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INDIAN COAST GUARD

(MINISTRY OF DEFENCE)

**PROCEEDINGS OF THE
25TH NOS DCP AND PREPAREDNESS MEETING
23 NOV 2023**

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EP/0720/25th Meeting

Date : 05 Jan 2024

**Proceedings of the 25th National Oil Spill Disaster Contingency Plan
(NOS DCP) and Preparedness Meeting held at Jamnagar on 23 Nov 2023**

1. The 25th National Oil Spill Disaster Contingency Plan (NOSDCP) and Preparedness meeting was held at Hotel 7 Seasons Resort, Jamnagar on 23 Nov 2023. Director General Rakesh Pal, PTM, TM, Director General Indian Coast Guard, chaired the meeting. The meeting witnessed an active participation from various government departments, ports and Oil Handling Agencies. A total of 85 representatives attended the meeting.
2. In his inaugural address the Chairperson welcomed delegates from various Ministries, Departments of the Central and State Government, Seaboard Commander, Regional Commanders of the Indian Coast Guard as well as members from Major Ports, Non-Major Ports, Oil Handling Agencies and Onshore Oil Installations. The text of the Chairperson's inaugural address is placed at **Annexure 'A'**.
3. The inaugural address was followed by a presentation on 'overview of NOSDCP', covering all activities since the last meeting held on 30 Nov 2022, which was presented by DIG Rajesh Mittal, Principal Director(Environment), Secretary NOSDCP. The presentation highlighted the need for early submission of Contingency Plans and provisioning of Pollution Response equipment at each facility besides timely submission of annual return to meet the obligations of NOSDCP. A handout of the presentation is placed at **Annexure 'B'**.
4. Thereafter, following presentations were delivered by the representatives from the respective stakeholders:-

(a) 'Preparedness for combating oil and chemical spills' by Capt. Rakesh Rawat, Senior General Manager, Reliance Jamnagar. A handout of the presentation is placed at **Annexure 'C'**.

(b) 'Preparedness for combating Oil and Chemical Spills' by Shri Vikash Tola, Senior Manager, IOCL Vadinar. A hand out of the presentation is placed at **Annexure 'D'**.

(c) 'Preparedness for Coastline Cleanup during an Oil and Chemical Spill incident' by Dr. Ravi DR, Environment Officer, Karnataka State Pollution Control Board. A handout of the presentation is placed at **Annexure 'E'**.

5. The important issues discussed and deliberated during the NOSDCP meeting includes requirement of HNS response Contingency Plan, training cum mock drill for Shoreline Cleanup, preparation of Contingency Plans and positioning of PR Equipment at all facilities. The discussions and decisions on actionable points of previous meeting and new agenda points are placed at **Annexure 'F'** and **Annexure 'G'** respectively.

6. During the meeting Director General Rakesh Pal, PTM, TM, DGICG, Chairperson NOS DCP awarded 'Samudri Paryavaran Sanrakshan Trophy -2023' to Jawaharlal Nehru Port Authority, Mumbai for instituting measures for protection of environment in its area of responsibility.

7. In the concluding remarks, the Chairperson appreciated the active participation of all stakeholders. The chairperson urged all the stakeholders to work in unison for the protection and preservation of the marine environment and the effective implementation of the NOS DCP, ensuring a foolproof mechanism to deal with oil spill incidents. The text of the Chairperson's concluding address is placed at **Annexure 'H'**.

8. The Glimpses of 25th NOSDCP and Preparedness meeting 2023 is placed at **Annexure 'J'**. The programme of the meeting and the list of attendees are placed at **Annexure 'K'** and **Annexure 'L'** respectively.



(SK Karwasara)
Commandant
Joint Director (Environment)
Secretary NOS DCP

INAUGURAL ADDRESS



Inaugural address

by

Director General Rakesh Pal, PTM, TM

Director General Indian Coast Guard

Chairperson NOS DCP

INAUGURAL ADDRESS BY THE DGICG
25TH NOS DCP MEETING AT JAMNAGAR, 23 NOV 23

1. Commander Western Seaboard, Regional Commanders, Officials representing various Ministries and Departments of the Central and State Governments, Members representing Ports and Oil Handling Agencies, other stakeholders and distinguished participants. A very good morning, and a warm welcome to you all, for the 25th NOS DCP and preparedness meeting.

2. The significance of environmental protection needs no emphasis, as today, we are witness to the severity of climate change in our lives. Protection of Marine environment from all kinds of pollution is critical for the sustenance of human life in near future as oceans cover more than seventy percent of the earth's surface. We, as public authorities have the responsibility to ensure that requisite mechanism is implemented with participation of various stakeholders for protection of marine environment from oil pollution.

3. Having gathered here under the auspices of the NOS DCP, we are well aware that the preservation and protection of the marine environment is an inalienable duty imposed on us by our international treaty obligations, our constitution, as well as our respective charters. This annual meeting provides yet another opportunity to revisit our readiness and measures to deal with contingencies, as well as to share our experiences and lessons learned, in dealing with actual incidents.

4. During the recently conducted 'Global Maritime India Summit', it was highlighted that the Indian Maritime Sector is set to witness a remarkable expansion, with a target to increase the capacity of ports by fourfold and capacity development for ship building and ship recycling. Our Hon'ble Prime Minister Shri Narendra Modi mentioned about the Government's vision of '*Ports for prosperity and Ports for progress*' according to India's strategic document 'Amrit Kaal Vision 2047'. With the development of port infrastructure, coastal and inland waterways, we will witness an increased maritime traffic and accordingly, we need to gear up for the contemporary maritime challenges. I would urge stakeholders to work on a vision plan to meet the future challenges.

5. It is noteworthy that the Indian Coast Guard is in the process of procuring pollution response equipment worth approximately ₹ 300 crores, which includes booms, skimmers, barges, dispersant spray systems and other equipment to fully equip ourself for effectively combating any oil spill in Indian waters. On the same lines, I would urge all the stakeholders to expedite the process of PR equipment acquisition, as mandated by NOS DCP, to enhance Tier-1 capability in their respective area of responsibility.

6. In order to strengthen force level, ICG is acquiring two more state of the art Pollution Response Vessels, which are being built by Goa Shipyard Ltd., and are likely to be inducted in the service by early 2025. These new vessels would supplement the existing strength of three dedicated Pollution Response Vessels already positioned at Porbandar and Mumbai on the West coast and one at Visakhapatnam on the East coast.

7. In addition to the acquisition of equipment and vessels, ICG have focussed on the training in the oil spill response domain. Since last NOS DCP, ICG has conducted 26 OPRC IMO Level courses for all stakeholders. A total of 460 personnel in Level-1 course, 90 personnel in Level-2 and 40 personnel in Level-3 courses have been trained.

8. Ladies and gentlemen, I am glad to inform you that there has been no major oil spill incident in Indian waters since our last annual meeting on 30 November 2022. This is the outcome of our dedicated efforts for preparedness towards dealing with oil spill contingencies. With the rising awareness and heartening initiatives taken by stakeholders, I am sanguine that we will achieve a foolproof mechanism to deal with oil spills.

9. I would like to congratulate and commend the efforts made by Tamil Naidu and Andhra Pradesh state authorities for formulation of Crisis Management Groups at their state, district and local level, as mandated by NOS DCP. I am sure the initiative will go a long way in ensuring prompt and effective mechanism to deal with oil spills in their coastal area. I would request all other Coastal States to make necessary provisions in their State Disaster Contingency Plans and establish Crisis Management Groups for handling oil spills.

10. I must also commend committee members from MoP&SW, OISD and ICG for the excellent efforts and support towards conduct of Joint Inspections of four Major Ports and Oil

Handling Agencies since last NOS DCP meeting. I am sure that the deficiencies brought out, if any, are being made good by the respective agencies.

11. Apart from national mandate, Indian Coast Guard is also striving to fulfil International obligation for protection of regional marine environment. Accordingly, ICG has been designated as the Competent Authority to deal with Oil and Chemical spills under the South Asia Cooperative Environment Program (SACEP), MoU which covers the waters of India, Bangladesh, Maldives, Pakistan and Sri Lanka. As per MoD directives post Indian - ASEAN Defence Ministers meeting in Cambodia on 22 Nov 22, a Regional Marine Pollution Response Centre (RMPRC) has been setup at Chennai to deal with any pollution incident in the region. The IMO OPRC level 1 & 2 training for Officers & Sailors from 21 Friendly Foreign Countries under ITEC programme is being conducted at RMPRC training facility, Chennai w.e.f. 20 Nov 23.

12. With regards to the approval of Oil Spill Contingency Plans of Ports, States and OHAs, it was observed that most of the plans are not approved due to the lack of requisite equipment as per NOS DCP requirement. However, we have relooked at the situation and with an aim to encourage stakeholders for apt preparedness, it has been decided that we will be provisionally approving the contingency plans of Minor Ports and OHAs provided they have minimum response equipment to deal with any contingency. However, I request stakeholders to plan procurement of equipment in a time bound manner as mandated by NOS DCP.

13. Whilst embracing the new technology for decision support and operational planning, new initiatives have been taken for enhancing the capacity towards Oil Spill Detection System. INCOIS has been progressively working to upgrade the Online Oil Spill Advisory (OOSA) with information like real time weather, potential fishing zones and Environmental Sensitivity Index. Secondly, under the innovation initiatives, ICG's challenge for, "Installation of Oil Spill Detection System and integration with network", has been selected under INDO-US joint challenge (INDUS-X). The project once realized will be a great aid in detecting oil spill disasters.

14. I would invite all the stakeholders to extensively utilise OOSA tool for generating trajectory of spill scenarios in the respective areas and provide suggestion for the

improvement. You will also witness the upgraded version of this software tomorrow during the inaugural session of NATPOLREX.

15. Before I conclude, I would like to compliment all the distinguished guests for their participation in the NOS DCP meeting, and I am sure that you will be able to make necessary changes at your level to achieve our common goal of marine environment protection from oil spills.

16. With these opening remarks, I look forward to positive deliberations in the meeting.

Thank you, Jai Hind.

