



INDIAN COAST GUARD

Government Perspective on Preparedness for Oil Spill Response in India

AA HEBBAR

Presentation at the OSRL-ITOPF New Delhi Seminar : Government and Industry Co-operation Learning from Global Good Practice

20 Nov 13



Overview

- What we do?
- Why we do?
- How we do?
- How others do?
- How should we do?



INDIAN COAST GUARD

INTRODUCTION



CONSTITUTION 42ND AMENDMENT

1976

Article 41-A, Part IV

The state shall endeavour to protect and improve the environment...



Article 51-A(g)

Fundamental duty of every citizen to protect and improve the natural environment...





INDIAN COAST GUARD

Formation of Coast Guard

1978

- As an armed force of the Union of India
- To function under the Ministry of Defence
- Motto: “VAYAM RAKSHAMAH”





INDIAN COAST GUARD

Duties and Functions



**SAFETY AND PROTECTION OF ARTIFICIAL ISLANDS
AND OFF SHORE OIL TERMINALS**



**PROTECTION TO FISHERMEN INCLUDING
ASSISTANCE TO THOSE IN DISTRESS AT SEA**



**PRESERVE AND PROTECT THE MARINE
ENVIRONMENT**



**TO PREVENT AND CONTROL MARINE
POLLUTION**



INDIAN COAST GUARD

Duties and functions



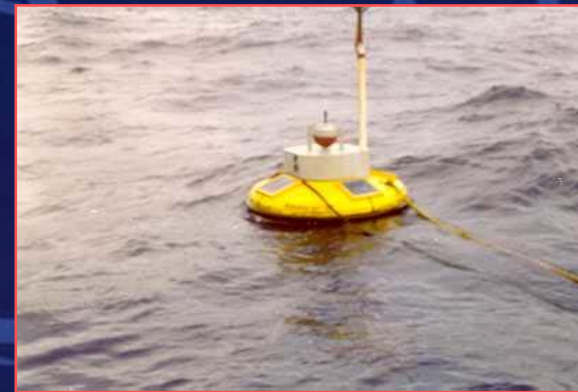
ASSISTING THE CUSTOMS & OTHER AUTHORITIES IN ANTI-SMUGGLING OPERATIONS



ENFORCING THE PROVISIONS OF SUCH ENACTMENTS AS ARE FOR THE TIME BEING IN FORCE IN THE MARITIME ZONES



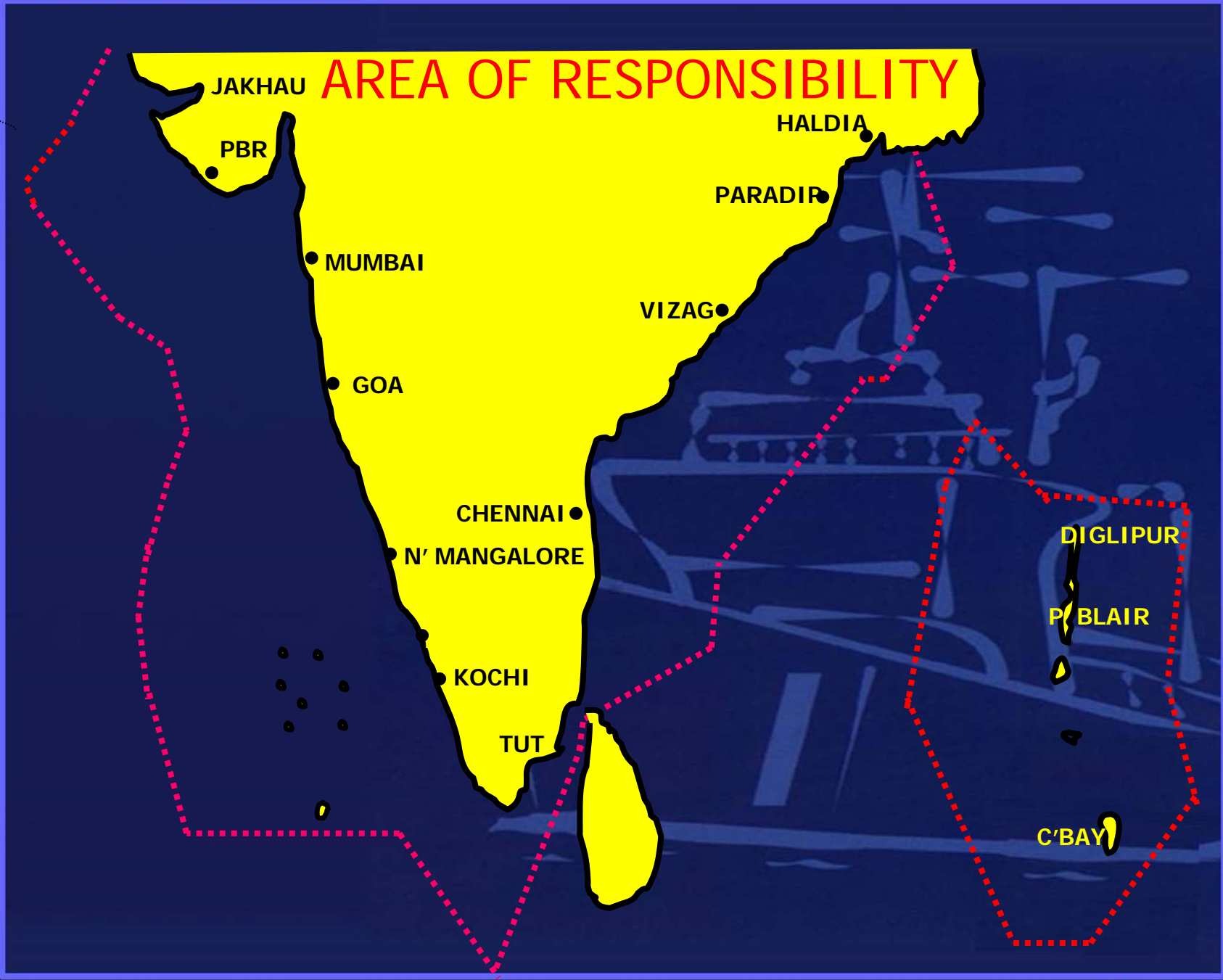
SAFETY OF LIFE AND PROPERTY AT SEA



ASSIST IN COLLECTION OF SCIENTIFIC DATA



INDIAN COAST GUARD





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Force Composition - Ships





INDIAN COAST GUARD

Force Composition - Aircraft





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ICG: Response Resources

- Dedicated response vessels





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ICG: Response Resources





ICG ASSISTANCE TO INDUSTRY

OIL SPILL CONTINGENCY PLAN

- VETTING AND OPERATIONALISATION

PR EQUIPMENT

- AUDIT AND INSPECTION

TRAINED PERSONNEL

- IMO LEVEL-1 TRAINING

EXERCISES AND DRILLS

- LOCAL, REGIONAL AND NATIONAL LEVEL



Joint Inspections and Audits

- ICG/ OISD joint inspection of oil installations
- ICG/ MoS joint inspection of major ports





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OIL SPILL RESPONSE TRAINING





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IMO Level 1 Training

PLACE	COURSE	STRENGTH
VADINAR	Biannual	20-25
CHENNAI	Biannual	20
PORT BLAIR	Biannual	10
MUMBAI	Biannual	20-25





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IMO Level 2 Training

- By AMET University with ICG faculty support
- Biannual – February/ August
- 25 participants per course





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OIL SPILL RESPONSE DRILLS & EXERCISES





