



Italian Ministry of Environment, Land and Sea Protection
"SAFEMED III Seminar on EMSA's pollution response services"

Lisbon, 13-14 May 2014

"Recent pollution response incident"



ITALIAN COAST GUARD

C. V. (CP) Rodolfo GIOVANNINI



Summary

- THE ITALIAN RESPONSE SYSTEM: LEGAL FRAMEWORK , CONTINGENCY PLANS, RESPONSABILITIES AND THE MoE RESPONSE FLEET
- PREVENTION AND CONTROL TOOLS
- RECENT POLLUTION RESPONSE INCIDENT
 - Off Shore oil platform (Tier 1)
 - Porto Torres and Tanker Emerald (Tier 2)
 - Costa Concordia (Tier 3)



MARINE POLLUTION LEGAL FRAMEWORK

INTERNATIONAL

- **MONTEGO BAY**, 10 December 1982
United Nations Convention on the Law of the Sea
- **OPRC 90**, 30 November 1990
Convention on Oil Pollution Preparedness, Response and Co-operation

REGIONAL

- **BARCELONA**, 16 February 1976
Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean
- **EMERGENCY PROTOCOL**, 16 February 1976
Protocol concerning Co-operation in Combating Pollution of the Mediterranean Sea by Oil and other Harmful Substances in Cases of Emergency

NATIONAL

- **LAW 979/1982**, 31 December 1982
Provisions for the sea protection

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TIERED RESPONSE SYSTEM

- **Tier 1:** occurs in the presence of pollution that affects only the port waters, or has mild or low environmental impact. Such spills can be addressed with appropriate local response resources, directly by the Head of the local Maritime Department, based on the Local Contingency Plan.
- **Tier 2:** occurs in the presence of a pollution that represents a serious threat to the coast and the environment. The strategic management is in charge of the Ministry of Environment while the operational direction is entrusted to the Head of the local Maritime Department . He can declares the local emergency;
- **Tier 3:** occurs in the presence of a major marine pollution, due to its size and / or the possible involvement of areas of high intrinsic value. The declaration of a «national emergency» made by the Presidency of the Council of Ministers determines the management of the situation by his Department of Civil Protection ;

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CONTINGENCY PLANS AND THE TIERED MANAGEMENT

- Coast Guard Local Contingency Plan (regularly updated) Tier 1 situations
- Ministry of Environment Contingency Plan (last Update Feb. 2013) Tier 2 situations
- Civil Protection Department Contingency Plan (last update Nov. 2010) Tier 3 situations

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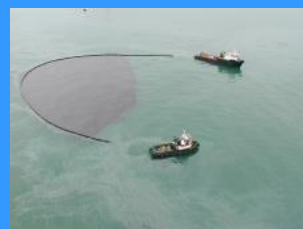


ADMINISTRATIVE RESPONSABILITIES

The Ministry for the Environment land and sea protection, is the political level responsible for the marine pollution response system implementation.

In this matter, the Ministry is the national contact point for the international bodies such as:

I.M.O., Rempec, E.U. Commission and EMSA.

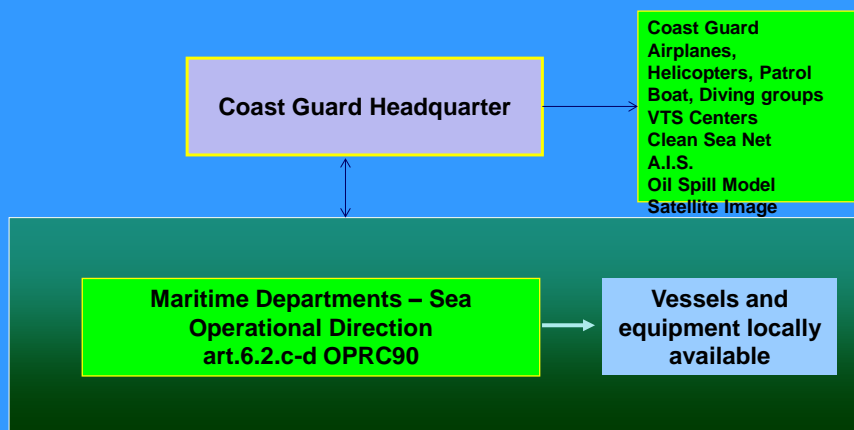


It is also the Administration appointed to sign sub-regional agreement and to give/request assistance from/to other States and to authorize the dispersant utilization and establish the response strategy.