**PRESENTATION
ON
NOS DCP OVERVIEW**



Presentation on "NOS DCP Overview"

by

DIG Rajesh Mittal

Principal Director (Environment)

Secretary NOS DCP

OVERVIEW OF NOS DCP

OVERVIEW OF NOS-DCP

INDIA'S MARITIME STAKE

- 2.02 million sq km of EEZ
- 7516 km coastline
- 9 Coastal states / 4 UTs
- 12 Major & 200 non-major ports
- Majority of industries along the coast
- 2.5 lakh fishing vessels

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RISK OVERVIEW

- 3rd largest consumer of oil after China & USA
- 70% of the world oil demand through the SLOCs
- Major ports of India handle over 7,000 tankers each year
- Over 80 companies are in operation in 228 offshore blocks and fields
- 6th largest energy market
- Production 32-33 MMTPA

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RISK ASSESSMENT

RISK = Hazard x Probability x Consequences

4/27

HAZARDS

- ✓ Spillage due to blowouts/ failure of structure / rupture of Submarine pipelines
- ✓ Oil transfer ops - Possibility of accidental oil leakages
- ✓ Looming of hazards view accident/ illegal discharge/Sabotage

5/27





PROBABILITY

- ✓ Main international tanker route in MZI
- ✓ Overall trade traversing close to Indian Coastline
- ✓ Increase in cargo traffic at major ports
- ✓ Tropical cyclones & effect of periodical monsoon in IOR

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CONSEQUENCES

- ✓ Presence of highly sensitive MPAs
- ✓ Fragile and delicate ecosystem with 1382 islands esp A&N / L&M islands
- ✓ Tourism Hubs along the Coastline
- ✓ Presence of industries and growing mariculture activities close to coastline

7/27

ICG MANDATE

- Coast Guard Act, 1978
- ✓ Taking **such measures to preserve and protect the marine environment, and Prevent and Control the marine pollution**
- 2002 Amendment to the Government of India (Allocation of Business) Rules, 1961
 - ✓ Surveillance and combating oil spill in MZI
 - ✓ Central Coordinating Agency for combating oil spills
 - ✓ Implement Contingency Plan for oil Spill Disaster



PRESERVATION AND PROTECTION OF MARINE ENVIRONMENT




PREVENTION AND CONTROL OF MARINE POLLUTION

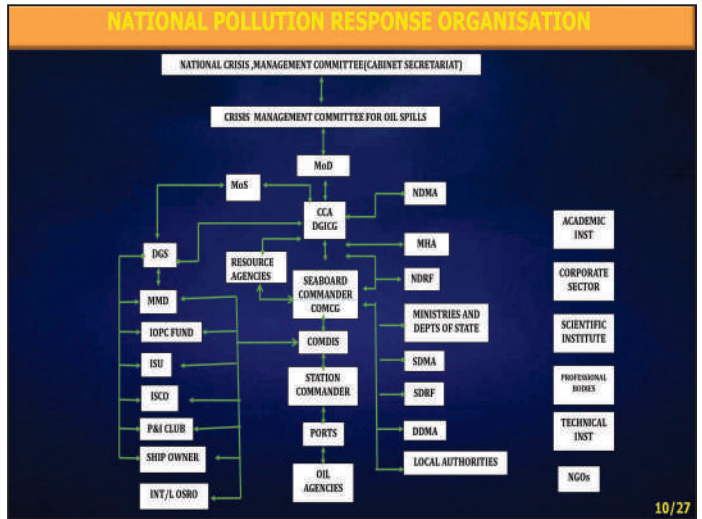
8/27

EVOLVEMENT OF NOS-DCP

- First promulgated in July 1996
- Updated in 1998, 1999, 2000, 2002, 2006 and comprehensively revised in 2015
- Originally designed for responding to oil spills only
- NOS-DCP facilitates national preparedness to Oil / HNS incidents and also fulfills obligation to have in place national plan to respond to HNS incidents
- Delineates duties of stakeholders and resource agencies



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RESPONSIBILITY OF PORTS/OHAs/SPMs

- To be in charge of the *overall co-ordination of oil pollution response* actions in jurisdiction
- To ensure that at least *minimum equipment are kept available locally* at all times
- To *identify suitable tugs, vessels and crafts* when required for the operations
- To *identify surface crafts* for embarking PR equipment
- To ensure that actions are taken by various authorities under the *overall legal responsibility of the receiver of wrecks*

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RESPONSIBILITY OF PORTS/OHAs/SPMs

- To arrange for *training of personnel* engaged in PR operations.
- To arrange for *periodical mock drills and exercises* towards readiness for PR operations.
- To consult the *ICG, DG Shipping, OISD or other authority*, when further advice/ assistance is required.
- To *keep the CCA apprised* of actions being taken.

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RESPONSIBILITY OF COASTAL STATES

- To take all suitable *measures to prevent pollution on shoreline*
- To *render all possible assistance* to the coordinator of the On Scene Commander, Local Action Group and District Commander
- To *maintain adequate quantity of basic PR equipment* for beach protection and shoreline cleanup
- To *identify suitable type of tug/boat/fishing vessel* in consultation with On-Scene Commander/ Coast Guard for mounting PR equipment
- To identify *places for waste oil disposal/ pits*
- To take actions as applicable to the major ports, in respect of *incidents at ports under jurisdiction*

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CONTINGENCY PLANNING

Coastal States – Local Contingency Plan for shoreline cleanup
Ports, OHAs and Oil Installation onshore – Facility Contingency Plan for Tier-I response

14/27

LOCAL CONTINGENCY PLANS-STATUS

Coastal States and UTs	13 (9+4)
Plans approved till date	2*
Plans being Analysed by ICG	--
Plans returned with observations	6
Plans awaited	6

•Tamilnadu – subject to inclusion of OSR equipment as per Appendix - F2.3 of NOSDCP
•Goa- Old Plan Approved

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FACILITY CONTINGENCY PLANS-STATUS

Agencies	Number	Plans Approved till date	Plans being Analysed by ICG	Plans returned with observations	Plans awaited
Major Ports	12	--	12		Nil
Oil Handling Agencies	19	02	6	07	4
Oil Installation Onshore	35	01	--	04	30
Non-Major Ports	70	1	10	29	7+23

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ICG INITIATIVES DURING SINCE LAST NOS-DCP

Revision of OSD use policy 2009
Withdrawal of zonation concept for use of OSD
Embarkation of PR equipment (Half yearly instead of quarterly)
PR strike teams
Updating of OOSA to provide holistic inputs for op decision
Coastal Radar based Oil Spill detection system through Indo-US iDex challenge

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TRAINING

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POLLUTION RESPONSE TRAINING

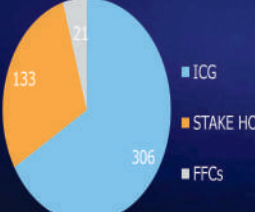
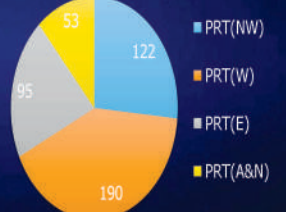
- Annual pollution Response Training Calendar
 - ✓ IMO level training
 - ✓ Local, Area, Regional and National level Exercises
 - ✓ Seminars and Workshop
- Training included for Resource Agencies and Stakeholders




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IMO LEVEL - 1 TRAINING

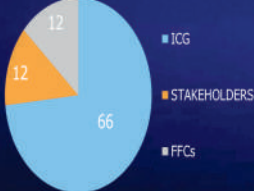

- Develop pool of trained manpower for meeting National PR commitments
- Conducted by CGPRTs
- 460 personnel trained since last NOSDCP Meeting

20/27

IMO LEVEL - 2 TRAINING

- Conducted Jointly with AMET University, Chennai and M/s OSCT, Mumbai
- 40% of faculty assistance provided by Coast Guard
- PRT(W) and PRT(E) conducting IMO Level-2 Independently also
- 92 Officials trained since last NOSDCP Meeting

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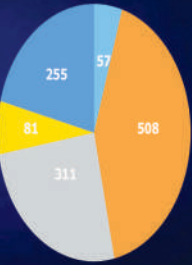
IMO LEVEL - 3 TRAINING

- Indian Coast Guard in collaboration with M/s OSCT, Mumbai started IMO OPRC Level - 3 training
- Commenced from Mar 22
- Trained 16 ICG and 24 Officers of the stakeholders since Last NOSDCP.

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MOCK DRILLS AND EXERCISES

37 Mock Drills/ Seminars and 1212 Participants (ICG/Stakeholders)
10 Pollution Response Exercises and 330 Participants (CG/Stakeholders)

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NATIONAL LEVEL POLLUTION RESPONSE EXERCISE

- NATPOLREX-VIII conducted off Goa 19-20 Apr 22
- NATPOLREX- IX planned 24-25 Nov 23 off Vadinar
- Participation from FFC as observers
- Showcase Pollution Response capability of India
- Exercise includes
 - ✓ Table Top Exercise
 - ✓ Inaugural Function & Seminar
 - ✓ Sea Exercise







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JOINT INSPECTION

- Ensure professionalism and standardisation of pollution response mechanism
- JI undertaken by reps from ICG, MoPSW and OISD for Major Ports and Oil Handling Agencies

Agencies	Total	Joint Inspections Planned	Joint Inspections conducted
Major Ports	12	07	04
Oil Handling Agencies	19	08	04

25/27

INTERNATIONAL COASTAL CLEANUP

- 3rd Saturday of every Sep
- Last ICC conducted on 16 Sep 23
- 25,245 individuals participated
- Approx 39,362 Kg Marine and Plastics litter collected
- In addition regular cleanup drive also undertaken







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CONCLUSION

- Preservation and protection of marine environment and prevention and control of marine pollution, a collective responsibility
- Achievable through coordination & synergy of efforts
- Cleaner Seas - A leap towards 'Swachh Bharat Abhiyan' and 'Swachh Sagar Abhiyan'

27/27



Thank you

**PRESENTATION
ON
PREPAREDNESS OF RELIANCE,
JAMNAGAR IN COMBATING
OIL AND CHEMICAL SPILLS**



Presentation on
“Preparedness of Reliance Jamnagar in Combating Oil and Chemical Spills”
by
Capt. Rakesh Rawat, Sr. General Manager
Reliance Industries Limited, Jamnagar, Gujarat

**PREPAREDNESS OF RELIANCE, JAMNAGAR
IN COMBATING OIL AND CHEMICAL SPILLS**

SPTL, Sikka

Port Overview

Brief Introduction

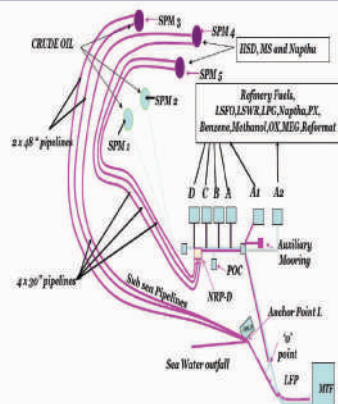
- The port is located off Sikka Creek
- It is Captive Port serving Reliance Jamnagar Refinery Complex
- The port is classed as a minor port and comes under the administrative control of GMB.
- The port was inaugurated for commercial traffic in 1999.



The Marine Facilities

This is India's largest Tanker Port:

- The marine facility consists of Six Jetty Berths and Five SPMs (CALM Type). SPMs are located 15 Km from shore, of which 3 SPMs are for Crude oil import and 2 SPMs are for Product export.



The Marine Facilities

- Crude SPMs are designed for vessels of Max LOA 345m, DWT 350000T & Draft up to 22.5m
- Product SPMs are designed for vessels of Max LOA 300m, DWT 150000T & Draft up to 18.5m
- Six Jetty berths are designed for vessels of Max LOA 252m, DWT 120000T & Drafts up to 14.5m



SPTL, Sikka

**Preparedness for Combating Oil
And Chemical Spill**

Cargo Handled

Port handles Crude, Petroleum Products, Petrochemicals and LPG

- Crude: Various Types of Crude
- Petroleum Products: HSD, MS, ATF, PCN, Alkylate
- Petrochemicals: Methanol, PX, OX, Benzene, MEG
- LPG : Butane and Propane

Vessel & Cargo Handled Data

➤ Total number of ships handled till 17.11.2023: **28700**.