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NATPOLREX





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BLUE WATERS

BLUE WATERS
 Newsletter
 On Marine Environment Protection

Biannual Jul 2013 Vol XIV Issue 2

A Publication of the Indian Coast Guard

m.v. SHRUJOY-II

18th NORDCP MEETING
 31 MAY 2013
 DEHRADUN

COLOUR CODED SYMBOLS

BLUE WATERS
 Newsletter
 On Marine Environment Protection

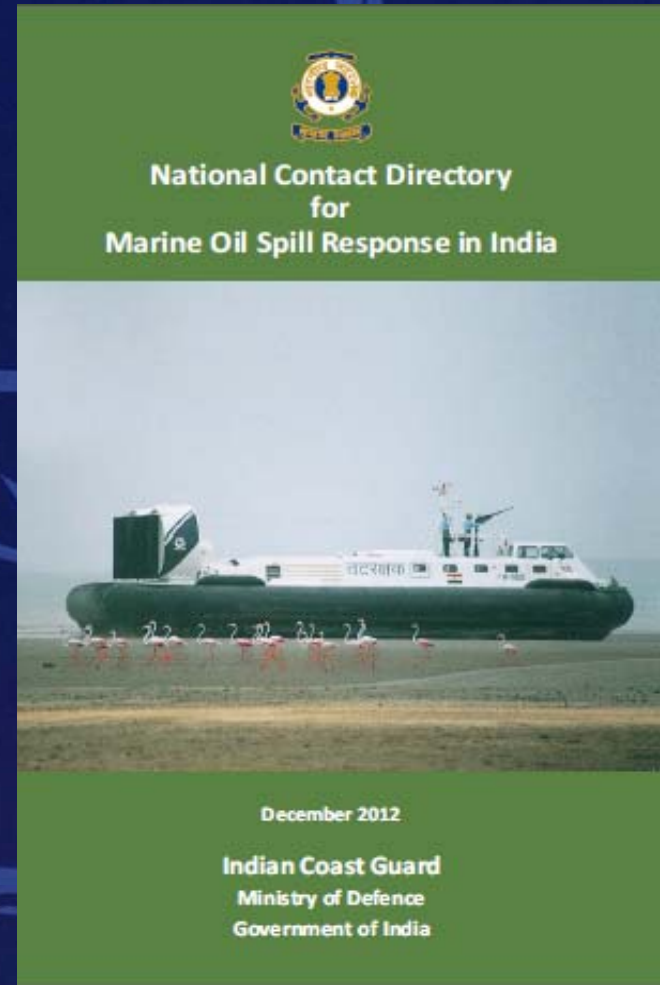
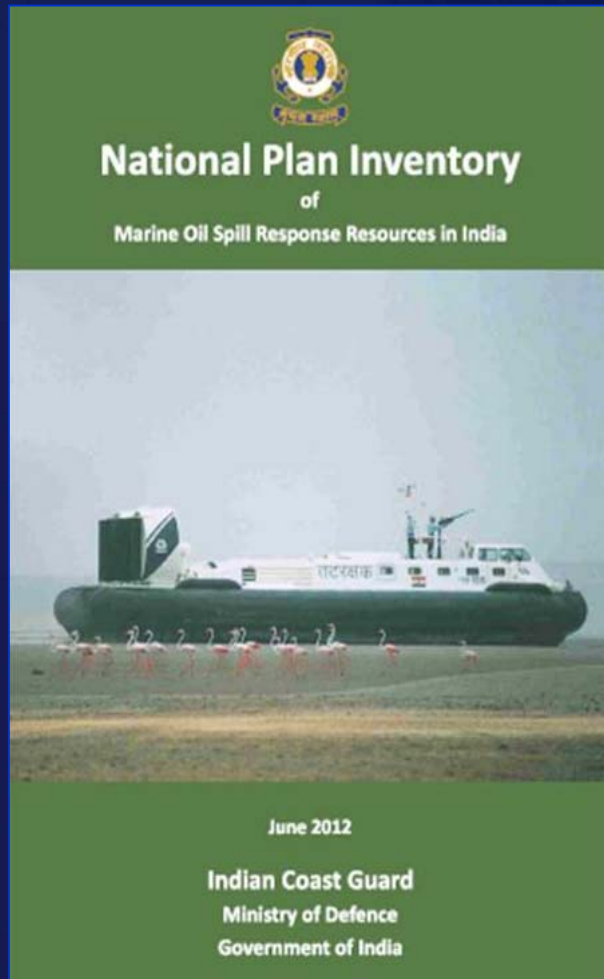
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NATIONAL PLAN INVENTORY AND CONTACT DIRECTORY





INDIAN COAST GUARD

NOSDCP CIRCULARS





PARTICIPATION AT IMO



- MEPC
- OPRC HNS
- IOPC FUND

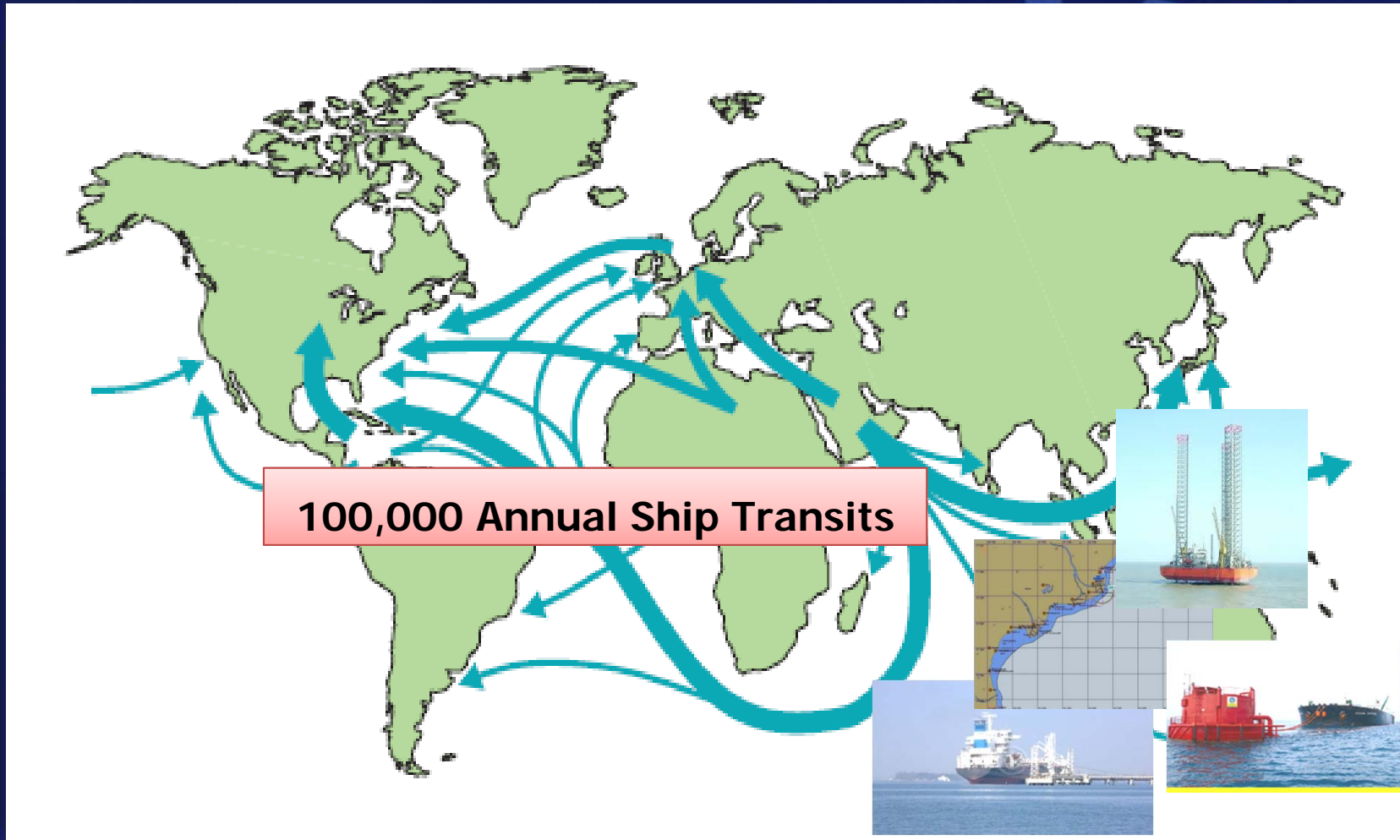


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RISK OF OIL SPILLS



Energy and Economy





Risk of oil spills

- Collisions
- Groundings
- Fires/ Explosions
- Operational discharges
- Accidental leakages
- Illegal discharges





Risk factors



- Type of oil/product
- Geographic location
- Weather
- Sea conditions
- Coastline
- Vigilance
- Volume of traffic
- Time of day
- Navigation hazards
- War
- Terminal design
- Condition of facilities
- Legislation
- Vessel quality
- Vessel types
- Types of operation
- Quantities handled
- Frequency of handling
- Training programme

Source: IPIECA, 2000, p.12



Spill Potential - Tank Ships

Typical tonnage (dead weight)	Grounding/ collision (1 wing tank)	Grounding with rupture (2 wing + 1 centre tank)	Bunker fuel
50,000	1,100	5,000	750
100,000	5,500	21,000	2,300
200,000	10,500	45,000	2,750

Source: IPIECA, 2000, p.12





Spill Potential - Oil Installations

	Time elapsed after rupture (hours)	Estimated size of spill (m ³)
Rupture of 30" Main Pipeline	1	1900
	6	5300
	24	13500
Blowout at oilfield	If well is successfully capped in about 5 days	3750-5000 @1500-2000/ day

Source: ONGC Oil Spill Contingency Plan Western Offshore Unit Mumbai, 2012, pp.9-11





Worst Case Discharge - SPMs

Location	Estimated size of spill (m ³)
Vadinar	16,000
Kandla	4,000
Haldia	5,000

Source: NOSDCP, 2006



INDIAN COAST GUARD

RESOURCES AT RISK



Resources at Risk

4009 wetlands
40230 km²

- Estuaries
- Lagoon
- Creeks
- Backwater
- Tidal mudflats
- Sand/beach/spit/bar
- Coral reefs
- Rocky coast
- Mangroves
- Salt pans/marsh vegetation

