In each system, it should be noted that the application and message is consistent as well as continuous with repetition of messages with periodicity at short time interval. It should be ensured that the warning reaches immediately to all people prone to the devastation.

6.2.1 Vigilant Online Monitoring

The time at which the cyclone, storm surge or Tsunami may reach the coast can be predicted with sufficient lead time. The destruction can be minimized if the coastal populations are warned and evacuated to elevated place and inland in time. Therefore keeping vigil on the warning is the very important aspect in protecting the lives.

Kamarajar Port should have an agreement with NIOT/INCOIS/IMD by enrolling themselves as the potential users. Live contact should be kept with the organizations indicated above to transmit the instant warning on occurrence of cyclone, Tsunami and storm surge. A vigilant team must be created and they should be deputed to the above organizations to attend the training programs and to understand the method of monitoring and the kind of emergency preparedness. The vigilant team must monitor the warning systems around the clock.

The vigilant team should have proper knowledge about the warning systems and should have attended the training programs conducted by the Tsunami warning centres. The training should be given periodically to update the system and methods of warning. The team should take the responsibility of giving immediate warning to the people in and around the power plant in case of Tsunami and they have to undertake the Emergency Preparedness Action. Safety drills should be conducted periodically.

Operational and emergency preparedness procedures should be planned meticulously in order to act on the warning and to disseminate it rapidly and effectively to the public.

6.2.2 Emergency Evacuation

Evacuation of people from risk areas is the first priority when early warning is received or the natural warning sign indicates the immediate arrival of cyclone, Tsunami wave or rise of storm surge.

Evacuation plan describes the time span available before and during the Tsunami or storm surge event. When facing local threat, evacuation procedures most possibly will have the character of a ‘runaway effort’ and people should not expect to receive much institutional support. The primary objective should be bringing as many people as

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possible out of the reach of the wave's impact to safe or 'relatively safe' areas. Therefore necessary steps have to be taken in advance to enable and support the community at risk to protect themselves at any time.

6.2.3 Mitigation measures against Tsunami and storm

Although the impact of Tsunami and storm is disastrous, the impact can be minimized by adopting the key components of mitigation measures. It was noticed during December 2004 Tsunami that the places located behind the highly elevated dunes, forest department planted Casuarina tress, dense plantations, Mangrove forests, offshore coral reefs, long salt pan heaps etc., were considerably protected. These areas experienced very low damage without causing death of the people. The kinematic energy of the Tsunami waves riding into the land gets dissipated due to these natural barriers. Thus the nature gives the scientific understanding of preparing the energy dissipating obstruction on the shore that can greatly protect the people and property against Tsunami.

The mitigation measures to be taken normally vary according to the local site conditions. Accordingly, in general case, the following mitigation measures are seen to be effective for the proposed project:

i) Bio Shield
ii) Construction of Tsunami/Cyclone Shelter

I. Bio Shield

It is a general belief that natural formations such as coral reefs, grass beds, coastal vegetations such as mangroves, estuaries and deltas of river mouths and flood plains play an important role in dissipating the forces of Tsunami waves.

A bio-shield formed by planting a vegetation belt along coastlines would protect the region against coastal storms, cyclones and Tsunamis. The plantations could absorb the force of severe storms and Tsunamis, and it could act as a 'carbon sink' by absorbing emissions of the greenhouse gas. The coastal front comprises beaches, sand dunes, head lands, creeks/river, rocky cliffs. The coastal vegetation also has a very important role in stabilizing and trapping marine sediments and forming a protective buffer between the land and the sea.

Mangroves: Mangroves are often recognized as the best defenses against wind, waves and erosion by deflecting and absorbing much of the energy of winds hence, Forest department encourages afforestation of Mangroves. Because of planting suitable species of mangroves along the coastline, during 2004 Tsunami, the fishing hamlets located on the leeward side of the Pitchavaram were totally safe without any traces of Tsunami. Therefore, Kamarajar Port may explore the suitability of their location to plant mangroves in consultation with Forest department.

Planting of Casuarinas: *Casuarina equisetifolia* is the most popular farm forestry tree in the coastal lands of Mainland India. The Casuarinas planted along the east-coast protected the region from Cyclone in November, 1999. Planting Casuarinas along the coastal front would provide substantial protection to the project region from the impacts of storm surges and Tsunami. Hence the water level rise during a Tsunami or storm will not have any major impact in this region.