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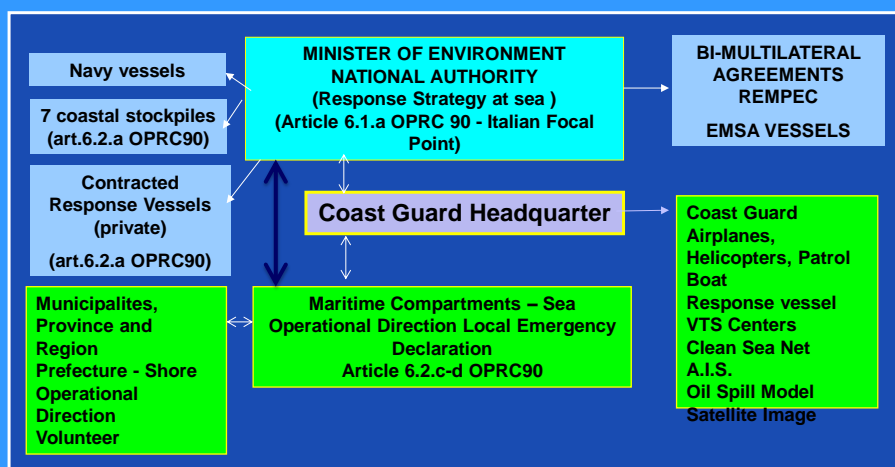
OPERATIONAL RESPONSABILITIES NATIONAL POLLUTION RESPONSE STRUCTURE: TIER 1



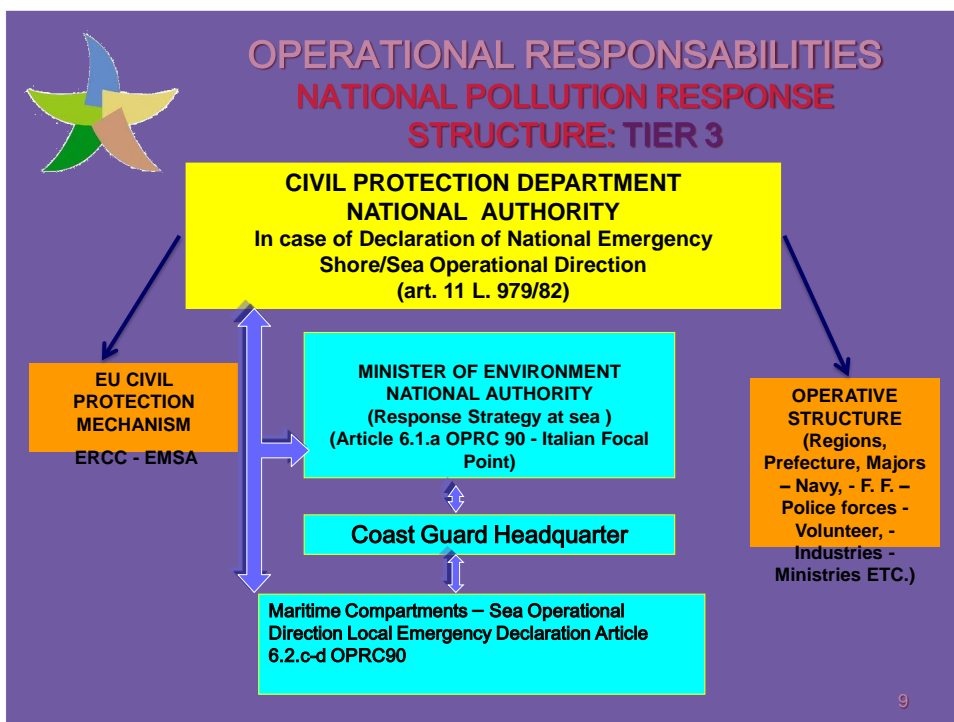
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OPERATIONAL RESPONSABILITIES NATIONAL POLLUTION RESPONSE STRUCTURE: TIER 2



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POLLUTION REPORTING

The Harbour who become aware of the presence of a pollution (actual or potential), provide to inform central and local bodies involved using the message **POLREP** (Pollution Reporting), a report of the most current information relating to a pollution incident, including actions taken and progress made during the response, which contains a permanent component addresses.