Mangroves
4870 km²



Corals

Andaman and Nicobar

Lakshadweep Island

Gulf of Mannar and Palk Bay in Tamil Nadu

Gulf of Kachchh in Gujarat

Singhdurg Coast in Maharashtra





Resources at Risk

Socio-Economic Dimension

- Beaches
- Fisheries
- Aquaculture
- Port productivity/ closure





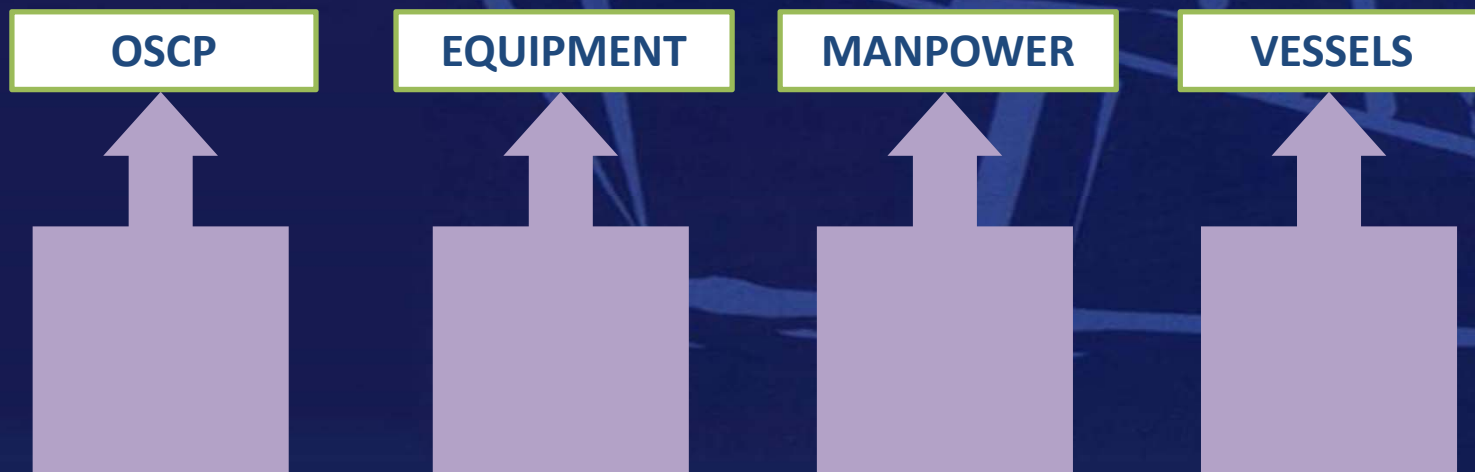
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PREPAREDNESS



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Pillars of Preparedness

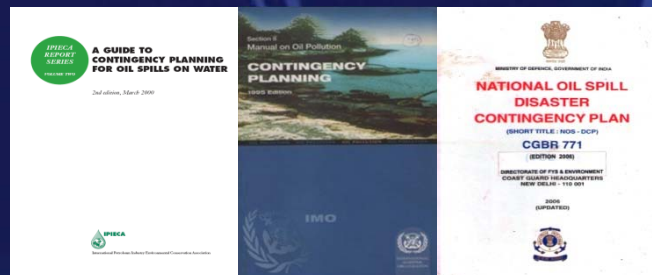




National Contingency Plan

Overview

- Prepared in fulfilment of obligations under OPRC 1990
- Approved by Committee of Secretaries in 1993
- Delineates responsibilities of stakeholders
- Obliges commitment of resources for oil spill response
- Systemises national preparedness and response





NOSDCP Contents

- Duties of the Coast Guard
- Scope and objectives of the plan
- Organisational structure
- Reporting and alerting procedures
- Assessment
- Disposal of oil
- Capabilities of resource agencies



Crisis Management Group

1.	Defence Secretary - Chairman
2.	Home Secretary - Member
3.	Foreign Secretary - Member
4.	Secretary Environment & Forests - Member
5.	Secretary Shipping - Member
6.	Secretary Petroleum and Natural Gas - Member
7.	Secretary Urban Development - Member
8.	Secretary Ocean Development - Member
9.	Secretary Science and Technology - Member
10.	Secretary Agriculture and Co-operation - Member
11.	Secretary Chemicals and Petro Chemicals - Member
12.	Secretary Industrial Development - Member
13.	Secretary (Security) - Cabinet Secretariat - Member
14.	Director General Coast Guard
15.	Chairman of the Concerned Port
16.	Director General Hydrocarbons
17.	Any member co-opted as deemed necessary



Resource Agencies

- MoS
- MoES
- MoEF
- MoPNG
- MHA
- CPCB
- COASTAL STATES
- SPCB
- CMFRI
- DG SHIPPING
- MMD
- MAJOR PORTS
- ONGC
- INDIAN NAVY
- INDIAN AIR FORCE
- IOCL
- OIL AGENCIES
- SCI
- NIO
- OTHERS AS REQUIRED



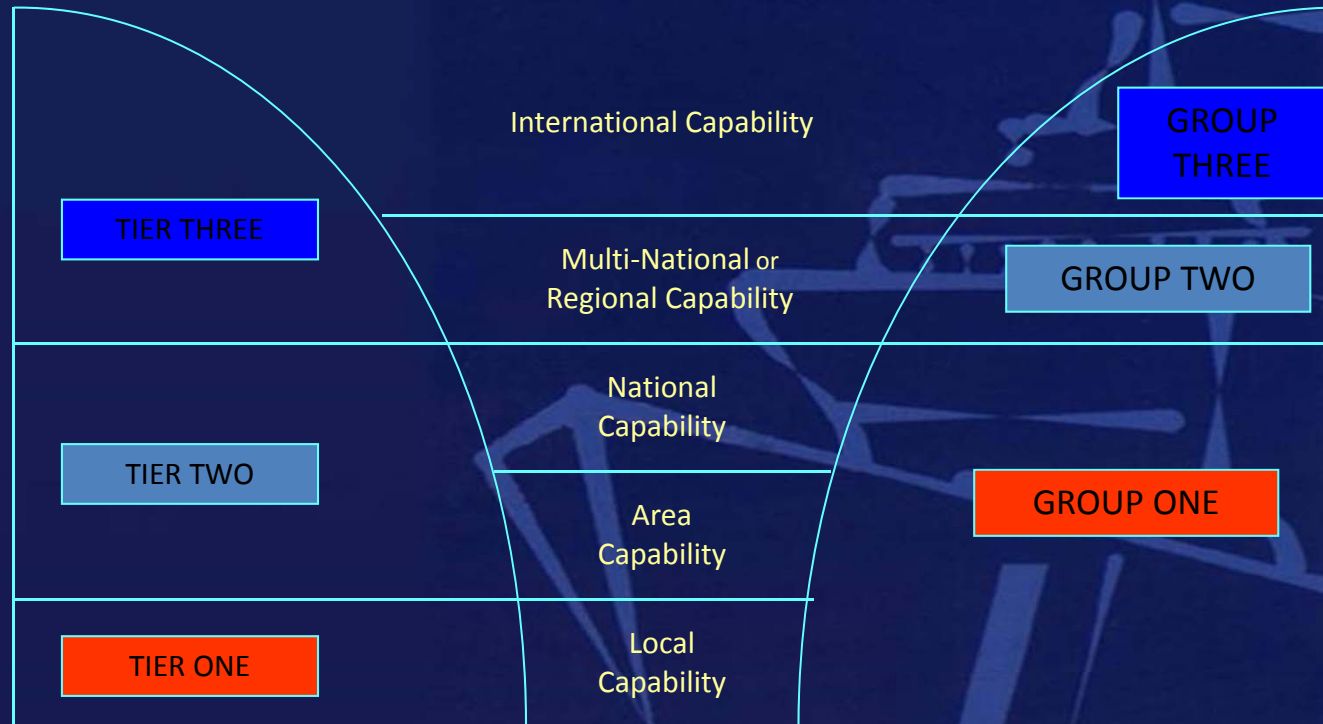
Coastal State LCP

Key Elements

- Sensitivity mapping
- Protection priorities
- Shoreline protection
- Shoreline cleanup
- Response personnel
- Waste disposal
- Fisheries closure areas
- Re-imbursments