➤ Number of ships handled Per Year.
Crude: 400 Product: 1200

Year	Number Of VL Handled.	Cargo Handled. (MMT)
2021-2022	1523	119.9
2022-2023	1545	121.1



Cargo Vessel Data per annum .

SPTL, Sikka

Alignment To OPRC Convention On Oil Spills

Oil Spill Response: Alignment With OPRC Convention

For responding to Oil Spill within jurisdiction

- Our Facility covers Risk Category ‘A’ under NOS-DCP.
- Facility maintains “Tier 1” Spill response equipment, material, trained manpower, sampling efforts, and crafts as recommended in Inventory Standards for Port Facilities (Appendix F2/NOSDCP 2015 & amendments) to combat oil spill up to 700 MT around its installations up to 500 mtr.
- Facility has Tier 1 Oil Spill Contingency plan in place.
- In addition, Facility has signed Mutual aid agreement with IOCL, Nayara Energy, BPCL, Vedanta Ltd and Essar bulk Terminal Salaya Ltd.

SPTL, Sikka


Response Capabilities

Pollution Response Equipment/Capability

Cat.	PR Equipment	ICG	Port Status	Remark
Category A	Inflatable booms.	2000 m	2150 m	
	Fence Boom	1000 m	1580 m	
	Skimmer.	06 nos	06 nos	
	OSD Applicator	04 nos	06 nos	
	Oil Spill Dispersant	3000 ltrs	10,000+ltrs	
	Flex Barge – 10t	04 nos	04 nos	Gravity Draining Facility.
	Sorbent Boom Pack	500 nos	500 nos	
	Sorbent Pads	2000 nos	2860 nos	
	Shore Clean Up equipment.			
	• Mini Vacuum pump.	05	05	
	• Fast Tanks.	05	05	
	Manpower :		Level 1- 20 Level 2 - 10 Level 3 - 04 Others - 15.	Level 1- 20 Level 2 - 08 Level 3 - 03 Others - 15.
Vessels:				
• Work boats	04	10		
•Tugs	04	10		


Pollution Response Equipment

- Six Tugs are equipped with inflatable booms, totaling to 2150 m.
- Four Tugs are equipped with Surface oil Skimmers of capacity 20 MT Each.
- Six crafts are fitted with OSD spray system/booms.



Pollution Response Equipment

- 1580 meters Permanent boom at Jetty.
- Tow Tank 4 x 10 tons.
- Absorbent pads, pillows and sampling equipment in readiness on various crafts/location.
- OSD : 10000 Ltrs placed on various crafts/stores.



SPTL, Sikka

Response to Oil Spill

Identified Operational Risks

The port estimates following qty. of Product spill from port operations and unforeseen events during operational phase.

At Jetty	Assessed Risk	Potential Spill Quantity (Tons)
Ballast discharge	Low	<25
Loading arms failure	Low/moderate	<0.5
Cargo tank overflow	Low/moderate	<10
Bunker tank overflow	Low/moderate	<1

Identified Operational Risks

The port estimates following qty. of Crude Oil Spilled from port operations and unforeseen events such as cyclone, intentional 3rd party interference or an earthquake:

At SBM	Assessed Risk	Potential Spill qty. (m ³)
1.Activation Of cast-off couplings	Low/moderate	<0.4
2.Rupture of floating hose	Low/moderate	<80
3.Rupture of under buoy hose	Low/moderate	<10
4.Minor leak in the sub-sea pipeline	Low/moderate	<2
5.Minor rupture of sub -sea pipeline	Low/moderate	<100
6.Major rupture of sub-sea pipeline	Low	<1000

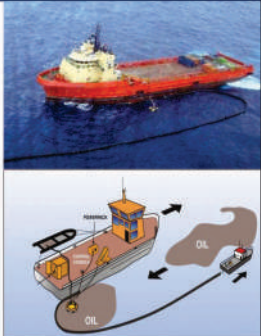
Oil Spill Response: Clean-up Strategy

Strategy utilized for containing and cleaning up of oil spills :

- Prioritizing the response basis sensitive area maps and output from Adios and OOSA
- Protection of sensitive area by deflection - using booms
- Recovery of oil from the sea surface with mechanical devices (boom, skimmer and sorbents)
- Dispersion of oil into the water column with dispersants
- Leave alone process.(for Natural Dispersion)
- Training and Exercise

Oil Spill Response: Containment and Recovery

- Booms are capable of deployment up to current of 4 Kn.
- Response Crafts are capable of safe and effective booming within 1 hour of oil spill anywhere within the port limit.
- All Response Crafts are capable of controlling and containing oil spill in an area accessible to oil recovery devices.
- Booms can be deployed in "U" or "J" configuration with the help of two crafts.
- Skimmer to be placed in the thickest part of the slick to maximize the rate of oil recovery.



Oil Spill Response: : Use Of Dispersant

All dispersible oil will be chemically dispersed with OSD in open sea within the window of opportunity after informing ICG

- Approved OSD for use in Indian waters
- OSD Suitable for Type III(Neat) & Type II (Dilute) application
- OSD Suitable for use up to viscosity of 5000 cst.
- Suitable Crafts for spraying OSD in both neat and diluted mode.
- ADIOS software available for determining the window of opportunity for use of dispersant.



Oil Spill Response: Training and Exercise

- Sufficient manpower as per ICG requirement with IMO level 1/2/3 training
- Monthly in-house training on all oil spill response crafts
- Quarterly Deployment of equipment in rotational manner
- In house mock drill once a year
- Joint drill with other Oil Handling Agencies in the region, witnessed by ICG

SPTL, Sikka

Response to Chemical Spill

Chemical Spill Response

- All the chemical products are handled through the Designated berth.
- Port handles only Category “Y” Product as defined by IBC.
- Based upon the product behavior groups and their properties the Response options available are mainly forecasting and monitoring to achieve control.

Marine facility Design For Petrochemicals

Port is designed with the concept of “No Leak Philosophy” integrated to take care of any leaks during normal operations.

- F & G detectors (Gas detection system) to detect hydrocarbon leakage at berths
- Loading arm at berths are provided with Power Emergency Release Coupler(PERC) to minimize spillage
- Additionally, ESD provided for closing valves and tripping pumps
- Jetty berths are provided with deluge system for spraying water to create barrier, disperse vapor cloud and to cool down
- Fire water network is provided on each berth with hydraulically operated monitors.
- Tugs are fitted with fixed type and telescopic water monitors
- Alcohol Resistant Foam on designated berth
- Appropriate PPE's for handling chemical.

Achievements

- The Terminal has been operating with “ZERO Incidents” since inception by having safeguards in place at various levels of operation using latest Technologies available along with trained manpower to achieve the company’s goal.
- The terminal was found very satisfactory with respect to Response capabilities and preparedness during the Joint Inspection by OISD & ICG in Mar 2023.

**PRESENTATION
ON
PREPAREDNESS OF IOCL VADINAR
IN COMBATING
OIL AND CHEMICAL SPILLS**



Presentation on
"Preparedness of IOCL Vadinar in Combating Oil and Chemical Spills"
by
Shri Vikash Tola, Senior Manager
IOCL, Vadinar

PREPAREDNESS OF IOCL VADINAR IN COMBATING OIL AND CHEMICAL SPILLS

Pahle Indian, Phir Oil

Propel the Nation On Duty Always
With the Mantra of

Nation-First

MINISTRY OF PETROLEUM & NATURAL RESOURCES

Indian Oil's Facilities at Vadinar for oil spill prevention, mitigation and response

Presented by

Vikash Kumar Tola
Sr. Manager (Marine)
Western Region Pipelines, Vadinar

Company Details

IOCL at a Glance

- ❖ IOCL is a Public Sector oil marketing Company owned by Government of India
- ❖ Indian Oil is serving the nation since last 64 years
- ❖ Total 10 refineries (including CPCL) having a national share of approx. 32%
- ❖ Annual crude oil processing approx. 80.55 MMTPA out of which 89% are brought to refineries by offshore facilities

Map of Refineries in India (Capacity in MMTPA)

Marketing & Pipeline Network

36,285	45	<p style="font-size: 0.7em;">Pipelines Network as on 31.03.2023</p>										
Retail outlets (added 1784 in 2022-23)	CBG stations (added 19 in 2022-23)											
1,788	132											
CNG stations (added 303 in 2022-23)	Aviation fueling stations (added 5 in 2022-23)											
108	10	37										
LPG selling points/terminals with 16 commissioned in 2022-23	Liquefied petroleum gas (LPG) stations	Counties of presence for SEAVD										
12,861	704 TMT	5,461										
LPG distributors	SEAVD's highest ever sales volume (achieving a growth of 20% in 2022-23)	EV charging stations (including 16 battery swapping stations)										
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Pipelines</th> <th style="text-align: left;">Capacity</th> </tr> </thead> <tbody> <tr> <td>Crude Oil Pipelines</td> <td>53.80 MMTPA</td> </tr> <tr> <td>Product Pipelines</td> <td>70.60 MMTPA</td> </tr> <tr> <td>TOTAL</td> <td>124.40 MMTPA</td> </tr> <tr> <td>Gas Pipelines</td> <td>48.73 MMSCMD</td> </tr> </tbody> </table>		Pipelines	Capacity	Crude Oil Pipelines	53.80 MMTPA	Product Pipelines	70.60 MMTPA	TOTAL	124.40 MMTPA	Gas Pipelines	48.73 MMSCMD	* IOCL capacity including CPCL
Pipelines	Capacity											
Crude Oil Pipelines	53.80 MMTPA											
Product Pipelines	70.60 MMTPA											
TOTAL	124.40 MMTPA											
Gas Pipelines	48.73 MMSCMD											

18064 km of Pipelines

Indian Oil Corporation Limited

Making a Mark Among Top Global Corporates In

500

listing since 1995

94TH

IndianOil ranked

Globally Acclaimed Proudly Indian

In an impressive leap, IndianOil has ascended 48 places to secure the 94th rank in the prestigious Fortune 500 list for 2023. With this surge, IndianOil becomes one of only two Indian corporations, and the only PSU to have been listed in the top 100 ranking. It is remarkable that IndianOil has consistently featured in the list since 1995. This is a validation of the company's unbroken record of excellence for over two decades.

The Fortune Global 500 list ranks corporations globally based on their total revenues for their respective fiscal years.