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Transplanting vegetation will not prevent the natural process of erosion, but it will accelerate natural recovery after damage. Additional works are often necessary to increase the potential for success. Thatching and beach recycling will assist in the accretion of sand, and will provide minor protection from Tsunami waves and will reduce damage due to trampling. Once grasses are well established they may well become self-sustaining, although any storm erosion damage will need to be rapidly made good.

Tsunami/Cyclone shelter

The warning and disaster evacuation system is the most important element in ensuring the public's safety. Suitable shelter must be constructed in order to evacuate the people in case of emergency.

The time of arrival provides only a limited time for people to move safely to the shelter. Two Cyclone shelters per cluster must be provided along the region of port. After the warning/siren is given, the government authorities will start the evacuation and the people living in the interior area will have to be moved to the Cyclone shelter built along the coastal stretch.

The location of the shelter must be chosen such that it is easily accessible for workers in industries and for the public living in the vicinity. Maintenance of these shelters and the access roads and keeping them in good condition throughout the year to its functional requirements is very important.

The shelter should be equipped with water supply, toilets, first aid centre, Generators, ration storing rooms and minimum cooking facility**.** The shelters should be designed to bear the workers in the industry and the people living in the vicinity. The stairway should be wide enough (>3 m) for the rushing people to climb the top without confusion and struggle. It should have an elevated handrail with proper light and ventilation. There should not be any windows on the seaward side to avoid the entry of water due to rising Tsunami wave. But enough windows and other ventilation measures must be provided on the leeward side of shelters.

Escape routes: The availability of safety zones that can be used as evacuation sites within walking distance must be inspected. People can be evacuated to hills over ten metres in elevation or the deep inland (>1 km) out of coastal inundation. Good elevated roads should be laid along the escape route to safe places which can be waded even during flooding.

6.2.4 Emergency alarm from Government Institutions

Kamarajar Port should jointly make understanding with NIOT/INCOIS/NDMA and a communication link should be established through satellite or GPRS. In case of emergency if warning is given at the above mentioned institutions, they can instantly activate the alarm at the industries through satellite/GPRS and give caution to the vigilant team so that they can immediately start the rescue operation.

6.3 OIL SPILL CONTINGENCY PLAN

The contingency plans are the over-arching document that embodies the Government response policy and national/local level response organization for responding to various types of disasters that may affect the local populace and also the flora and fauna. Certain types of pollution can cause irreparable damage to the eco system which sustains large life forms.

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The coast of Tamil Nadu now face increased threat from oil spill from the passing ships, port activities, petro chemical exploration and exploitation activities etc. The contingency plan is provided to assist the Port authority in dealing with an accidental discharge of oil. Its primary purpose is to set in motion the necessary actions to stop or minimize the discharge and to mitigate its effects. Effective planning ensures that the necessary actions are taken in a structured, logical and timely manner. This plan predicts the mutual assistance and movement of equipment and personnel to respond to the oil spill in neighbor terminal / area.

6.3.1 Responsibilities

Oil spill up to Tier I will be the responsibility of the agencies as mentioned below

a) Port - Area in and around port up to port limits including anchorage.
b) Oil Handling Agencies - With in the area of operation
c) State Government- Shoreline clean up including inland waters

Table 6.2 Participants of Organization at various levels

Level	Organization	Joint Participation by Organizations
TIER I	Port Authority	Ship + Port Authority + Mutual Aid Agencies
TIER II	State Government of Tamil Nadu + Indian Coast Guard	Ship + Port Authority + State Government of Tamil Nadu + Indian Coast Guard
TIER-III	Central Government (Indian Coast Guard)	Ship + Port Authority + State Government of Tamil Nadu+ Central Government (Indian Coast Guard)

Source: DMP report, Environmental Technical Services Pvt. Ltd, 2014

The Tiruvallur District administration will be lead agency for coordinating shoreline response with other agencies and polluter within the district.

6.3.2 Scope of Oil Spill Contingency Plan

An oil spill contingency plan may appear complicated because it provides many details about the numerous steps required to prepare for and respond to spills. It also covers many different spill scenarios and addresses many different situations that may arise during or after a spill. Despite its complexity, a well-designed is easy to follow. The Contingency plans always have four major aspects in common

- Hazard identification
- Vulnerability analysis
- Risk assessment
- Response actions

Planners use hazard identification and vulnerability analysis for developing risk assessment and then it is used as a basis for planning specific response action.

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Notification

- Spill of any nature shall be notified to the port through signal station. The responsibility of raising the alarm shall be with the Master of the Ship while the vessel in port limits.
- Preliminary Oil spill Notification report shall be given to the signal station.