The Global Framework



Industry Concept of Tiered Response

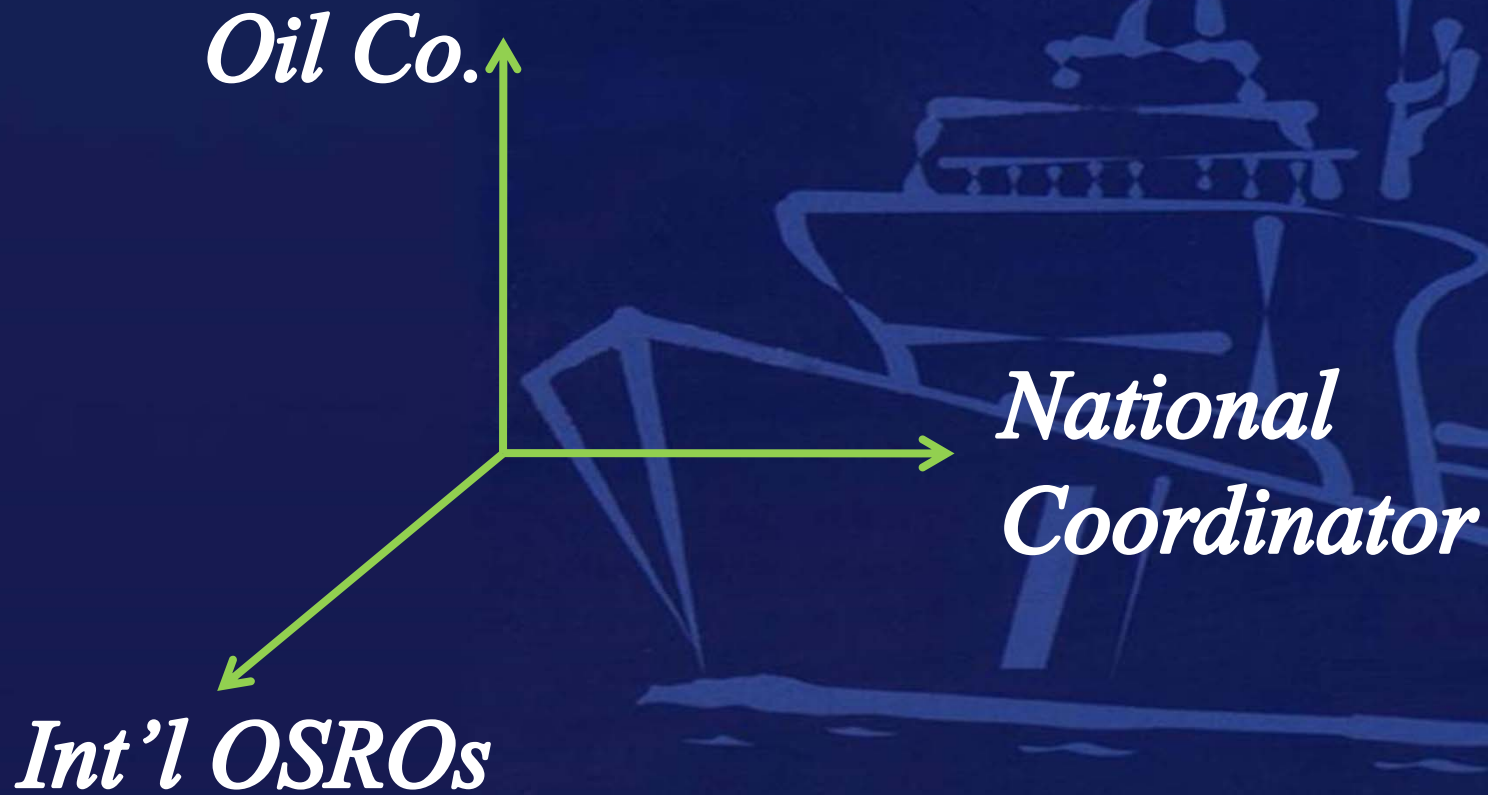
The Organisation of the National Framework



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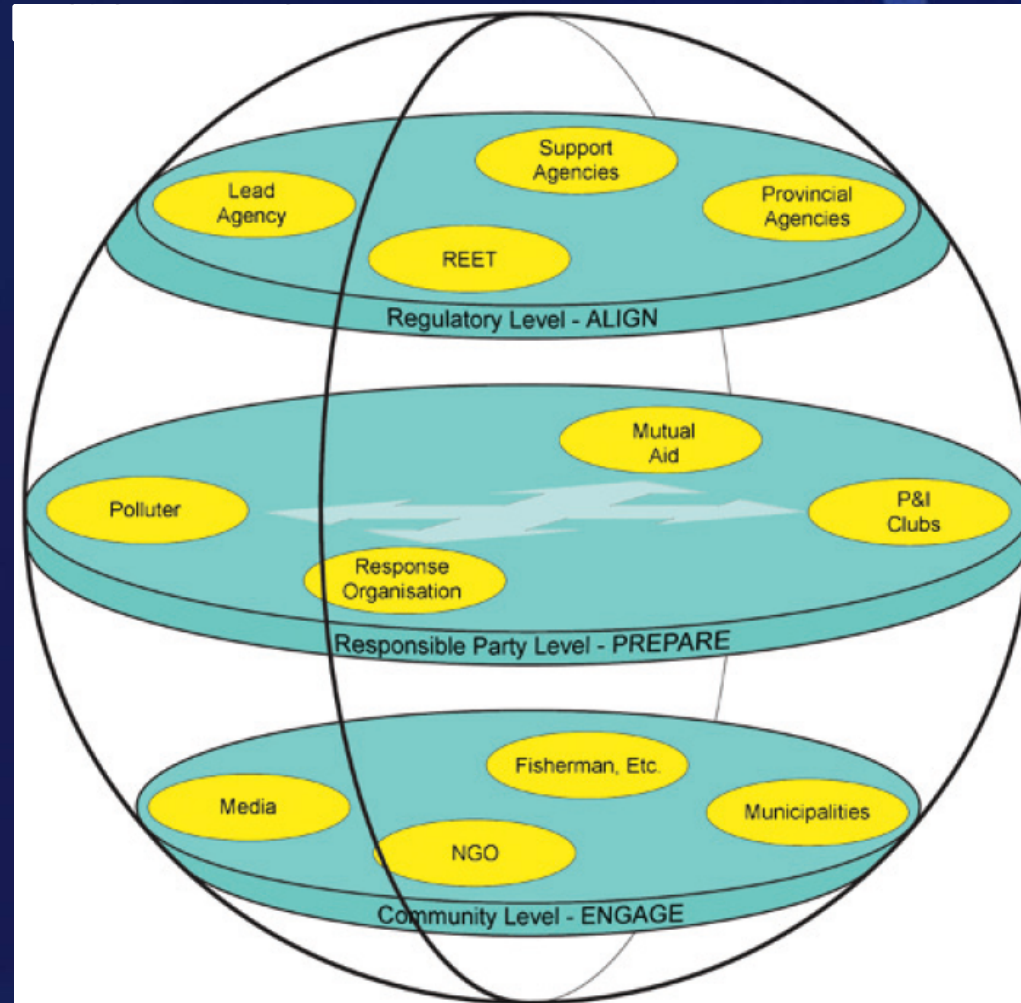
Contingency Planning

3D Characteristic





Org. Levels & Response Integration





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Qty for Tier-1 Planning





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Tiered Preparedness - Prescriptive Criteria

10K		10K		
		2.5K		
700	1K	1K	1K	
		150		300
	10		10	7
IND	AUS	NO	PH	SA



Tiered Preparedness - Descriptive Criteria

BR	1	On site personnel; Regional CDA may support
	2	Support by Regional Oil Spill Response Center & Logistic Center in São Paulo
	3	National and/or international aid: other CDAs, CCC, Briggs bases (by contracts) and OSRL
NZ	1	Industry
	2	Regional Councils and Unitary Authorities
	3	Maritime NZ and International Partners
UAE	1	by On-Site Resources
	2	Requires Mutual Aid Assistance
	3	Requires National or International
UK	1	Within capability of one local authority, harbour authority or EHS)
	2	Regional (beyond the capability of one local authority or EHS)
	3	National (requires national resources)



Tiered Preparedness - U.S. Descriptive Criteria for monitoring efficiency of dispersant application

U.S.	1	Aerial observations using photographic aids or advanced remote sensing instruments and reporting back to Unified Command
	2	Real-time data from the treated slick (1) Continuous sampling by fluorometer 1 m under dispersant treated slick (2) Fluorometer data conveyed to Scientific Support Team, which forwards it with recommendations, to Unified Command (3) Water samples are also taken for later analysis at a laboratory
	3	Expands monitoring efforts in several ways and provides information on where the dispersed oil goes and what happens to it. (1) Two fluorometers on same vessel monitor at two water depths (2) Monitoring conducted in center of treated slick at several water depths, from one to ten meters; and (3) Portable water laboratory provides data on water temperature, pH, conductivity, dissolved oxygen, and turbidity



U.K. MCA

ITEM	DESCRIPTION
ETV	4 X 125 BOLLARD PULL X 800 HP BOW THRUSTER AND STERN THRUSTER
OSD SPRAY A/C	LOCKHEED ELECTRA X 2 – 15 TONS PALLETISED CESSNA C 406 X 1 (+ 2) – 1.5 TONS EXTERNAL
BOOM	8180 M
SKIMMERS	3 NOS.
OSD	2 X SHIP SETS 4 X 500L TRAILER
STORAGE BARGE	2 X 150 TONS
TRANSFER PUMP	8 X 500 M ³ /H 8 X 190 M ³ /H
LP FENDERS	16M X 3.75M
INERT GAS GENERATOR	ONE



RoK KNMPA

ITEM	DESCRIPTION
ORV	23
BOOM	3,000 M
SKIMMERS	84 NOS.
STORAGE BARGE	6 X 500 GROSS TON
RESPONDERS	220
RECOVERY CAPABILITY	10,000 LITERS
	5,000 LITERS KMPRC
	5,000 LITERS PRIVATE COMPANIES



AMSA

ITEM	DESCRIPTION
ORV	8
BOOM	24,900 M
SWEEP SYSTEMS	6 SETS
SKIMMERS	55 NOS.
TOWABLE DEVICES	26 NOS, 537 METRIC TONNES
TEMP STORAGE DEVICES	47 NOS, 180 KL
OSD APPLICATORS	13 HELISPRAY BUCKETS
	45 BOAT SPRAY SYSTEMS
	22 DISPERSANT TRANSFER PUMPS
	395 KL DISPERSANT
OSD SPRAY A/C	6 AT 502 (1850 L) ... AT 802 (3000 L)