The Energy of India
A Global Homecoming

Terminal Details

Offshore Facilities at IOCL Vadinar

- 28.62 MMT Crude Oil was handled at Vadinar SPMs during FY 22-23
- Contribution of Vadinar Offshore facility in meeting Crude Oil requirement of IOCL Refineries is -37%
- Vadinar Offshore handles ~10.5% of the Crude Oil requirement of India
- Vital role in meeting petroleum products demand in Northern, Central and Western parts of India

SPM-I commissioned in 1978
SPM-II commissioned in 1997

Schematic of Crude Oil Unloading System at IOCL Vadinar

ONSHORE PORTION

- Western Leg: 25.01 KM, 14.27m W.T. APRIL 2002, NACE (2019)
- Eastern Leg: 0.00 KM, 14.27 m W.T. APRIL 2002, NACE (2019)
- Offshore Segment: 10.43 KM, 14.27m W.T. APRIL 2002, NACE (2019)
- Deep Sea: 13.05 KM, 14.27m W.T. APRIL 2002, NACE (2019)
- Offshore Segment: 10.92 KM, 14.27m W.T. APRIL 2002, NACE (2019)

Distances from pig barrel

IOCL Vadinar Tank farm Installation

Total No of Crude Oil Tanks- 18 (each of 85000 KL capacity)

Layout of Facility

- Revenue Boundary
- Marine Sanctuary
- Reserve Forest
- Marine National Park
- OFFSHORE PL2
- OFFSHORE PL1


Cargo Handling Facilities

Labels: MULTI PRODUCT DISTRIBUTION UNIT, ROTATING ARM, FIXED FLOATING BUOY, MOORING HAWSER, FLOATING BUOY, PIPELINE, PLEM, SUBMARINE HOSE, ANCHOR CHAIN LEG

Overview of SPM System

Labels: Floating Hoses, SPM, Submarine hose, PPLEM, Submarine Pipeline, Seabed, Pipeline, TANK CONTAINMENT SYSTEM, PIPING SYSTEM

Cargo Handling Facilities- Vadinar




IOCL has two Single Point Mooring Systems

Nature of Operation
Unloading of crude oil from tanker at SPM and transportation till tank farm

Type of ships:
Crude Oil tankers


Type of bunkers used by ship:
VLSFO

Crude Oil Handled in last 5 years




FY	Total Tankers	VLCC	Others (Suezmax, Aframax and LR-I tankers)	Total Quantity (MMT)
2018-19	171	80	91	25.837
2019-20	165	82	83	24.853
2020-21	148	66	82	22.671
2021-22	156	77	79	25.816
2022-23	182	76	106	28.619

Oil Spill Prevention, Mitigation and Response



In case of any oil spill, efforts and consequences increases over time whereas success rate decreases drastically.


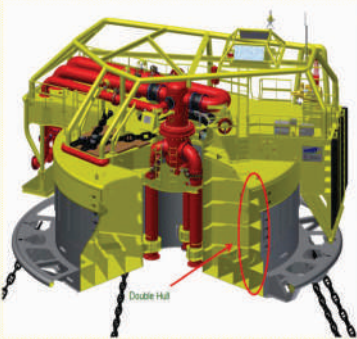
Therefore, IndianOil believes in following three key components with respect to oil spill at seas



1. Minimize the risk of any oil spill- Robust and safe design
2. Mitigation of any oil spill- Reducing the quantum of spill
3. Response to any oil spill- Reducing the response time


Design Improvements and Best Practices to minimize the risk of pollution and enhancement of safety

Robust design of SPM buoy

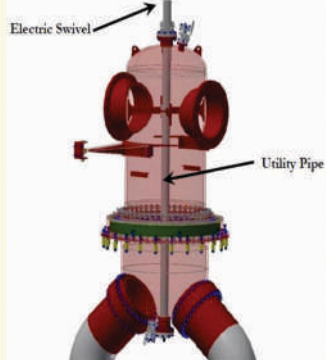



- ❑ The buoy hull has been upgraded to double hull design
- ❑ Hull structure is circularly divided into outer hull cofferdam, inner hull buoyancy tanks and centrewell open to sea.
- ❑ It is also divided radially in to 6 segments thereby making it highly reliable in terms any damage to hull leading to loss of buoyancy

Electrical Swivel for charging hull batteries



- ❖ The Product Swivel Unit (PSU) has a central bore for fitting of a small EexD Slip Ring unit on the top of the fluid swivel via utility pipe which is one of its kind in India.
- ❖ Slip ring arrangement facilitates charging of battery bank installed inside the hull thereby eliminating any requirement of opening of SPM compartments for the same.




Advanced Telemetry- Alarms for Predictive Maintenance

Fog Horn for audio alarm integrated with visual beacon have been installed which provides warning in case of-


- ✓ Leak in the PDU system
- ✓ Leakage in main bearing system
- ✓ High mooring hawser tension

Benefit- Advance information of any abnormality which facilitates in taking pro-active action for remediation thereby reducing the risk of oil spill



Initiatives- Enhancement of Terminal Productivity

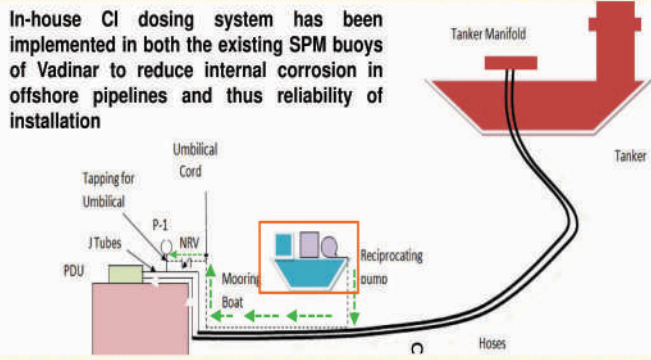
❖ Offshore Pipelines are inspected by intelligent pigs every 5 years which scans the complete pipeline and provide overall health conditions of pipeline which help in taking any predictive maintenance



Ensuring regular Intelligent Pigging of Offshore Pipelines

In-house CI dosing Arrangement

In-house CI dosing system has been implemented in both the existing SPM buoys of Vadinar to reduce internal corrosion in offshore pipelines and thus reliability of installation




In-Built CI Dosing System in New Buoy

❑ IOCL has procured a new SPM buoy which has in-built CI dosing system which is first of its kind in India.

❑ The system is capable for continuous and adjustable dosing of CI during entire crude oil discharge operation which can be controlled from local as well as remote.

❑ This system facilitates operations in rough weather conditions



Proactive Safety Measures - Cyclone Preparedness



Design Improvements and Best Practices to mitigate the oil spill

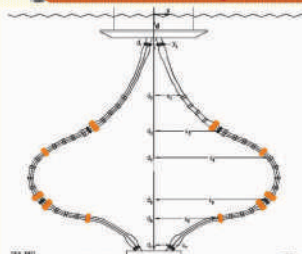
MBC in Flexible Floating Hoses string- Enhancing Safety



Marine Break away coupling (MBC) mitigates oil pollution during excessive load or surge in floating hoses string

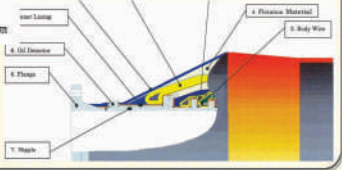


Double carcass design for Flexible Subsea Hoses String- Enhancing Safety




Submarine hoses are of double carcass type. Outer carcass contains the oil in case of failure of inner carcass

Double carcass submarine hoses also provide visual alarm in case of failure of inner carcass- Facilitating early action and thus improving safety of



Facilities and best Practices to for quick oil spill response

In-house Water Flushing System



Water flushing is required in case any maintenance needs to be undertaken. In house facility has been developed on maintenance vessel which facilitates:

- ❖ No dependency on tankers and enhanced contingency plan to deal with any kind of exigency
- ❖ Operational flexibility and controlled flushing operation (less time and quantity)
- ❖ Financial saving in terms of demurrage and port charges to be paid to a tanker for flushing operation

Dedicated Oil Spill Response Vessel



Readiness of Pollution Response Inventory

S.N.	PR Equipment	Available
1	Boom	600 m- Coastal boom 1600 m- Inflatable boom
2	Skimmer	Disc Skimmer-2, MOP skimmer-1, Brush Skimmer-1
3	OSD Applicator	03
4	Oil Spill Dispersant	5000
5	Flex Barge	4
6	Portable Temporary Storage	4
7	Absorbent booms & pillow	450
8	Absorbent pads	1500
9	Work Boat	3
10	Oil Spill Tug	1
11	Mini Vac-Pak	1

Oil Spill Mock Drill- Table top Exercise

Regular mock drills and exercise are carried out to enhance contingency preparedness

Awareness Program for Fishermen Community

IOCL Vadinar Offshore Project

Project Details

Description	Offshore Lines	
	Existing	New
Length of offshore lines	1. 5.3 Km	1. 6.8 Km
	2. 6.3 Km	2. 7.8 Km
Length of loop line	2.1 Km	2.1 Km
Depth at SPM location	1. 34.9 m	1. 35.2 m
	2. 32.5 m	2. 37.0 m

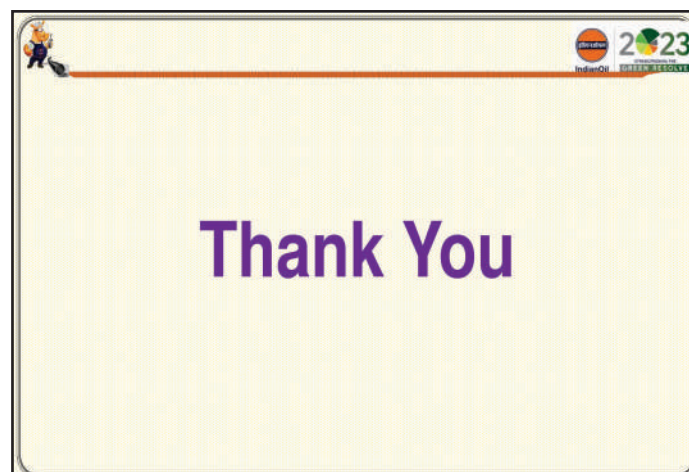
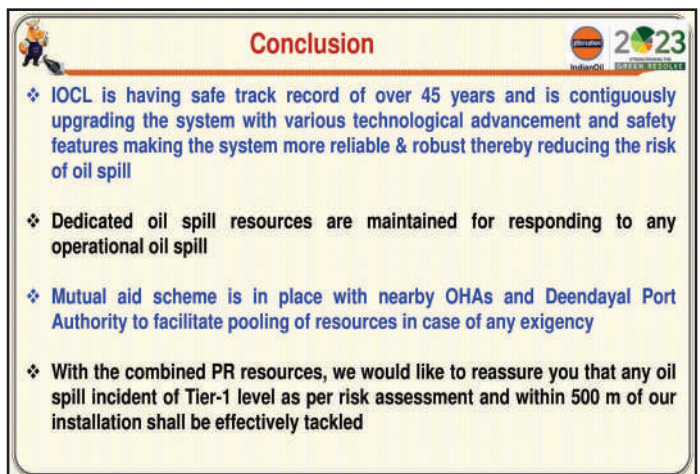
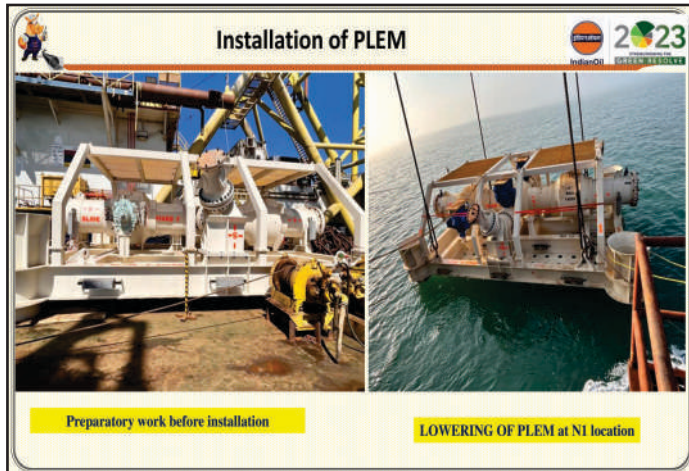
Field Layout of Offshore Facility