Signal Station

- On receiving and recording the alarm, will communicate the same to the General Manager (MS)/Chief Manager (MS).
- Make an announcement on VHF Ch 16/74 about the situation.
- Inform the Agents of the vessel.
- Inform harbour crafts to be ready and should report to response team for further instructions.
- Activate response team.
- Update Port main office all the reports received from response team.
- As per instructions from main office center inform all other parties.
- Initial crisis notification/ Oil spill notification sheet to be filled up and faxed to main office.
- Maintain record of events and communication log.
- Make an announcement on VHF Ch 16/74 about the latest situation.

Table 6.3 Description of Oil Spill

Code	Description Appearance	Layer Thickness Interval (µm)	Liters /Sq. KM	Description of Appearance
1	Sheen (Silvery / Grey)	0.04 – 0.30	40 - 300	Light reflecting from very thin oil films
2	Rainbow	0.30 – 5.0	300 – 5000	Range of colours
3	Metallic	5.0 – 50	5000 – 50000	Homogeneous colour i.e. brown, blue or purple
4	Discontinuous True oil colour	50 – 200	50000 – 200000	Broken nature of colour
5	Continuous True oil colour	200 to more than 200	More than 200000	Diffuse in overcast condition

Table 6.4. Oil Spill Crisis Management Team

S. No.	Oil Spill Crisis Management Team
1	Director
2	General Manager (Marine)
3	Chief Manager (Marine)
4	Chief Manager (Finance)
4	Safety Officer
5	Head Environment
6	Occupational Health Centre (PRO)

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The Kamarajar Port Oil Spill Response Team (OSRT) undertakes responses to all Tier 1 oil spills at Kamarajar Port limits. Kamarajar Port is facilitated with Oil Spill Response Equipments likes of

- Skimmers
- Booms
- Dispersants

6.3.3 Mobilizing Immediate Response

- Dispatch the oil spill equipment and activate the response
- Dispatch a vessel to collect a reel of boom, power pack, towing bridles, etc., a skimming unit and to take a slop barge alongside. Assisted by one of the line boats, the vessel will maintain 'J' configuration or take instruction from SCO.
- Once in position with the boom deployed, the vessel will deploy the recovery unit into the oil and commence recovery into flexi barge.
- In high sea states or currents a second vessel may need to assist.
- If oil traveled past the fixed boom, the vessels should proceed to the leading edge of the slick, deploy the boom, retaining one end, and passing the other end to other available vessel. The vessel should then take up station such that the boat forms 'J' configurations. The vessel on the short leg of the boom with the slop barge alongside will deploy the skimmer unit and recover oil into the slop barge.
- In the event of a large or continuing spillage a second boom should be deployed with two vessels, one of which will have storage capacity and a recovery unit onboard. This second containment system will take up station astern of the first boom array. Any oil escaping from the first system will then be contained by the second boom.

Use of Dispersants

- If oil is not contained, or is unlikely to be contained, SCO recommend who will seek approval from ICG for use of dispersants.
- While permission is being sought one or two vessels proceed to the leading edge of slick, deploying dispersant spraying equipment during transit.
- Once on station after firm instruction of on receipt of permission, vessel shall commence applying dispersant.

Post Cleaning Operations

- The collected oil samples will be sent to the Laboratory for analysis.
- The waste materials will be brought ashore and disposed through CPCB approved recyclers.

6.4 Integration of DMP with National Disaster Management Authority

6.4.1 National Disaster Management Plan

- On 23 December 2005, the Government of India took a defining step towards NDMP by enacting the NDMP ACT, 2005. The NDMP Act, 2005 is a Paradigm Shift from a response and relief-centric approach to a proactive, and comprehensive mindset towards NDMP covering all aspects from prevention, mitigation, preparedness to rehabilitation, reconstruction and recovery.

- Similar to National Authority at the Centre, the State Government is to establish a State Disaster Management Authority for the State. The State Authority is to be headed by the Chief Minister of the State as the Chairperson. Every State Government, in turn, is to establish a District Disaster Management Authority for every district in the State with the District Collector as the Chairperson.

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- The Central Government is empowered to take further measures as it deems fit for the purpose of disaster management like deployment of naval, military and air forces, other armed forces of the Union or any other civilian personnel as may be required for the purposes of this Act. Government of India is empowered to establish institutions for research, training, and developmental programmes in the field of disaster management as per this act.

- The national vision is to build a safer and disaster resilient India by developing a holistic, proactive, multi-disaster and technology driven strategy for NDMP. This will be achieved through a culture of prevention, mitigation and preparedness to reduce the impact of disasters on people. The entire process will centre stage the community and will be provided momentum and sustenance through the collective efforts of all government agencies supported by Non-Governmental Organizations (NGOs).