Norway: Govt. Equipment

Organisation	Inventory
Norwegian Coastal Administration	<p>27 Oil Spill Response Depots along coastline (16 main & 11 smaller ones)</p> <ul style="list-style-type: none">• 9,000 m lightweight booms• 22,000 m medium-weight booms• 12,000 m heavy booms• 130 oil recovery units• 9 emergency off-loading units for bunker oil• 4 emergency off-loading units for cargo oil• 4 specialized oil recovery vessels with boom & skimmer• 10 small dedicated counter pollution vessels

Source: http://www.kystverket.no/en/EN_Preparedness-against-acute-pollution/Protection-against-acute-pollution/Recources/



Norway: Municipal Equipment

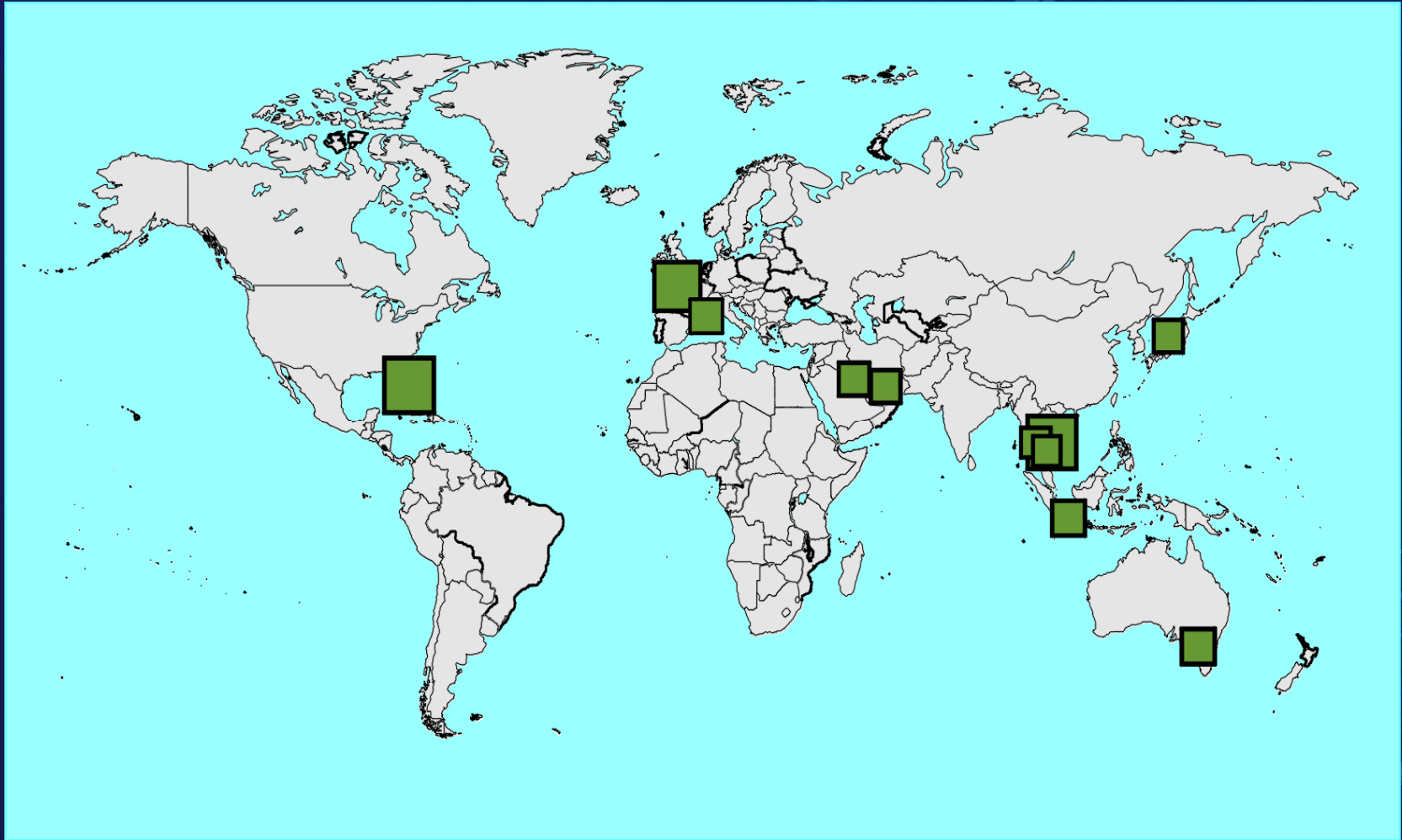
Organisation	Inventory
Municipal and inter-municipal depots	<ul style="list-style-type: none">• 70,000 meters of lightweight booms• 300 oil skimmers
Norwegian Coast Guard	9 vessels with booms and skimmers

Source: http://www.kystverket.no/en/EN_Preparedness-against-acute-pollution/Protection-against-acute-pollution/Recources/



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Oil Industry Tier 3 Resources





U.S. OSRO Classification

Near-shore

	M	W1	W2	W3
BOOM (1,000 FEET)	8	30	30	30
EDRC (100 BBL/DAY)	12	125	250	500
TSC (100 BBL)	24	250	500	1000



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OIL SPILL RESPONSE EQUIPMENT STATUS

The attached audit equipment report is to be used for guidance purposes only solely on this report. As with any other report, results are dependent on the quality of the data used to create the report.

EQUIPMENT DESCRIPTION		Total
Dispersant Application		
	Neat-sweep dispersant boom system	3
	Boat Spray Sets	18
	Fluorometer	7
Aircraft Systems		
	Adds Pack Dispersant Spray	3
	Nimbus Dispersant System	1
Inshore Boom		
	(m)	15,940
	(ft)	52,283
Offshore Boom		
	(m)	5,900
	(ft)	19,352
Active Boom		
		9
Fire Boom		
	(m)	600
	(ft)	1,968
Inshore Storage		
	(m ³)	817
	(US Gall)	215,827
Offshore Storage		
	(m ³)	1,675
	(US Gall)	442,485



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Recovery Devices		
	Recovery - Combi	3
	Recovery - Mechanical	13
	Recovery - Oleophilic	61
	Recovery - Vacuum	25
	Recovery - Weir	16
Power Pack		
	1 to 50 Kw	34
	50Kw Plus	21
Dispersant - SLA		
	Corexit 9500 (m3)	78
	Corexit 9527 (m3)	74
	Finasol OSR52 (m3)	62
	Slickgone EW (m3)	29
	Slickgone LTSW (m3)	28
	Slickgone NS (m3)	423
	Total Dispersant - SLA (m3)	695



■ PAJ OSR Equipment Stockpiles (as of Apr 2012)

Main Equipment			Japan	Overseas	Total
Boom	Solid	Large Size Emergency Use	20,000m 1,200m		20,000m 1,200m
	Inflatable		9,806m	5,500m	15,306m
Skimmer		No. of Unit Capacity(kl/h)	73 4,553	20 1,615	93 6,168
Beach Cleaner		No. of Unit Capacity(kl/h)	38 456	10 156	48 612
Recovered Oil Storage	Oil Bag, Barge	No. of Unit Capacity(ton)	27 1,950		27 1,950
Portable Tank		No. of Unit Capacity(ton)	222 1,584	40 360	262 1,944



NOFO

Item	Description	Remarks
Boom	20,000 m	Deployed as 19 Offshore Spill Response Systems (each comprising 2 vessels, 400 m boom and a large skimmer)
Skimmer	50 no.	

Source: http://www.kystverket.no/en/EN_Preparedness-against-acute-pollution/Protection-against-acute-pollution/Recources/



MSRC

REGION	SKIMMER	BOOM	STORAGE	DISPERSANT
Atlantic	51	80,057	280650	21615
Atlantic - Inland	4	240	1600	NIL
Gulf	81	20,2821	397540	41329
California	88	19,8445	115953	26,955
Pacific/Northwest	77	19,6913	203363	14790



NRC

STATE	SKIMMER	BOOM	STORAGE
Alabama	4	3300	1
Aruba	5	6600	11
California	40	117400	36
Delaware	nil	10100	1
Florida	17	16200	13
Georgia	1	4100	1
Hawaii	5	44400	2
Illinois	2	5000	4
Kentucky	1	6100	1
Louisiana	13	9500	3
Maine	7	6900	4
Maryland	2	nil	
Massachusetts	6	12600	5
Michigan	2	9000	3
Mississippi	2	4000	
Missouri	2	7100	1
New Hampshire	1	1000	4



NRC

STATE	SKIMMER	BOOM	STORAGE
New Jersey	9	13100	5
New York	9	15750	12
North Carolina	1	4000	
North Dakota	2	1000	8
Ohio	4	nil	
Oregon	16	25475	2
Pennsylvania	4	8400	
Puerto Rico	8	23800	5
Rhode Island	4	8100	6
South Carolina	4	6100	
Texas	15	26900	9
St. Croix	21	29700	4
St. Lucia	4	200	4
St. Thomas	1	200	4
Virginia	3	1100	1
Washington	33	70870	25
Wisconsin	2	11000	2