Piling for Anchor Chain

BHA - 60° FUGSTEN CARBIDE DRILLING BIT

REVERSE CIRCULATION DRILLING

60° ANCHOR PILE with Anchor chain connection



**PRESENTATION
ON
'PREPAREDNESS FOR
COASTLINE CLEANUP
DURING AN
OIL AND CHEMICAL
SPILL INCIDENT'**



Presentation on
"Preparedness for Coastline Cleanup during an Oil and Chemical Spill Incident"
by
Dr. Ravi DR, Environment Engineer
Karnataka State Pollution Control Board

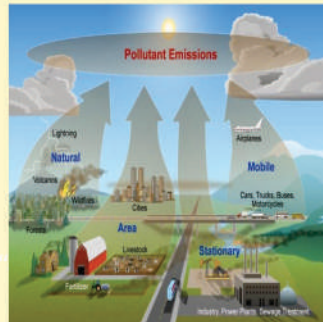
**PREPAREDNESS FOR COASTLINE CLEANUP
DURING AN OIL AND CHEMICAL SPILL INCIDENT'**

Oil Spill & Role of State Pollution Control Board

Dr. Ravi D.R

- M. Tech, PhD

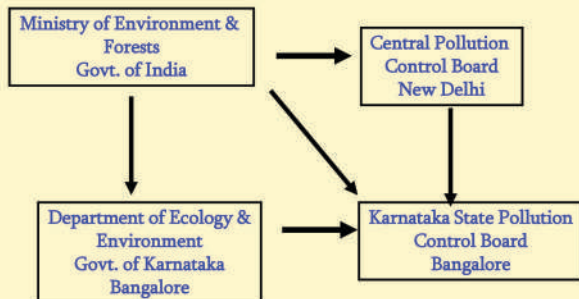
Karnataka State Pollution Control Board



Pollution Control Laws In India

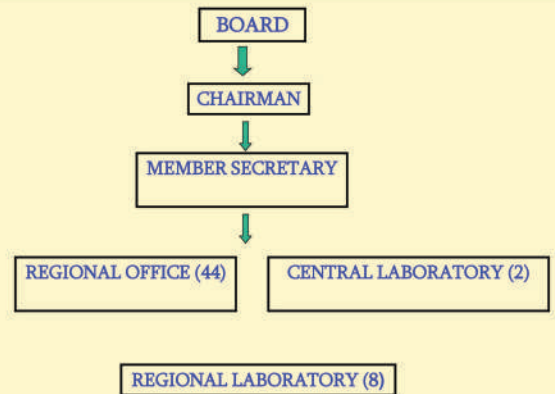
- ☐ Water (Prevention & Control of Pollution) Act, 1974
- ☐ **Water (Prevention & Control of Pollution) Cess Act, 1977**
- ☐ Air (Prevention & Control of Pollution) Act, 1981
- ☐ Environment (Protection) Act and Rules, 1986
 - Hazardous Waste (Management & Transboundary Movement) Rules, 2016;
 - Manufacture, Storage & Import of Hazardous Chemical Rules, 1989;
 - Environment Impact Assessment Notification, 2006;
 - Bio-medical Waste (Management) Rules, 2016;
 - Noise pollution (Regulation & Control) Rules, 2000;
 - Solid Wastes (Management) Rules, 2016;
 - Batteries (Management & Handling) Rules, 2001;
 - e-Waste (Management) Rules, 2016;
 - Plastic Waste (Management) Rules, 2016

KSPCB- Institutional Frame Work



Karnataka State Pollution Control Board was constituted under Section 4 of the Water Act on 21.09.1974

Organization Set Up



Key Functions of Board

- Prevention and control of environmental pollution through effective enforcement of legislations.
- Advise the State Government in matters concerning prevention, control and abatement of pollution.
- Dissemination of info relating to prevention and control of environmental pollution.
- Monitoring of water and Air quality.
- To lay down standards of treatment of sewage and trade effluents.
- To evolve economical and reliable methods of treatment of sewage and trade effluents.

Consent & Enforcement Mechanism

- Site suitability
- Assessment of pollution potential and its impacts
- Rendering technical advise
- Promoting cleaner technologies
- Conditional Permits
- Inspection & Monitoring to verify compliance
- Focus on highly polluting activities (Large Red – 17 Category)
- Ensuring compliance through persuasion, hearings
- Encouraging self monitoring
- Taskforce, Watchdog committees, Green Police
- Penal actions in case of non compliance

Marine Pollution

Marine Pollution (UN definition) – “The introduction by man, directly, or indirectly, of substances or energy to the marine environment resulting in deleterious effects such as: hazards to human health, hindrance to marine activities, impairment of the quality of seawater for various uses and reduction of amenities.

80% of all marine pollution comes from land-based activities!



Major Marine Pollutants

Worldwide

- 10 Billion tonnes of ballast water with invasives.
- 10,000 Million gallons of sewage annually- Sewage may entering in to the sea directly or from inland towns/industries,
- 3.25 Million metric tonnes of oil annually – Reduction in DO concentration, causes lethal toxicity to aquatic flora, causes heavy damage to fisheries, Hydrocarbons get incorporated in body tissues of marine animals,
- 6.89 Millions of tonnes of Solid waste
- 9.62 Millions tonnes of Plastic Waste in the recent Past – Plastic debris when bulky is difficult to Pass and become permanently lodged in the digestive tract of these animals blocking the passage of food and causing death through starvation or infection.

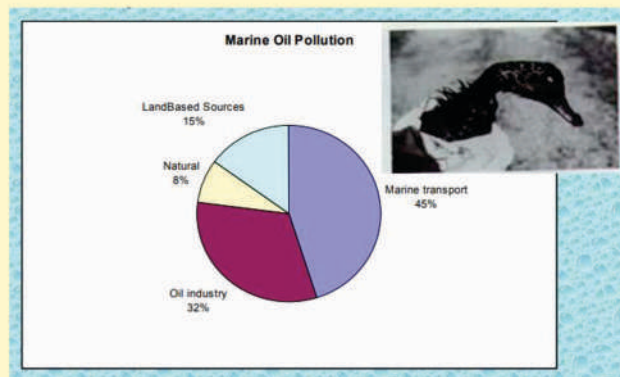
Major Marine Pollutants - Metals

- Presence of dangerous metals include Mercury, Nicle, Lead, and Copper.
- Heavy Metals are a great concern because they enter the food chain.
- Fuel combustion, electric utilities, steel and iron manufacturing, fuel oils, fuel additives and incineration of urban refuse are the major sources of oceanic contamination by heavy metals
- Copper is dangerous to marine organisms and has been used in marine anti-fouling paints.
- Mercury and Lead poisoning cause brain damage and behavioral disturbances in children.
- Contaminated land runoff, rain of pollutants from the air, and fallout from shipwrecks pollute the ocean with dangerous metals.
- Human activities release 5 times as much mercury and 17 times as much lead as is derived from natural sources.

Major Marine Pollutants – Solid Waste

- Large portion and great danger is non-biodegradable plastic.
- 46,000 pieces of floating plastic/sq mile of ocean surface off the N.E U.S. coast.
- Sea turtles confuses with plastic bags for jellyfish and die from internal blockages.
- Seals and sea lions starve after being entangled by nets (decomposition time 400 years).
- Plastic debris kills 100,000 marine mammals and 2 million sea birds die annually.

Marine Oil Pollution



Impact of Marine Pollution

Marine pollution affects ecosystem health, public health, recreational water quality and economic viability in the following ways:

- Mechanical
- Eutrophication
- Saphrogenic
- Toxicity
- Mutagenic and Carcinogenic



Why Focus on Marine Pollution

- Nearly **half** of the global population resides in coastal areas.
- 2/3rd of the world's cities are Coastal
- Goods and services provided by marine coastal ecosystems are worth US \$ 13 trillion per annum, which equals to **half** of the annual global GDP



Cost of Marine Pollution

- 3.25 million metric tons of oil wasted vs. 3.4 million tons used by Jamaica annually.
- 100,000 mammal and 2 million bird deaths annually.
- Reduction of GDP by decreasing fishery resource (11.9k tonnes – 7.7k landed 1960-97) and decreased tourism earnings.
- Loss of bio-diversity and potential life saving medicines for AIDS & Cancer.

Solution to Marine Pollution

Two main methods –

Correction – costly and time intensive –

Prevention – requires attitude changes.

It is believed that Prevention is better than cure

Since the effects of marine pollution is irreversible and we may therefore be creating everlasting damage to the marine ecosystem.

“An ounce of prevention is worth a pound of cure”

Prevention & Control of Marine Pollution

- Stabilization of Ecosystem.
- Reutilization, recycling, renovation and recharge of the waste.
- Removal of oil pollutants by skimming, by spreading high density powder over the oil patch, it can be sunk to the bottom, using suitable absorbing material.
- Heat can be removed from condenser cooling water prior to their disposal in to the marine water.
- Adopting appropriate methods to remove heavy metal from the marine water.
- Deep sea mining can be minimized or reduced by using proper mining technique.
- Intensive must be offered for conservation and creating awareness on marine pollution.

Marine Pollution Convention

There are Following international marine pollution conventions, to evolve Policy for Prevention of Marine Pollution.

- Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft (1972) The Oslo Convention.
- Convention for the prevention of pollution from ships (1973)MARPOL.
- Convention for the Prevention of Marine Pollution from Land-based Sources (1974) The Paris Convention.
- Convention for the Protection of the Marine Environment of the North-East Atlantic (1992) The OSPAR Convention.

Case Study of Sunken Ship

Incident: The vessel PRINCESS MIRAL carrying steel coils from Malaysia to Lebanon had developed holes (3 nos.) in its hull at port side due to severe weather conditions and grounded near a place Ullal in Mangalore, Karnataka state, India.