6.5 EMERGENCY PREPAREDNESS & RESPONSE

6.5.1 Introduction

Disaster is considered as a sudden, low probability incident with dire consequences for the surrounding environment (community) requiring unusual action to be taken. An incident may be considered a major environmental disaster if it causes long-term damage to rare or valuable features of the natural or man-made environment, or there is wide spread environmental damage. This chapter defines procedures to address potential incidents arising from abnormal operational conditions, accidents and emergencies.

6.5.2 Safety procedures

The first step to minimise risk would be to ensure efficient and safe operations at the various stages of transfer operations. This can be achieved by adhering to strict inspection and routine maintenance schedule of the various components of the transfer system.

Tankfarm area

Tankfarm area has certain safety features depending on the type of material and the volume of material being stored. Generally the systems comprise of the following:

- *Fire Water System*: Firewater is provided for cooling of the shell in case of fire to the adjacent facility, thus providing against tank failure. The firewater shall be made available from the pressurized firewater network provided for the terminal. For tankages, depending upon the nature of material to be stored, firewater sprinkler system shall be provided. Firewater hydrants and monitors shall also be provided at various locations outside the dyke area.

- *Foam System*: The foam system shall be provided depending upon the nature of material stored and the size of tankages. The system consists of adequate water supply, supply of foam concentrate, suitable proportioning equipment, a proper piping system, foam makers and discharge devices to adequately distribute the foam over the hazard.
- As a protective measure, inter distances are also provided between the tanks according to the OISD guidelines.
- For all tanks emergency relief provisions and normal venting arrangements are provided as per the API guidelines.

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6.5.3 Liquid Cargo Spill Response

The primary aims of a spill response are to protect human health and safety, minimize environmental impacts and to restore the environments, as nearly as practicable, to pre-spill conditions. The environmental impact of a spill can be minimized by good management and planning as well as through the response actions put into effect by the responsible authority. The various TIERS of response for oil spills can be utilized for emergency preparedness while handling liquid cargo

Tiers of Response

Internationally oil spills and the responses they require is categorized into three “Tiers”. The concept of a tiered response links the credible spill scenarios to attainable scales of response, and by linking joint arrangements, enables escalation from one tiered response to the next, should the need arise. It is a practical method of planning a spill response in terms of required resources.

In India, the Coast Guard is the Coastal Coordinating Authority for marine pollution. It is also responsible for implementation and enforcement of the relevant marine pollution laws and regulations. The Coast Guard has brought out a “ National Oil Spill Disaster Contingency Plan – 2000”. As per the Contingency Plan, the Director General – Indian Coast Guard, Coast Guard Headquarters, Delhi is the Central Coordinating Authority. The Port authorities are responsible for dealing with accidents within the port limits keeping the Coast Guard Regional Centre duly informed. The responsibility for combating oil spill contingencies on shore is with the coastal State.

As per the requirements of the NOS – DCP, all contingency plans of all handling companies and ports are to be vetted and approved by the Indian Coast Guard.

The Oil Industry Safety Directorate has also brought out their OISD Guidelines – 200: “Guidelines for preparation of Oil Spill Response Contingency Plan” (First Edition August 2000).

Tier 1 – Small Local Spills

This includes spills at company owned or operated (or shared) facilities where events are largely controlled by the company’s operating procedures, and personnel and equipment can be made available to respond immediately to an “ on site” incident. Generally, such an incident would be associated with ship transfer or bunkering operations at a jetty, pier or mooring and around waterside storage tanks. The facility contingency plan should recognize the need for a rapid response capability aimed at quickly containing and, if possible, recovering the spill.

According to OISD: 200, the extent of this spill is 100 tonnes at each installation.

Tier II – Medium Sized Spills

This includes spills beyond local response team capability where resources from other companies, industry and government response agencies in the area can be called in on a mutual aid basis. Companies may participate in a local co-operative where each member pools their Tier 1 resources and have access to any equipment that may have been jointly purchased by the co-operative. Tier II risks would typically be associated with shipping accidents in ports or harbours, in estuaries and coastal waters, but could also be from pipelines, tank failures or near shore exploration.

According to OISD: 200, the extent of this spill is 100 tonnes at regional level.

Tier III – Large Spills

Tier III spills are classified as major incidents, typically resulting from spillage at sea such as from tankers and offshore platforms, the scale and scope of which is beyond the capabilities of a Tier II response. Substantial further resources are required and support

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from a national or international cooperative stockpile may be necessary. As such incidents are often high profile and politically sensitive, the Tier III plan will most probably form part of a National Emergency Plan headed by an appropriate national agency or government department.