Part 1 – POLWARN: Gives information or warning of pollution or threat of pollution (Date and time; position; incident; outflow; acknowledge)

Part 2 – POLINF: Gives detailed supplementary (characteristics of pollution; source and cause of pollution; wind direction and speed; current or tide; sea state and visibility; drift of pollution; forecast; identity of observer and ships on scene; action taken; photographs or samples; names of other states informed; acknowledge)

Part 3 – POLFAC: FACilities Request for assistance (request for assistance; cost; pre-arrangement for the delivery; assistance to where and how; other states requested; change of command; exchange for information; Acknowledge)

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OFFSHORE VESSELS (9)

Bonassola



SEA BOOM: 400 m COASTAL BOOMS: 200 m DISPERSANT: 1000 LT
 SKIMMER: ONE SKIMMER OF 50 MC/h
 RECOIL TANKS: 734 MC (not heated) + 2 discharge pump AT 300 MC/H
 Hoisting: 3 TONS HOISTED AT 5.2 MTS

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"ESCORT ASSETS" Database (First line vessel of opportunity)



Response Vessels, or other ships that could be usefull integrated in a response operation, and equipment of private owners, not contracted by the Ministry of the Environment, are now reported in the Local Contingency Plan, and in a centralized database. In case of emergency, the use of such units must be formally required to the Ministry of Environment and authorized by it under the recognition of the debt.

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PREVENTION AND CONTROL TOOLS

AERIAL PATROL AND SURVEILLANCE

Air assets - three air bases



FIXED WINGS

- ✓ PIAGGIO P-166DL3 S.A.R
- ✓ P180
- ✓ ATR-42 MP

ROTARY WINGS

- ✓ AGUSTA AW139 GC
- ✓ AGUSTA AB 412








ANTIPOLLUTION EQUIPMENT:

- Electro-optical system (E.O.S.T.)
- Multispectral system
- Radar Sensor SLAR
- CASI 1500 (Compact Airborne Spectrographic Imager)
- Sensytech 1268 ATM-E
- SEADARQ- OPV 95 MT (P166 DL3 SAR)

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REMOTE SENSING

It is the collection of qualitative information on the physical processes and the environment, by detecting, recording, measuring and interpreting the images

• Electro-optical System (E.O.S.T.)

- Thermal camera with three interchangeable lenses with different focal length

• Multispectral

DAEDALUS 1268 ATM-E



• Radar SLAR

(Side Looking Airborne Radar)



Other sensors



A.T.V.
Color camera

L.R.T.V.
monochrome
Spotter

I.R.
camera

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PREVENTION AND CONTROL TOOLS

MONITOR, PATROL AND COORDINATION

Ships Assets (600 naval units)

I.C.G. units are located in 112 places around the shoreline.

At this moment the fleet is composed of:

- 2 Multipurpose oceanic vessels
- 4 ships for long patrolling operation and high speed (class 900);
- 31 ships for medium endurance operation (classes 400 and 300);



- 29 fast ships for medium endurance operation (class 200);
- 94 SAR units "every weather condition" (class 800);
- 167 coastal units (classes 2000, 500, 700);
- 272 small units;
- 3 idro-ambulance (class 450)

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New Multipurpose Naval Unit – Task and Mission



- Pollution response (Oil recovery)
- Sea patrolling and aerial surveillance
- Search and rescue
- Operation control centre platform for civil protection emergencies
- Containers and vehicles transportation
- Relief operations
- Fishery controls
- Fire fighting
- Towing of vessels