The Vessel was completely sunk on June 23, 2022, Thursday near Mangalore coast

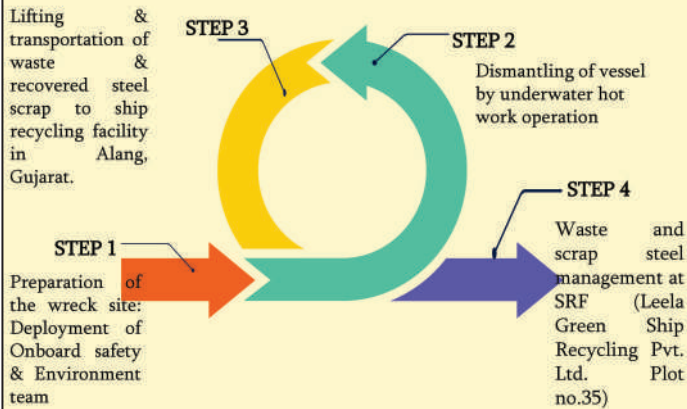
Vent pipe connected with hose pipes to extract the oil from PRINCESS MIRAL.

Oil was safely removed from the vessel and all the oil tanks were flushed.



Pumping of oil from PRINCESS MIRAL to the oil collection vessel.

Objectives: PRINCESS MIRAL Salvage operation

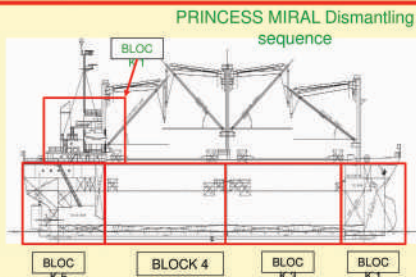


Step 1: Preparation of the wreck site



- Oil Spill team to deploy the Solid protection oil boom around the wreckage.
- Oil spill response team and underwater diving team on stand by.
- Oil response equipment's (i.e., absorbent material, OSD, boom, skimmer, storage tank, low /high pressure jet spray and OSD applicator, manual cleaning tools/equipment).
- Oil response team will take round by boat every day before the salvage operation to check the status of oil booms.

Step 2: Dismantling of vessel by hot work



- Dismantling of the vessel will start from the accommodation block (Section 1) followed by the fore peak (section 2) part of the vessel, then the cargo holds & side shells (section 3 & 4) and after reaching the aft block (Section 5) of the vessel, main engine will be directly lifted by the heavy lift crane mounted on the barge.
- Special care will be taken while dismantling the aft block of the vessel as it will be full of machineries so chances of oil spill while recovery is more.
- Underwater gas cutting operation will be carried out by trained underwater divers who have prior similar experience.

Step 3: Lifting & Transportation of steel scrap & waste



- Barge crane used to lift the dismantled block having a capacity of 150 tons
- Blocks approximately less than one ton are dismantled at a time and transferred to the barge.
- After lifting, the dismantled blocks will be transferred to the block carrying flat top barge. The barge will move the blocks to the ship recycling facility at Alang, Gujarat (Leela Green Ship Recycling Pvt. Ltd., Plot no.35).
- A preliminary environmental testing of nearby sea water and sediment samples will be carried out both before and after the salvage operation. Testing will be made by an recognised and authorised third party at site.

Step 4: Management of recovered waste and steel scrap



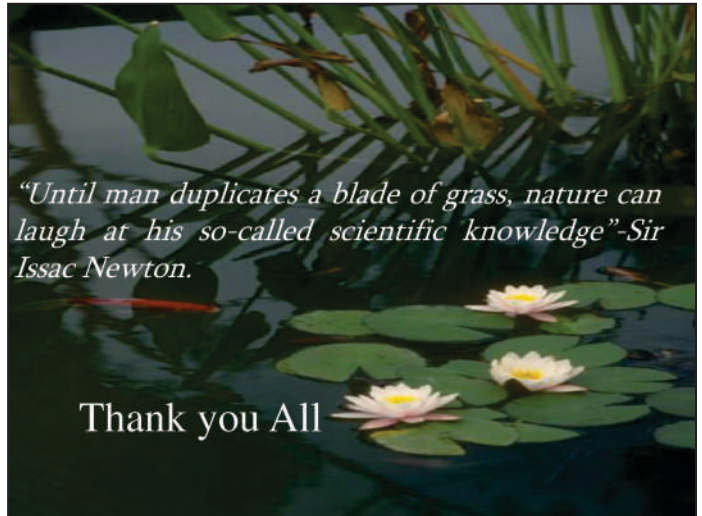
- Blocks received from the barges are first inspected for a contaminants and wastes.
- After cleaning, the blocks are sent to the secondary cutting zones of the Shio Recycling Facility (SRF). Sorting of blocks and wastes takes place simultaneously during the cleaning and checking process.
- Waste water after cleaning will be collected and temporarily stored at SRF's oily water tanks and later sent to the authorized waste handlers for final disposal.
- Hazardous wastes recovered are also temporarily stored at SRF's waste storage rooms and later sent to disposal at treatment, storage & disposal facility (TSDF site).
- Bigger blocks are further cut into smaller pieces and later converted into final truck loadable pieces and stacked at the site.
- Final plates are stacked in stacking zone and are properly barricaded to prevent any movement of workers.

Role of KSPCB

- State Pollution Control Board has played Role of Monitoring and Supervisory in this operation.
- Issued Authorization/Permission to recover the Oil and Other materials which was within the ship.
- Identified an Agency who has facility for recycle/reuse of Oil recovered from the ship.
- Monitored whether the quantity of recovered material has reached Recycling facility and disposed safely without causing environmental impact.
- Coordinated with all the Other agency who are involved in the process.
- Regular reports were submitted to all the concerned agency including District Administration and District Disaster Management Authority.

Conclusion

- Oceans play an important role in the Chemical and Biological balance of the life on the earth.
- These are rich with marine resources like minerals, oil and marine life and the sea food supplies meet a substantial food requirement of the population.
- If the marine life is affected by the pollution and carry pollutants in its bio mass, the human population get the impact while consuming resources.
- Hence it is necessary to create awareness about the marine pollution and to protect the marine water from the pollutants.



ACTIONABLE POINTS OF PREVIOUS MEETING

ACTIONABLE AGENDA POINTS OF 24TH NOS DCP PREPAREDNESS MEETING

1. **Preparation of Contingency Plans and positioning of PR equipment at facilities**

Coastal States/ Union Territories, Ports, OHAs and Oil Installation Onshore are to expedite preparation of contingency plan and positioning of PR equipment at their facilities to meet Tier-1 obligation of NOS DCP by 31 Dec 19. Regional Commanders may continue to render guidance and support to the stakeholders.

Proposed By: CGHQ

Deliberation

PD (FE) briefed about the status of OSCPs of Coastal States, Major Ports, OHAs and Non-Major ports. Further, he informed that the ICG has taken a relook at the process of vetting/ approval of OSCPs, and the committee constituted for the scrutiny of plans would consider the commitments of stakeholders for the procurement & positioning of deficient PR equipment in a time-bound manner during the evaluation process of OSCPs for approval. The progress of equipment procurement will be monitored during Joint Inspections for early positioning, aligning with the mandate of NOSDCP. PD (FE) recommended that the agenda be retained, as has been done in the past, until we arrive at a concluding stage towards formulation and approval of OSCPs of all stakeholders.

Decision

The Chairperson urged that all stakeholders expedite formulation of contingency plans along with the positioning of response inventory. ICG will provide necessary guidance and support for any issues faced by the stakeholders. **Point to be retained.**

Action by: All Coastal States/UTs, Ports, OHAs & Oil Installation Onshore

2. **Promulgation of 'NO OSD use area'**

MoEFCC to intimate CGHQ, on vetting of Environment Sensitive Index Mapping by

Coastal States and UTs so that a technical committee can be constituted for identifying “NO OSD USE” area.

Proposed By: ONGC

Deliberation

PD(FE) brought out that ESI mapping has been carried out from low waterline to the landward side and the use of OSD is not intended in this area. Further, as previously deliberated, a committee has been constituted for drafting new policy guidelines on use of OSD in Indian waters. New specification for toxicity of OSD i.e. more than 1000 PPM is being considered. Additionally, the requirement of seeking permission of ICG authorities prior use of OSD has been withdrawn vide NOS-DCP circular no. 4/2017. As NEBA is mandatory before using OSD, the promulgation of ‘No OSD use area’ is no longer relevant now. However, the progress of Environmental Safety Index (ESI) mapping is important and accordingly all the coastal States are requested to expedite ESI mapping.

Decision

Since, NEBA has been made mandatory prior using OSD resulting in insignificance of ‘No OSD use area’, **the point is closed.**

3. Supplementing ICG capabilities with Industry Led Initiatives and Service Contracts

MoPSW to develop private Oil Spill Response Organization in India for supporting ports and Oil Handling Agencies in mitigating oil spills beyond Tier-1.

Proposed By: CGRHQ(NW)

Deliberation

Principal Director (FE) brought out that there are no updates from MoPSW regarding setting up of professionally managed Regional Oil Spill Response Centres (ROSRC). He further requested Deputy Secretary, MoPSW for providing update on the status of committee report for establishing ROSRC. Deputy Secretary, MoPSW apprised that the committee has submitted its report and the proposal is being examined. ICG may proceed with scrutiny and vetting of OSCPs of Major

Ports. PD (FE) suggested that the revision of equipment list based upon the risk based assessment may be undertaken at a later date so that there is headway in approving the plan at least. Some ports representatives were of the opinion that, as contingency plans are not approved, they are unable to purchase the equipment. Therefore, approval of plans in the present form would remove this alibi and progress of procurement would be monitored subsequently during the joint inspections.

Commander Coast Guard (Western Seaboard) pointed out that on the advice of representative of MoPSW, the approval of OSCPs of major ports may be delinked from establishment of ROSRC. Accordingly, the plans can be submitted to CGHQ by the Major Ports for scrutiny by the committee. At the same time, a revision of minimum equipment inventory based on risk assessment, is to be undertaken in a time-bound manner and submitted to Coast Guard Headquarters.

PD(FE) stated that we can make a notation based on the intervention of MoPSW rep and OSCPs of major ports would be scrutinized/ approved by the committee formed for the purpose.

Decision

The Scrutiny and vetting of OSCPs of Major Ports be de-linked from the establishment of ROSRC and may be progressed by the committee constituted for approval of OSCPs.
Point to be retained.

Action by: ICG/MoPSW

4. HNS Response and Contingency Plan

NOS DCP may be replaced with Comprehensive Contingency Plan for Marine Spill in India (CCP-MSI), which should cover HNS as well as Oil Spill Contingencies. The Plan should be realistic and should be based on threat evaluation on marine spills supported by data on transportation of Oil and other HNS cargo in and around Indian waters. The SOPs for HNS spill may be drawn and role of various stakeholders may be spelled in the plan.

Deliberation

Principal Director (FE) apprised the forum that a Board of ICG Officers has been constituted for preparation of draft HNS Contingency Plan. Further, all ports have forwarded data to respective

Coast Guard Regional Headquarters for handling of HNS cargo in their ports. The preparation and promulgation of HNS contingency plan is the need of the hour and accordingly ICG is working on HNS contingency plan and the same would be promulgated post consultation with the concerned Ministries and major stakeholders.

Decision

Point to be retained.

Action by: ICG

5. Only one manufacturer is approved by ICG for supply of OSD for combating oil spill upto 12 n miles in Indian waters because of which there is single party and monopoly in the market. Same may be reviewed.