According to OISD: 200, the extent of a Tier III spill is more than 1000 tonnes.

Spill Response Methods

If a spill occurs, it is most effectively dealt with by tackling it speedily, whilst it is still localized. Aircraft spraying with chemical dispersant can be used to break up the oil, and wave action will help to complete the dispersion. Where wave heights are not excessive, it may also be possible to use mechanical means to contain and collect the oil with booms. In general, oil booms are used to deflect oil away from sensitive areas, to guide oil towards a location in which it might be recovered, or to encircle and entrap oil on the water. Different forms of skimmers, vacuum units and recovery devices may be used to remove the oil from the water surface. Dispersant chemicals may be used to disperse the oil on the surface of the water. Different types of absorbent materials and products to enhance biological degradation, etc. are available.

The most common system includes oil containment and recovery using booms and skimmers. This system consists of a recovery vessel; tug boats, containment booms, skimmers, transfer pumps, and temporary storage. The effectiveness of the system depends on weather and sea conditions, size of spill, type of oil, presence of debris, seamanship, vessel capability, boom configuration / performance, skimmer type, type and capacity of transfer pump, and storage capability.

When a spill occurs, the first step is to prevent it spreading and to restrict it in an area for further action. This is achieved by using booms.

Booms

Booms are floating devices that may have one or more of the following functions in connection with oil spill response:

- Deflecting oil to prevent the oil slick from contaminating sensitive areas
- Containment of liquid cargo
- Containment and concentration of oil (for recovery by a skimmer)

Booms are designed and manufactured in many sizes and materials in order to meet various requirements. However, although they may differ structurally, basically they have in common the following components:

- Freeboard to prevent or reduce splash over
- Subsurface skirt to prevent or reduce escape of oil under the boom
- Floatation by air or some buoyant material
- Longitudinal tension member (chain/wire) to withstand effects of wind, waves and currents.

Spill Oil Recovery Skimmer

The oil spill contained in the boom is recovered from the surface of the water by means of a skimmer.

The skimmer will be of the weir type suitable for harbour oil spillage clean up operations. It will have the following accessories:

- Pump unit with three pontoon floating frame and inlet weir

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- Cutting knives fitted in both the inlet and outlet units of the pump system in order to handle all types of oil.
- Diesel driven hydraulic power pack.
- Collecting tank for recovered oil.

The skimmer head assembly is fabricated out of stainless steel and fixed to a superstructure supported on buoyancy chambers. These chambers are cylindrical in shape and also constructed out of stainless steel. The design allows each buoyancy chamber to keep the skimmer head floating. The structure is designed to have reserve buoyancy of about 50% so that if one chamber is punctured, the skimmer head can still float. The chambers are polished or painted in bright colours for easy spotting.

The skimmer head is usually designed to handle all types of oils, and the weir has perforated sections to allow flow of the oil into the rear pump.

The skimmer unit has a hydraulic power pump driven by a diesel engine of about 20 HP.

The recovered oil is discharged into a container, which transported to a shore based reception facility for treatment. Oily water of less than 15 ppm is released in accordance with the MARPOL convention.

TIER 1 Response System Proposed at Ennore

For the proposed Ennore project, response system for Tier 1 has been planned. It consists of containment using booms and then recovery through skimmers. The recovered oil / slop will be collected and sold to authorized vendor.

The various components of the system are as follows:

- ♦ Oil containment boom
- ♦ Towing and mooring accessories
- ♦ Boom reels with diesel hydraulic power packs for launch and recovery of deployment booms
- ♦ Aluminium work boat with engine for launch and recovery of booms, maintenance and line handling operations
- ♦ Disc skimmer with diesel hydraulic power pack with hoses
- ♦ Accessory package including storage tank, sorbets, spill response equipment and tools.

6.5.4 Emergency Response Planning (ERP)

Handling Major spills

- On noting a spill transfer operations shall be suspended immediately
- The onsite personnel at the jetty locations shall indicate the position and cause of spill to onshore control room. The onsite personnel shall also indicate the probable size of the spill
- The site main controller shall assist the designated oil spill response team / Coast Guard reach the site of spill and mobilize oil spill combating equipment to the site depending on the size of the spill.
- The responsibility of the site main controller is also to inform all statutory authorities, i.e, TamilNadu Maritime Board, TNPCB, Coast Guard, Ennore / Chennai Ports, Superintendent of Police, Local Customs etc.

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