OSRL

EQUIPMENT	SOUTHMPTON	SINGAPORE
INSHORE BOOM	<ul style="list-style-type: none"> Sea sentinel 10 mtr boom- 104 Sea sentinel 20 mtr boom- 177 Shore guardian 10 mtR boom- 52 Shore guardian 20 mtR boom- 90 Troil Boom GP 750 (20 mtr)- 8 	<ul style="list-style-type: none"> Sea sentinel 10 mtr boom- 51 Sea sentinel 20 mtr boom- 89 Sea sentinel 200 mtr boom-4 Shore guardian 10 mtR boom- 49 Shore guardian 20 mtR boom- 36 Troil Boom GP 110 (25 mtr)- 22 Supermax-Rigid boom in 25 mtr sections-26 Sea Curtain-Foam filled in 50 mtr sections-14
OFFSHORE BOOM	<ul style="list-style-type: none"> RO boom 200 mtr-9 High Sprint Rapid boom 300 mtr-1 	<ul style="list-style-type: none"> RO boom 200 mtr-8 High Sprint Rapid boom 300 mtr-2
SKIMMER	<ul style="list-style-type: none"> Diesel driven rope mop 6 tph-2 Diesel driven rope mop 3-5 tph-4 Diesel driven rope mop 12 tph-2 	<ul style="list-style-type: none"> Diesel driven rope mop 18 tph-1 Diesel driven rope mop 3-5 tph-3
INSHORE STORAGE	<ul style="list-style-type: none"> Fastank (cap 2400 US Gallons)-47 Fastank (cap 600 US Gallons)-4 	<ul style="list-style-type: none"> Ro tank (cap 2600 US Gallons)-6 Fastank (cap 2400 US Gallons)-23
OFFSHORE STORAGE	<ul style="list-style-type: none"> Storage Barge-25 m³-4 Storage Barge-50 m³-6 	<ul style="list-style-type: none"> Storage Barge-25 m³- 5 Storage Barge-50 m³-2 Unitor oil bag (200 m³)-1 Unitor oil bag (100 m³)-3 Waste containment tank 2600 US Gallons- 10



Australia: First-Strike Equipment

Item	Townsville Port	Lucinda
Structure-flex General Purpose Boom	300 m	300 m
Structure flex land sea boom	60 m	60 m
Weir skimmer	1	1
Flexi-dam recovered oil container (10m ³)	2	2
Anchor kit	1	1
Sorbent Boom	120 m	120 m
Sorbent pads	500	500
Sorbent mops	150	150



U.S.: Massachusetts

Boom Inventory

Region	Type of Owner-ship	Calm Water Boom (up to 18")	Protected Water Boom (19-36")	Open Water Boom (>36")	Shore Seal Boom	TOTAL LENGTH OF BOOM IN FEET				
North Shore	State	17,500	0	0	0					
	Federal	0	0	0	0					
	Contractor	0	0	0	0					
	TOTAL	17,500	0	0	0	0				
Boston Harbor	State	8,000	0	0	0					
	Federal	0	0	0	0					
	Contractor	0	4,980	4,200	0					
	Co-operative	11,850	6,000	0	0					
	TOTAL	19,850	10,980	4,200	0	0				
South Shore	State	6,000	0	0	0					
	Federal	0	0	0	0					
	Contractor	3,300	1,500	0	0					
	TOTAL	9,300	1,500	0	0	0				
South Coastal	State	14,000	0	0	0					
	Federal	0	0	0	0					
	Contractor	1,000	0	0	0					
	TOTAL	15,000	0	0	0	0				
Cape & Islands	State	24,700	0	0	0					
	Federal	0	0	7,624	0					
	Contractor	2,000	0	0	0					
	TOTAL	26,700	0	7,624	0	0				
Inland	State	1,000	0	0	0					
	Federal	0	0	0	0					
	Contractor	6,800	1,500	0	0					
	TOTAL	7,800	1,500	0	0	0				
TOTAL FOR ALL REGIONS		96,150	13,980	11,824	0					



U.S.: Massachusetts

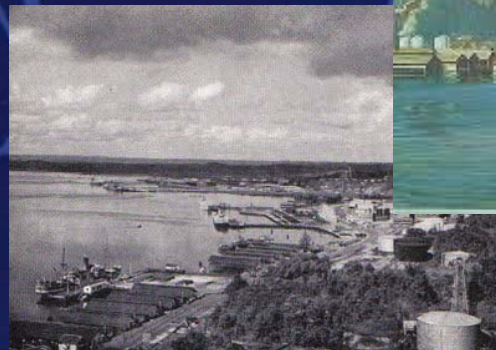
Skimmer and Temporary Storage

Region	Type of Owner-ship	Skimmers	Skimming systems – skim & store	Temporary Storage Devices
		(# of units)	(# of units)	(est. total storage capacity in gal)
North Shore	State/Federal	0	0	0
	Contractor	0	0	0
	TOTAL	0	0	0
Boston Harbor	State/Federal	0	0	0
	Contractor	9	31	8,900,000
	TOTAL	9	31	8,900,000
South Shore	State/Federal	0	0	0
	Contractor	5	2	48,500
	TOTAL	5	2	48,500
South Coastal	State/Federal	0	0	0
	Contractor	0	0	0
	TOTAL	0	0	0
Cape & Islands	State/Federal	0	0	0
	Contractor	0	1	3,000
	TOTAL	0	1	3,000
Inland	State/Federal	0	0	0
	Contractor	0	6	4,400
	TOTAL	0	6	4,400
TOTAL FOR ALL REGIONS		14	40	8,955,900



Balikpapan, Indonesia

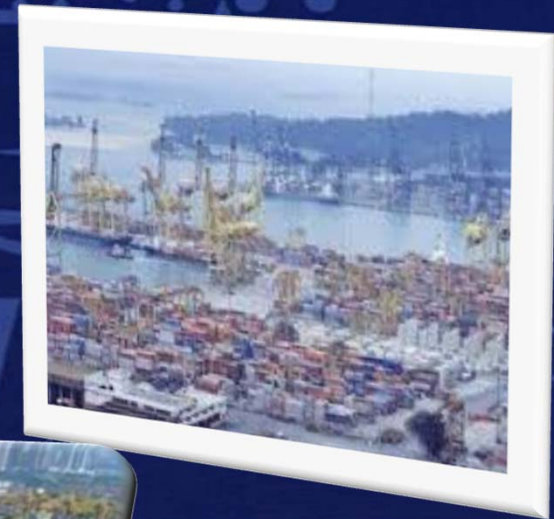
- Oil boom 1,750 m
- Oil skimmer 2 sets
- Oil storage tank 4 sets
- Oil dispersant spray system 5 sets





Singapore

- Oil dispersant spray system 26 sets
- Oil vacuum pump 1 set





Hong Kong

- 3 purpose built multi-function PR vessels
- 6 back-up supporting vessels
- Oil boom 2,300 m
- Oil skimmer 3 sets
- Oil dispersant 50,000 liters
- Absorbent
- Other ancillary equipment





Rotterdam

- Commercial company HEBO contracted to respond to all incidents in port area
- Company operates oil recovery craft and quantities of containment boom within port area
- No stock of own OSD; would seek assistance from UK





U.S.

Planning standards for dispersants

- (2) The plan holder must identify the locations of dispersant stockpiles, and dispersant type, capable of dispersing the lesser of **five percent** of the worst case spill volume or **12,000 barrels per day**, using a dispersant to oil ratio of one to twenty.
- (3) The plan holder must describe the methods of transporting equipment and supplies to a staging area, and appropriate aircraft or vessels to apply the dispersant and monitor its effectiveness.
- (4) The plan holder must describe operational support capability, including the **platforms** and **spotters** used to deploy dispersants, monitor the operational efficacy of the dispersant application to support operational decision making, and ensure safety of response personnel.
- (5) These resources must be capable of being **on-scene within 12 hours** of spill notification