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5 DIVERS OPERATORS TEAMS

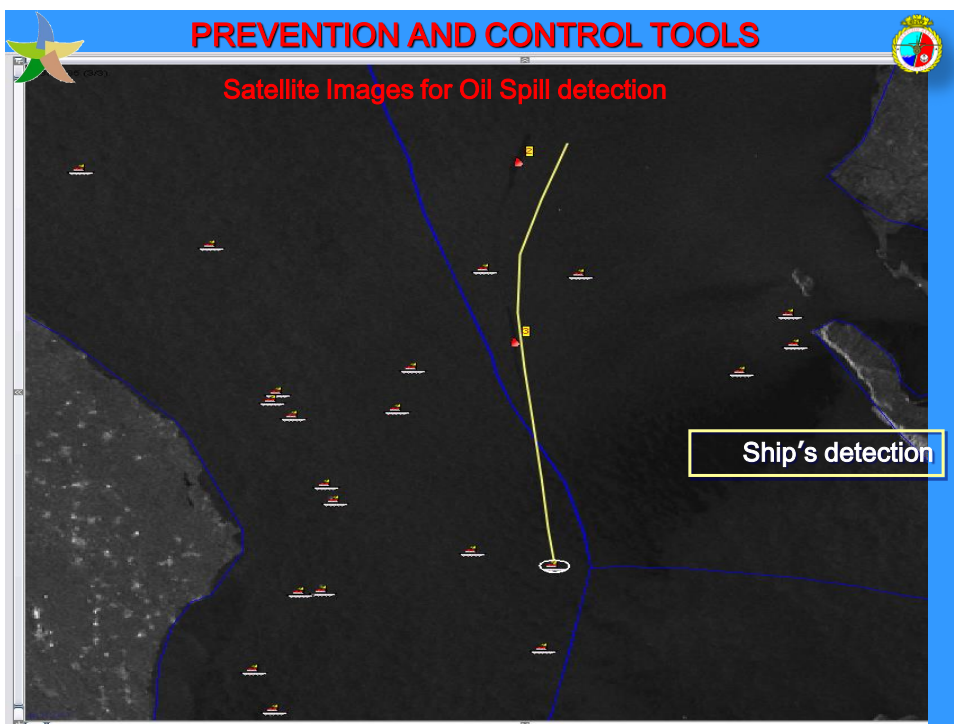
1 ADRIATIC SEA
2 TIRRENIAN SEA
1 SICILY ISLAND
1 SARDINIA ISLAND









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Examples of scenarios dispersion of hydrocarbons at sea

Porto Torres (January 2011)	Costa Concordia (January 2012)	Piattaforma Rospo Mare (January 2013)
Ship Type: Tanker	Ship Type: Passengers	Altezza SLM 6 mt
Name: Emerald	Name: Concordia	Profondità fondale 74 mt Lat
Length: 182 m	Length: 290 m	14°56'21" N
Flag: Malta [MT]	Flag: Italia [IT]	Long 042°11'44"E



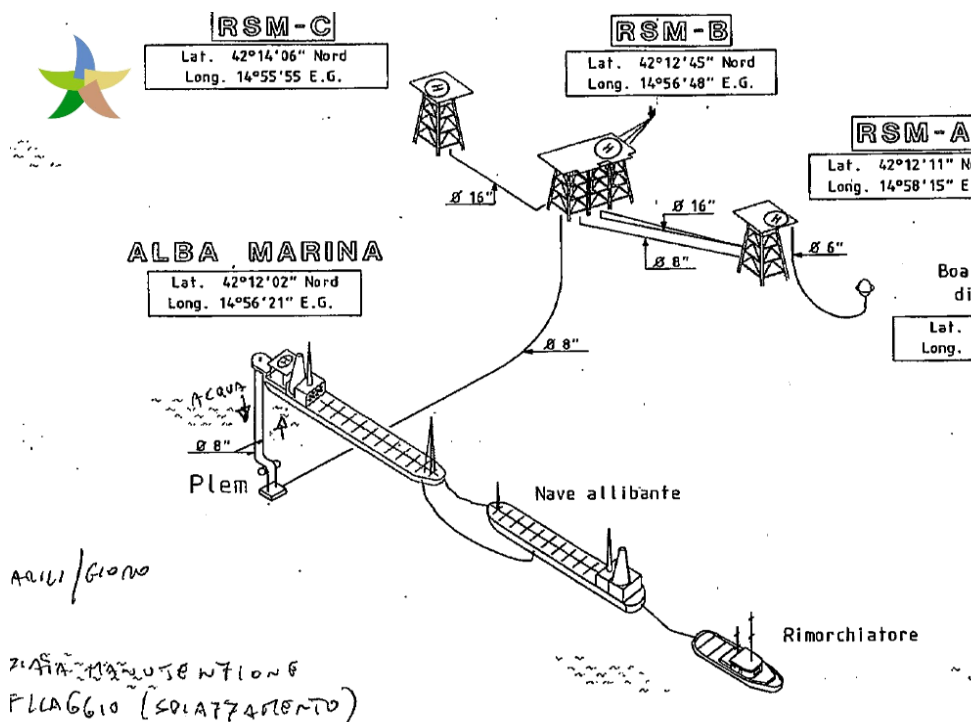
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OIL FIELD «TOAD SEA» FSO PIPELINE ACCIDENT (TIER 1)

- The Field named " Sea Toad", located approximately 12.5 miles NNE of the port of Termoli in the Adriatic sea and approximately 8.5 miles from the nearest coast, consists of 3 platforms, and from a floating storage and offloading tanker named Alba Marina.
- The above-mentioned structures allow the extraction, processing and storage of crude oil through a subsea pipeline system. The control and management of surface installations is managed through a centralized system that allows continuous monitoring over 24 hours.