Proposed By: IOCL Vadinar

Deliberation

Principal Director (FE) apprised that the zonation concept for use of OSD has been withdrawn vide NOS-DCP circular 1/2023 and now there is no longer a single vendor situation. Further, he informed that all ICG listed OSDs can be now used in the Maritime Zones of India.

Decision

Point to be closed.

6. The requirement of storage for bioremediation is mentioned in the PR inventory for both ports and OHAs. Expertise is required to handle bioremediation as it is a process, hence it cannot be stocked up. It is recommended that stakeholders should have understanding with expert agencies because its role is post spill cleaning. The mere mention of volume in the inventory does not serve the purpose.

Proposed By: OISD

Deliberation

Principal Director (FE) intimated that an expert committee has been constituted with various

scientific & technical members from governmental and non-governmental bodies. The committee has deliberated on the issue of bioremediation and it has been decided that ICG will not be dealing with the use or approval of bioremediation as the process is only for land based activity. Accordingly, minimum quantity of bioremediation as promulgated by NOS DCP circular 3/2018 will be withdrawn with the promulgation of new policy and guidelines for the use of OSD in Indian waters.

Commander Coast Guard (Western Seaboard) mentioned that the issue may be further deliberated before removal of bioremediation from the list to obviate any queries thereon. Further, he suggested that all aspects regarding the issue may be deliberated and analysed prior arriving at any decision. CGC(W) emphasized that the point may be retained and post promulgation of the new policy, a decision may be taken on removal of the same from circular 03/2018.

Decision

The assessment on removal of bioremediation from the circular 03/2018 may be undertaken post promulgation of policy and guidelines on use of OSD.

Point to be retained.

Action by: ICG

NEW AGENDA POINTS

NEW AGENDA POINTS FOR 25TH NOS DCP PREPAREDNESS MEETING

1. Paradip port authority has requested for early approval of their Oil Spill Contingency Plan by Indian Coast Guard as the same is awaited from CGHQ.

Proposed By: Paradip Port Authority / RHQ(NE)

Deliberation

Principal Director(FE) brought out that this agenda has been discussed at length and with the kind intervention of rep of MoPSW, the point no longer holds merit. Oil Spill Contingency Plans of all major ports will now be examined by the committee.

Decision

Point to be closed.

2. **Training cum Mock Drills for Shoreline Cleanup**

The training of various States and private sectors are already in vogue at CGPRT and onboard PCVs. However, in an oil spill disaster local manpower will be required from the concerned Coastal District through all stakeholders and District Administration. A programme consisting of training session may be designed for the school, colleges and coastal villages. All government offices, youth organization and NGOs may be reached out through State/ District Administration and the training may be imparted to the government employees, youth organization and NGO members too. This awareness programme will incline the local population in large number towards vitality to protect environment. Certification of such modules may be considered as an added skill to all trainees.

Proposed By: CGRHQ(NW)

Deliberation

Principal Director (FE) apprised that ICG has examined this point and opined that the conduct of mock drill for shoreline cleanup is to be incorporated in contingency plan of the Coastal States. The conduct of regular mock drill in all Coastal Districts as promulgated in the plan is an

important aspect. Notification of the mock drill may be published for wider information and be forwarded to respective CG Regional/District Headquarters. The representatives from ICG and other stakeholders may attend the mock drill for advice and observation. Further, ICG Pollution Response Teams (PRTs) may be utilized to conduct training on shoreline cleanup and modalities of course & certification may be worked out accordingly.

DDG (Ops & CS) emphasized that training and mock drill for the shoreline cleanup is the responsibility of each stakeholders. If oil spills extends beyond the area of jurisdiction and reaches the shore, it becomes the responsibility of the concerned State, accordingly states need to be prepared. Additionally, there is requirement of training, as oil pollution at sea is a disaster that requires all stakeholders to come together for effective response. Coastal States have the contingency plan for Tsunami, incessant rains, flooding, fire, natural disasters etc., but in many States (except Andhra Pradesh and Tamil Nadu), oil spill as a disaster has not been included in their State Contingency Plans. ICG may assist State Administration in identification of equipment for the shoreline cleanup and training aspects.

COMCG(NW) recommended that suitable strategy may be adopted and appropriate authority may be informed through Chairperson NOSDCP for the States to include shoreline clean up and training in their state contingency plan.

Chairperson, NOSDCP commented that a two pronged approach can be adopted wherein State Maritime Board and State Pollution Control Board may take up the issue with appropriate authority at State level for institutionalization of shoreline cleanup. Further, as the Chairperson, I will take up the case with MHA and Cabinet Secretary (Security), requesting them to issue necessary directives to the State to include oil spill as disaster in their Contingency Plans.

Decision

The shoreline cleanup is the responsibility of the coastal States and accordingly, the conduct of mock drills is to be triggered by respective States/District administration. The point to be progressed through State Pollution Control Board, as representative of coastal States, and through Central Agency i.e. Disaster Management, MHA and Cabinet Secretary (Security).

Point to be retained.

Action By: ICG/ Coastal States

3. Para 4.9 of NOS DCP (CGBR 771) indicates periodic inspection of ports and oil handling agencies by ICG along with other statutory authorities. The inspection also caters for checks of the inventory standards of the port facilities/oil handling agencies as it has to be maintained by the respective agencies i.a.w. Appendices F 2.1 and 2.2 of NOS DCP 2015. However, presently no inspection is being undertaken for the inventory standards of Coastal States, which is to be maintained by State/State Pollution Control Authorities i.a.w. Appendix F2.3 of NOS DCP 2015, wherein the preparedness for response to shore line cleanup is envisaged. As shoreline cleanup is one of the most important elements of the pollution response operations, it is important that coastal states are adequately prepared for mobilization of the required equipment. The quantum of shorelines cleanup equipment with ICG, Ports and Oil handling agencies being limited as per the inventory list, it is necessary that the coastal states/states pollution control authorities are in possession of the required response equipment as promulgated in the NOS DCP and also it is required that the same are being maintained for operational serviceability. Accordingly, it is recommended that the state pollution control authorities and the inventory standards to be maintained by the concerned coastal States, be also brought within the purview of joint inspections i.a.w. Para 4.9 of NOS DCP 2015.

Proposed By: CGRHQ (A&N)

Deliberation

Principal Director (FE) informed that inventory standards for coastal States are incorporated in the **Appendix F2.3 of NOS DCP**. All the coastal States are to procure equipment for effective response and shoreline cleanup. The Crisis Management Groups as mentioned in the NOS DCP are to be promulgated by Coastal States. Tamil Nadu and Andhra Pradesh Governments have already constituted Crisis Management Groups and issued Government notification regarding the same. Other States may also follow the suit and constitute CMGs at State, District and local level. It is recommended that State Authorities may frame internal mechanism for ensuring preparedness for oil spill response and positioning of equipment for shoreline cleanup. The issue of joint inspection of States is beyond the ICG ambit as per existing norms in NOS DCP.

Decision

Point to be closed.

4. It is proposed to consider the combined capacity of Nayara Energy Limited, Indian Oil Corporation Limited and Deendayal Port Authority for oil spill response in Vadinar Port area as Tier-1 facility instead of insisting individual organization to maintain the entire Tier-1 facility separately.

Proposed By: Mutual Aid Members of Vadinar Port Area – Deendayal Port Authority, Nayara Energy Limited and Indian Oil Corporation Limited.

Deliberation

Principal Director (FE) stated that synergetic actions among the stakeholders are always encouraged for collaborated efforts to mitigate any oil spill, however, this should be over and above minimum inventory, as per para 4.6 of NOS DCP. Tier-1 equipment for pollution response is required to be held individually by Port facility and Oil Handling Agencies. This issue has been discussed previously on many occasions and it is reiterated that the minimum inventory as promulgated, is required to be maintained by each facility for undertaking Tier-1 spill response in their respective areas.

Further, continuing with the discussions, the Secretary to the Chairperson apprised that if one norm is applied in one specific situation and another norm in another specific situation, it would be very difficult to create harmonized structure that NOS DCP presently provides to all. Therefore, mutual aid agreement is encouraged but the locality or location of these facilities, vis-a-vis the time required for handling such a contingency, as well as the distances, are major factors. In the case of DPA-Nayara-IOCL Vadinar, the facilities are very closely located and therefore the committee may be formed under the directives of Chairperson and analyse the proposal including provisionally approved plans of M/s Nayara Energy Ltd and IOCL, Vadinar.

He further informed that a revision of pollution response equipment inventory is already envisaged, so there is a need to take calibrated approach, ensuring consistent and steady progress.

PD (FE) further informed that there is no need to adhere strictly to quantitative categorization of Tier-1 spill i.e. 700 tones and emphasized the importance of adopting a risk based approach. In this regard, data of past oil spills in the Maritime Zones of our country and the

volume of oil spilled have to be analysed to arrive at an average quantum of oil spill for categorization.

IOCL, Vadinar Rep brought out that Nayara and IOCL are very close, Nayara is having 01 SPM and IOCL is having 02 SPMs and all the SPMs are in close proximity. Therefore, he reiterated that combined capacity of all three may be considered as Tier-1. Reps of HPCL, Adani, RIL, ONGC and Vedanta also requested for considering their Mutual Aid Agreement as Tier-1 capability.

Decision

The Chairperson directed that a committee be formed comprising members from concerned Ministries & other stakeholders and study be undertaken for Mutual Aid aspect in totality. All stakeholders are to accordingly prepare their proposal for the committee.

Point is to be retained.

Action By: ICG & Stakeholders

CONCLUDING ADDRESS

CONCLUDING ADDRESS BY THE DGICG AT THE
25TH NOS DCP MEETING AT JAMNAGAR ON 23 NOV 2023

Good afternoon to you all,

1. At the outset, I would like to congratulate all the participant for their active involvement in the discussions on various agenda points and the earnest sharing of professional knowledge. It was encouraging to witness productive discussions on various aspects of oil pollution response during the meeting. You would agree that, taking our discussions to their logical conclusion calls for dedicated efforts on part of all the stakeholders in their respective area of expertise.
2. As we all agree that, cohesiveness amongst stakeholders is the key to enhancing efficiency in pollution response operations. I would urge you all to continue with frequent interaction and exercises at various levels for sharing of professional knowledge and competence, so as to enhance the robustness of the national system, for meeting the future challenges of oil pollution response.
3. Pollution response planning and operations require integration of professional knowledge from various walks of life. Synergy among all stakeholders is therefore vital in achieving the national objective of preserving and protecting the marine environment.
4. I also look forward to the realistic and wholehearted efforts by all stakeholders in fulfilling the expectation placed on them to ensure a fool-proof implementation of NOS DCP, and I am very sure that we all will be in an even better position and state of preparedness during the next NOS DCP meeting.
5. With this, I would like to convey my appreciation to all members for your enthusiastic and active participation in the meeting.

Thank you. Jai Hind.