Reference: WAC 173-182-325



WAC 173-182-330

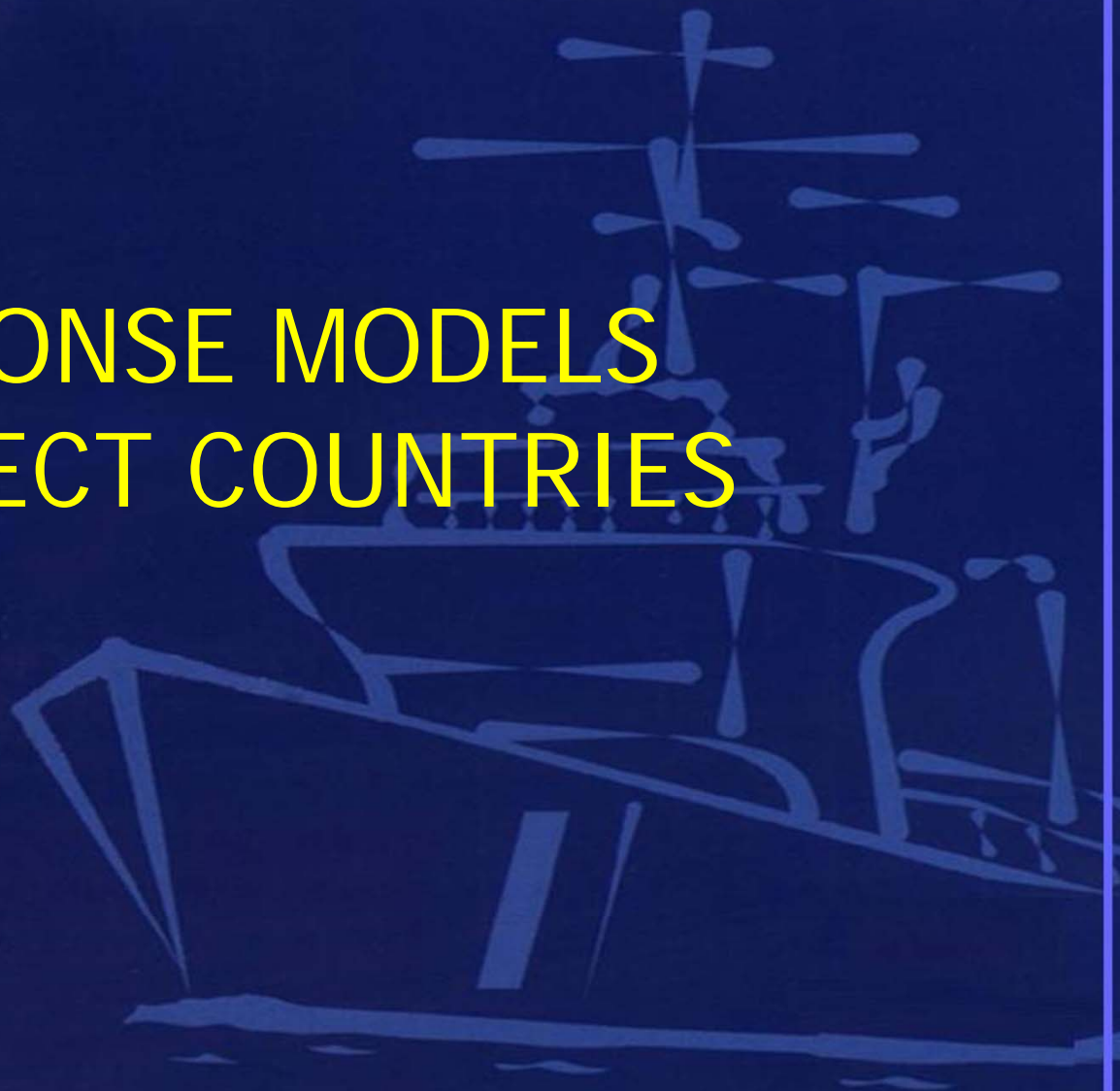
Planning standards for in situ burning

- (1) Based on the NWACP, plan holders operating in areas where in situ burning has an expedited approval process must plan for the use of in situ burning.
- (2) The plan holder must identify the locations of two fire booms, air monitoring equipment, igniters and aircraft or vessels to be used to deploy the igniters.
- (3) The fire booms must be five hundred feet in length each and have an additional one thousand feet of conventional boom, tow bridles and work boats capable of towing the boom for burning operations.
- (4) The plan holder must describe the methods of transporting the equipment to a staging area, and appropriate aircraft or vessels to monitor its effectiveness at the scene of an oil discharge.
- (5) These resources must be capable of being on-scene within twelve hours of spill notification.



INDIAN COAST GUARD

RESPONSE MODELS IN SELECT COUNTRIES





AUSTRALIA

- **AMOSC** FINANCED BY PARTICIPATING OIL COMPANIES AND OTHER SUBSCRIBER OIL COMPANIES
- **AMSA** PURCHASES EQUIPMENT UNDER NATIONAL PLAN FUNDS
- MASTER SERVICE CONTRACT BETWEEN **AMSA** AND **AMOSC** FOR RESOURCES



JAPAN

- **PAJ** Trade association of 18 oil co.
- **PAJ-OSR** Stores and lends PR eqpt free of charge; maintains 6 centers in Japan and 5 overseas
- Subsidy by **METI**



REPUBLIC OF KOREA

- National response capability 20,000 tons
- Clear division of responsibility under law of marine pollution prevention 1997
- 10,000 tons government - KNMPA
- 5,000 tons –KMPRC an association of 97 member companies
- 5,000 tons individual private companies



UNITED KINGDOM

- MCA responsible for pollution response and salvage
- Contractor responsible for clean-up
- Minimum essential resources with MCA for **first response**
- 100,000 pounds available with MCA for urgent needs



UNITED STATES

- **OPA 90** Pre-contractual arrangement
- **NRT** Planning, policy and coordination
USCG vice chairman
13 regional response teams
No direct response
- **USCG** 3 strike teams as backup
- **OSRO** 130 (MSRC, CCC, NRC)
- **OSLTF** US\$ 1 billion
US\$ 25,000 to OSC for contingencies



Categorization : Ports

Category	Description
A	Port handling crude oil/tanker visits /SPM/STS
B	Ports which handle products only OR Ports which handle ships carrying > 1000 tons of fuel/bunker oil
C	Other than Cat 'A' and Cat 'B'



Stockpiles - Category A Ports

PR Equipment	Manpower	Other Vessels
Boom- 2000 Mtrs	IMO Level I -10	Work boats – 02
Skimmer – 04 (20TPH)	IMO Level II -04	Tugs - 02
OSD Applicator – 06 Nos	IMO Level III- 01	
OSD – 10,000 Ltrs	Other – 10	
Flex Barge – 04 (10 Tons)		
Current Buster booms at ports where tidal current is >2 Kn-02 Nos		
Sorbent boom pack-500 Mtrs		
Sorbent pads-2000 Nos 200 Kgs		
Shore cleanup equipment-		
Mini Vacuum pumps/OSD applicator/Fast tanks-05		



Stockpiles - Category B Ports

PR Equipment	Manpower	Other Vessels
Boom- 1000 Mtrs	IMO Level I -06	Work boats – 01
Skimmer – 04 (20TPH)	IMO Level II -02	Tugs - 01
OSD Applicator – 02 Nos		
OSD – 5,000 Ltrs	Others - 10	
Flex Barge – 02 (10 Tons)		
Sorbent boom pack-200 Mtrs		
Sorbent pads-1000 Nos 200 Kgs		
Current buster booms at ports where tidal current is >4Kn – 02 Nos.		



Stockpiles - Category C Ports

PR Equipment	Manpower	Other Vessels
Boom- 600 Mtrs	IMO Level- I -02	Work boats – 01
Skimmer – 02 (20TPH)	Other – 10	
OSD Applicator – 02 Nos		
OSD – 3,000 Ltrs		
Flex Barge – 02 (10 Tons)		



Categorization : Oil Agencies

Category	Description
Super A	Agencies operating more than five offshore platforms in an area
A	Offshore E&P Installation for crude oil, SPMs handling crude oil, FPSO, platform involved in crude oil transfer
B	Vessel/platform involved in drilling operation
C	Only gas based E&P Ops/LPG/LNG/Naptha



Stockpiles - super category 'A'

PR Equipment	Qty	Manpower	Response time
Boom	2000 m	IMO Level I –10	30 min for well/ pipeline leaks
Skimmer (20TPH)	04	IMO Level II –04	60 min for other oil spill incidents
OSD Applicator	06	IMO Level III –01	
OSD	10,000 L	Other – 10	
Flex Barge (10 T)	04		
Current Buster booms (tidal current >2 Kn)	02		
Sorbent boom pack	500 m		
Sorbent pads	2000/ 200 Kgs		
Shoreline cleanup eqpt	05 sets		
Workboats	02		
MSV/ OSV/ Tugs	02		



Stockpiles - category 'A'

PR Equipment	Qty	Manpower	Response time
Boom	1000 m	IMO Level I-06	30 min for well/ pipeline leaks
Skimmer (20TPH)	04	IMO Level II-02	60 min for other oil spill incidents
OSD Applicator	02	Other – 10	
OSD	5,000 L		
Flex Barge (10 T)	02		
Sorbent boom pack	200 m		
Sorbent pads	1,000		
Current Buster booms where current is >4 Kn	02		
Workboat	01		
MSV/ OSV/ Tug	01		



Stockpiles - category 'B'

PR Equipment	Qty	Manpower	Response time
Boom	600 m	IMO Level I-02	Not exceeding 2 hrs
Skimmer (20TPH)	02	Other – 05	
OSD Applicator	02		
OSD	3,000 L		
Flex Barge (10 Tons)	02		
MSV/ OSV/ Tugs	01		



Stockpiles - category 'C'

PR Equipment	Qty	Manpower	Response time
Boom	600 m	IMO Level I-02	Not exceeding 2h
Skimmer (20TPH)	02	Other – 05	
OSD Applicator	02		
OSD	3,000 L		
Flex Barge (10 T)	02		
Workboat	01		



ONGOING INITIATIVES

- Oil spill response modeling
- Review of National Plan
- No OSD use areas



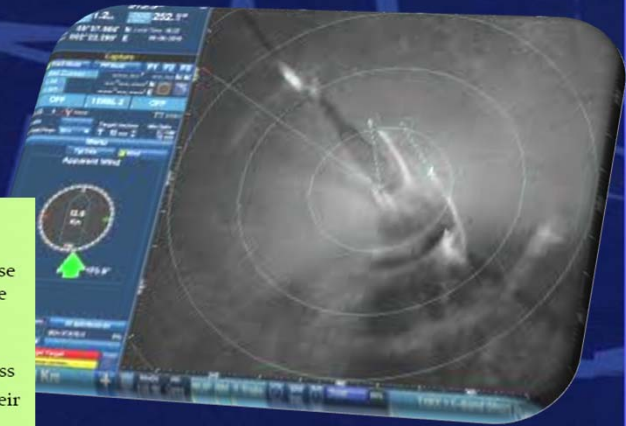


ONGOING INITIATIVES

- OPRC amendments
- OSRO concept
- RADAR spill detection
- Oil finger printing

SZH MSA Notice 38 of 2010

- Seems to provide for the ability to contract with those companies seeking approval in Shenzhen during the evaluation period
- All 23 companies mentioned in the notice have oil sludge collection and tank cleaning as a core business
- Most P&I clubs have distributed notices advising their clients to not contract with these companies
- In the event of a pollution incident it is unclear if the Shenzhen MSA will ask why the shipowner did not contract with a company in light of the notice.



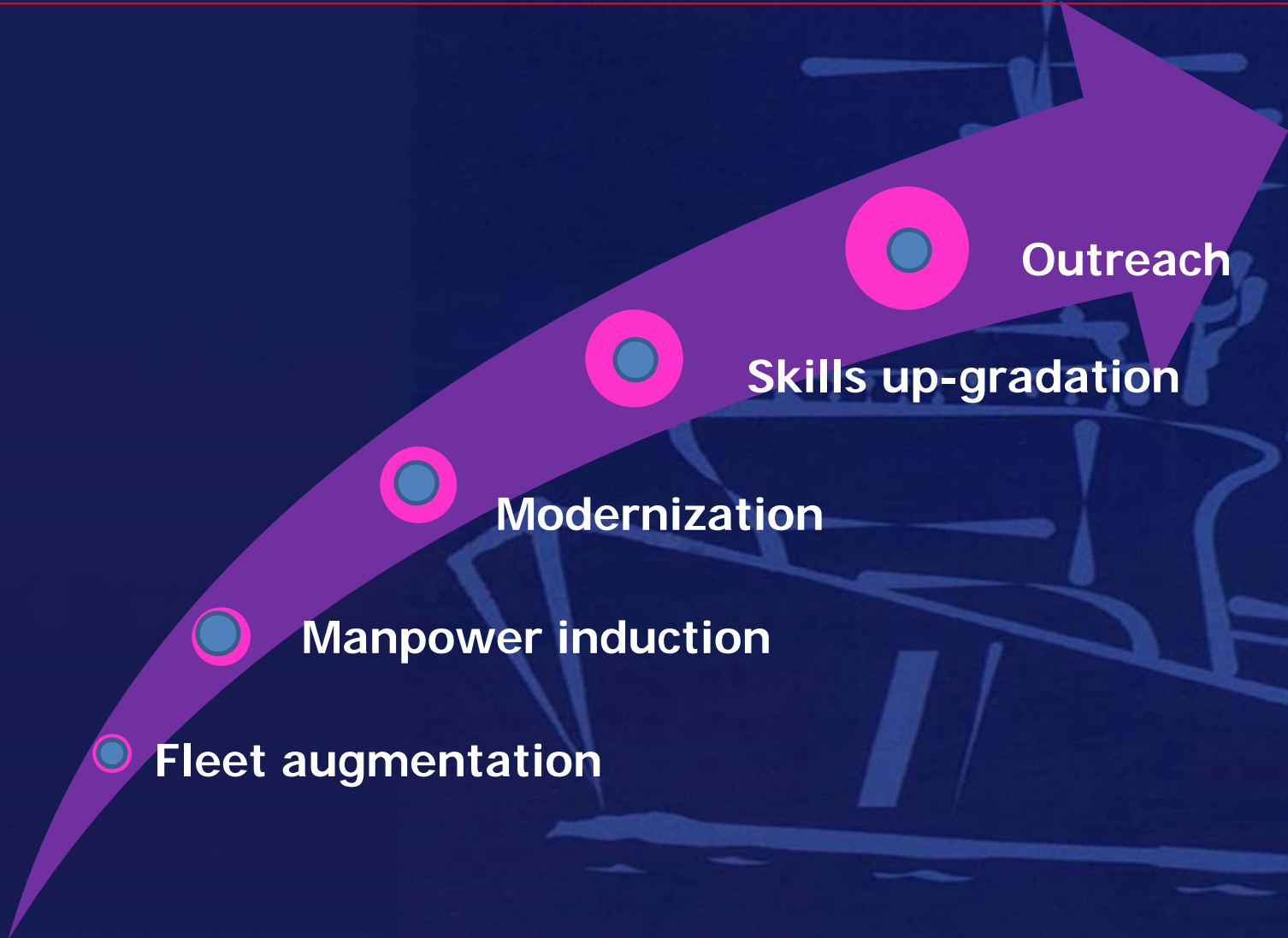


OSRO Perspectives

- Enabling legislation
- Private enterprise
- Methodology for raising capital costs
- Sustainability of venture
- Facilitative measures by government
- Certification and periodical verification
- Possible role models?



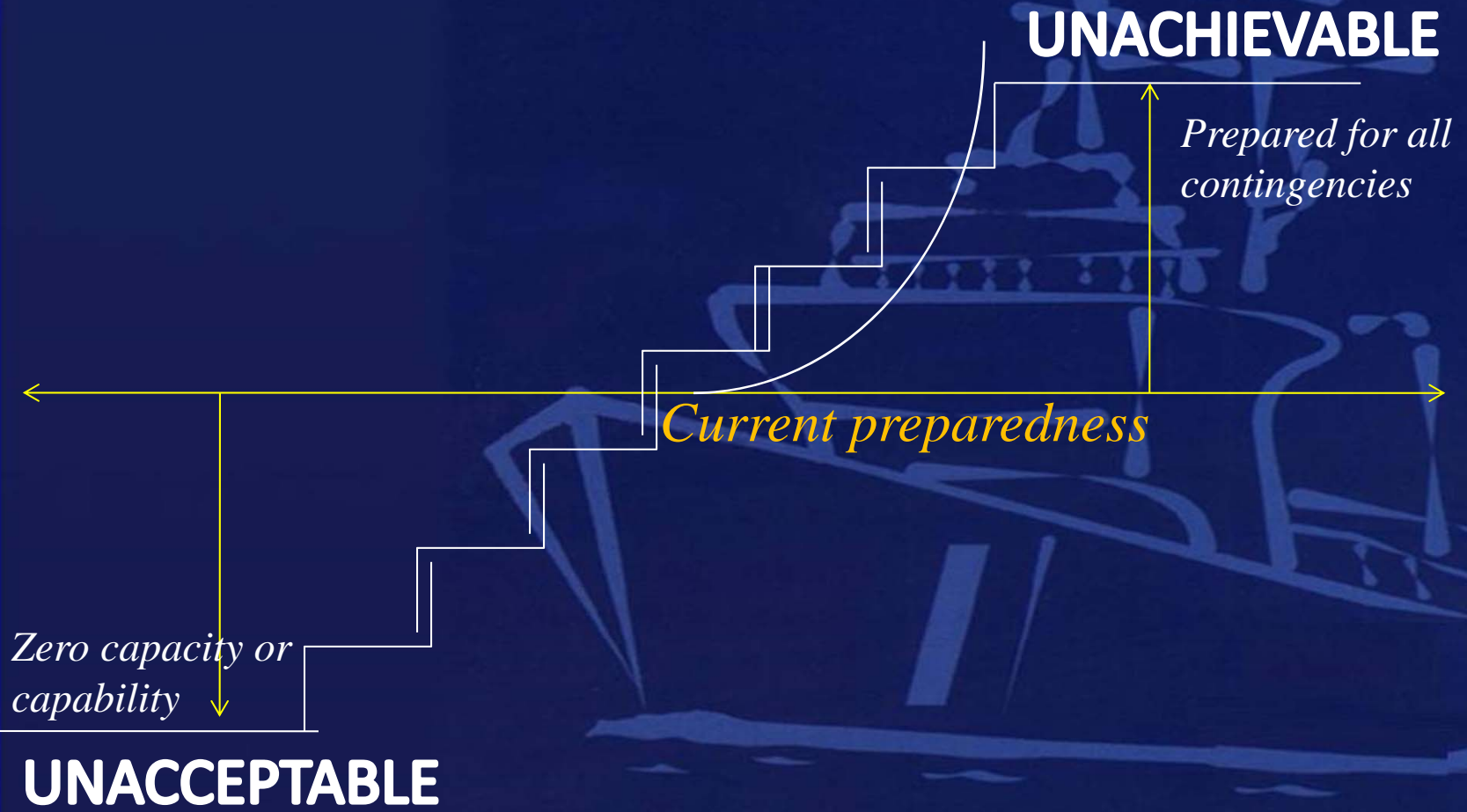
WAY AHEAD





INDIAN COAST GUARD

CAVEAT





THANK YOU
JAI HIND...