**GLIMPSES OF 25TH NOS DCP
AND
PREPAREDNESS MEETING**

**GLIMPSES OF 25TH NATIONAL OIL SPILL DISASTER CONTINGENCY
PLAN (NOS DCP) AND PREPAREDNESS MEETING**





PROGRAMME

PROGRAMME
25th NATIONAL OIL SPILL DISASTER CONTINGENCY PLAN
AND PREPAREDNESS MEETING

Date : 23 Nov 2023

Venue : 7 Seasons Resort, Lakhabavad, Jamnagar, Gujarat - 361006

Time	Event
0900	Delegates Arrive & Registration
0945	Delegates to be seated
0950	Flag Officers Arrives
1000	Screening of ICG movie, Introduction to NOS DCP and Introduction of Chairperson, NOS DCP
1030	Chairperson, NOS DCP Arrives
1032	Inaugural Address by the Chairperson, NOS DCP
1045	NOS DCP overview by Principal Director (Fisheries & Environment)
1100	Award of National Marine Environment Protection Certificates and "Samudri Paryavaran Sanrakshan Trophy" by Chairperson NOS DCP, Director General Indian Coast Guard
1105	Interaction over High Tea
1125	Presentation on Preparedness for combating Oil and Chemical Spills by Capt. Rakesh Rawat, Senior General Manager, Reliance Industries Ltd, Jamnagar
1140	Presentation on Preparedness for combating Oil and Chemical Spills by Shri Vikash Tola, Senior Manager (Marine), IOCL , Vadinar
1155	Presentation on Preparedness for Coastline Cleanup during an Oil and Chemical Spill incident by Dr. Ravi DR, Environment Engineer, Karnataka State Pollution Control Board.
1210	Discussion on Actionable points and Agenda points
1300	Closing Address by the Chairperson, NOS DCP
O/C	Group Photography
1310	Lunch
O/C	Chairperson, NOS DCP Departs

PARTICIPANTS LIST

25th NATIONAL OIL SPILL DISASTER CONTINGENCY PLAN (NOS DCP)
AND PREPAREDNESS MEETING - 23 NOV 2023

LIST OF PARTICIPANTS

Sl.	Description	Name & Rank	Designation
Indian Coast Guard			
1.	CGHQ	DG Rakesh Pal, PTM, TM	DGICG
2.	HQCGC(WS)	ADG KR Suresh, PTM, TM	CGC(WS)
3.	CGRHQ (NW)	IG AK Harbola, TM	COMCG (NW)
4.	CGRHQ (W)	IG Bhasham Sharma, TM	COMCG (W)
5.	CGRHQ (E)	IG Donny Michael, TM	COMCG (E)
6.	CGRHQ (NE)	IG IS Chauhan, TM	COMCG (NE)
7.	CGHQ	IG Anupam Rai	DDG (Ops & CS)
8.	CGHQ	DIG Rajesh Mittal	PD(FE)/CGHQ
9.	CGRHQ (NE)	DIG Ashish Shrivastav	CSO(OPS)/RHQ (NE)
10.	COMDIS-15	DIG Venugopalan Krishna Kumar	COMDIS-15
11.	CGRHQ (E)	DIG VK Vijay Kumar	CSO(OPS)/RHQ (E)
12.	CGPRT (W)	DIG PV Mondal, TM	Oi/C PRT(W)
13.	CGHQ	DIG Arun Singh	D(IC)/CGHQ
14.	CGRHQ (W)	DIG Mukund Gujar	CSO(OPS)/RHQ (W)
15.	CGRHQ (NW)	DIG Parag Goswami	CSO(OPS)/RHQ (NW)
16.	CGRHQ (NW)	Comdt Kundan	RFEO(NW)

Sl.	Description	Name & Rank	Designation
17.	ICGS Vadinar	Comdt MM Marbaniang	CO ICGS Vadinar
18.	CGHQ	Comdt AK Mahapatra	JD(IC)/CGHQ
19.	CGHQ	Comdt (JG) SK Karwasara	DD(FE)/CGHQ
20.	CGRHQ (W)	Comdt (JG) Uday Kumar Chaudhary	RFEO(W)
21.	CGPRT (NW)	Comdt (JG) F A Pathan	Oi/C, PRT(NW)
Indian Navy			
22.	Navy/ HQGD&D / APAO	Cdr SD Tripathi	--
23.	Navy, INS Sardar Patel, Porbandar	Cdr Vineet	Staff Officer (Ops)
MoD/ Ministries/ Government Agencies			
24	Port, Shipping and Waterways	Shri Gopinath Nayak	Deputy Secretary (Ports)
25.	Port, Shipping and Waterways	Shri Anil Pruthi	Director (Engineering)
26.	INCOIS	Shri Alakes Samanta	Scientist-D
27.	INCOIS	Dr. SJ Prasad	Project Scientist
28.	OISD	Dr. Naveen Raj	Head-Environment & Nodal officer for OSR, OISD, MoPNG
29.	OISD	Shri CM Pakhale	Additional Director- OISD

Sl.	Description	Name & Rank	Designation
30.	DGH	Shri Ramesh Maharaj	Chief General Manager (D)
31.	DGH	Dr. Siddharth Kumar	Chief General Manager (P)
32.	IWAI (Inland Waterways Authority of India)	Capt Mahendra Kumar (IN)	Hydrographic Chief
33.	Central Pollution Control Board	Shri Dinabandhu Gounda	Director, IPC-I
States			
34.	Kerala State Pollution Control Board	Smt. Sumithra S	Senior Env. Eng.
35.	Kerala State Pollution Control Board	Shri Abhiram V.K	Assistant Eng.
36.	Karnataka State Pollution Control Board, Mangalore	Dr. Ravi DR	Environmental Officer, KSPCB
37.	Maharashtra Pollution Control Board	Dr. J.B. Sangewar	Joint Director, Water Pollution Control
38.	Maharashtra Maritime Board	Capt. C.J. Lepande	Port Officer
39.	Mercantile Marine Department, Kandla, Jamnagar (DG shipping)	Capt. Mohit Kumar Behl	Dy Nautical Adviser-Senior DDG (Tech) & Survey In-charge (SIC)
40.	Gujarat Maritime Board	Dr. Manan Shukla	Manager (Env.)
41.	Gujarat Maritime Board	Shri Amit Munjani	Safety Officer
42.	Gujarat Maritime Board	Shri Anilkumar N. Thummar	Dy Executive Engineer (M)

Sl.	Description	Name & Rank	Designation
Ports & Oil Handling Agencies			
43.	Mormugao Port Authority, Goa	Capt. Arun Kumar	Harbour Master
44.	Paradip Port Authority	Capt. Amit Kumar	Pilot
45.	Visakhapatnam Port Authority	Capt. T Ravikiran	Dock Master
46.	Cochin Port Authority	Capt. Bhaskar Krishnan Kunji	Manager (Marine Pollution Control)
47.	New Mangalore Port Authority	Capt. Gaurav Mathur	Oil Spill Response Officer, NMPA
48.	Mumbai Port Authority	Capt. Bhabatosh Chand Capt. Ravikumar L. Shinde	Dy Conservator Harbour Master
49.	JNPA Mumbai	Capt. Shashikant Shripal Jadhav	Harbour master
50.	VOC Port Authority, Tuticorin	Capt. Uma Shankar Behara	Pilot
51.	Chennai Port Authority, Chennai	Capt. T.M. Kumar	Harbour Master
52.	Kamarajar Port Limited, Chennai	Shri M Vijayan	Manager (HSE)
53.	Kamarajar Port Limited, Chennai	Shri B Chaitanya Kumar	Executive (HSF)
54.	Deendayal Port Authority, Kandla, Gujarat	Shri Ramasamy Athmanthan	Chief Operation Manager
55.	Deendayal Port Authority, Kandla, Gujarat	Capt. Laljee Ram Meena	Harbuor Master
56.	Muldwarka Port, Ambuja Cement, Gir Somnath	Shri Lal Singh	Marine Ops incharge

Sl.	Description	Name & Rank	Designation
57.	Goplapur Port	Shri Ravindra	Captain
58.	Simar Port Pvt. Ltd.	Shri Arpit Gupta	Asst General Manager
59.	Dhamra Port	Shri Ajit Narayan Mahapatra	Deputy Conservator
60.	Adani Krishnapatnam Port Ltd.	Capt. Bibhupada Sahoo	Harbour Master & HoS
61.	Adani Gangavaram Port	Capt. Rajesh Prakash	Deputy Conservator
62.	Vizhinjam Port	Shri Prasad Kurien	General Manager
63.	Adani Port & SEZ Mundra Port	Shri Parveer Vasistha	--
64.	HPCL-Mittal Pipeline, Mundra	Shri N. Karthikeyan	GM-Pipeline
65.	HPCL-Mittal Pipeline, Mundra	Shri Ashok Tiwary	Manager
66.	Nayara Energy Limited, Vadinar	Capt. Ranjan Shashikant	Port Captain
67.	Nayara Energy Limited, Vadinar	Shri Sachin Shah	Lead HSEF-Marine
78.	Nayara Energy Limited, Vadinar	Shri Ajay Pokiya	Lead Maintenance Marine
69.	Reliance Industries Limited (RIL) (SPTL), Jamnagar	Capt. K Tripathi	Add. Vice President
70.	Reliance Industries, Jamnagar, Gujarat	Capt. Rakesh Rawat	Senior General Manager
71.	Reliance Industries Limited Jamnagar (Gujarat) HSEF-Environment	Shri Anand Sutaria	Vice President Environment

Sl.	Description	Name & Rank	Designation
73.	Reliance Industries Limited Jamnagar	Shri Ramesh Vekariya	--
73.	IOCL, Vadinar	Shri Vikas Kumar Tola	Senior Manager (Marine)
74.	Ocean Sparkle Ltd	Commander Parveer Vasistha	Commander
75.	ONGC Ltd. Mumbai	Shri Avinash	Executive engineer
76.	ONGC Ltd. Mumbai	Shri Nilay Meshram	DGM (Environment)
77.	CPCL - Chennai	Shri MN Suresh	Senior Manager(Tech-EP & S)
78.	Sun Petrochemical Pvt. Ltd. Hazira	Shri Pankaj Singh Chauhan	DGM
79.	Sun Petrochemical Pvt. Ltd. Hazira, Surat	Shri Bhargav Modi	HSE Manager
80.	Mangalore Refinery and Petrochemicals Ltd.	Shri Manjunath Halashi	Chief Manager (OMS), MRPL
81.	Mangalore Refinery and Petrochemicals Ltd.	Shri M.S. Sudarsan	Chief General Manager (HSE)
82.	Reliance India Ltd Hazira	Capt. Khemraj Pandey	Dy General Manager (Marine)
83.	Vedanta Limited Cairn Oil and GAS Dwarka, Gujarat	Shri Mayur Gorfad	Manager Marine
84.	Vedanta Limited Cairn oil and GAS Dwarka, Gujarat	Shri Pranav Patel	Head HSE
85.	Vedanta Limited Cairn oil and GAS Dwarka, Gujarat	Shri Shailesh Patel	Dy Manager



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