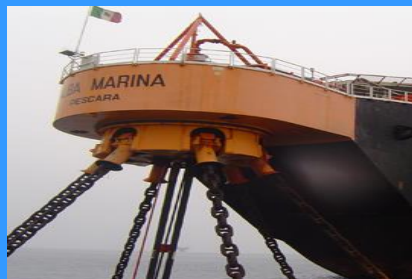




ALBA MARINA INCIDENT

January 22, 2013.

The responsible of the Oil Platform "toad sea", gave warning to the Harbour Master of Termoli of a slick of dense product 60 x 20 meters in the oil field "toad sea" 8 nm off the coast and 24 nm off the marine protected area of "Tremiti archipelgo" - immediate stop of production - 30 minutes later a Coast Guard aircraft has flew over the area. Sampling has been carried out by the harbor master of Termoli. An Industry supply vessel and a MoE response contracted vessel are Intervened on the spot. Coast Guard divers have conducted a survey also with a ROV provided by the industry discovering a failure in the oil riser connecting the platform with the FSO "Alba Marina". Approximately 1 cubic meter of product has spilled.

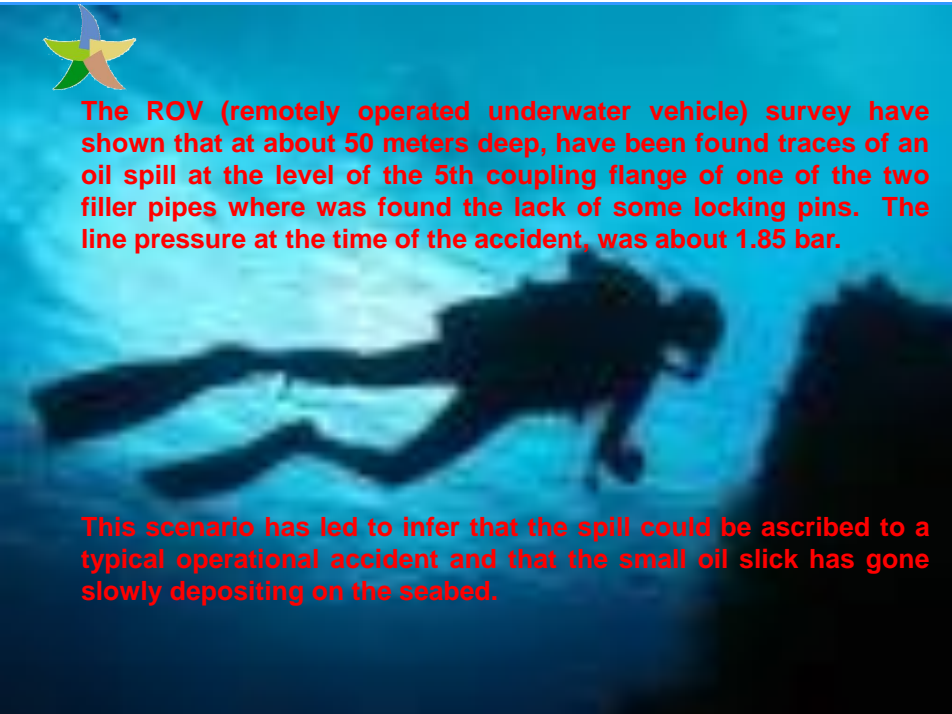




INCIDENTE PIATTAFORMA ROSPO MARE

The S.L.A.R. track recorded by the Coast Guard aircraft Manta, during a first pass on the area during the night, gave the evidence of the presence of a slick that extended from the stern of the FSO Alba Marina along the current for two long stretches about 4 NM.

From a subsequent passage, played about two hours after the previous one, the aircraft reported a strong decrease of the slick while naval units, during the various missions in the area affected by the phenomenon, found no trace of pollutants.

The ROV (remotely operated underwater vehicle) survey have shown that at about 50 meters deep, have been found traces of an oil spill at the level of the 5th coupling flange of one of the two filler pipes where was found the lack of some locking pins. The line pressure at the time of the accident, was about 1.85 bar.

This scenario has led to infer that the spill could be ascribed to a typical operational accident and that the small oil slick has gone slowly depositing on the seabed.





PORTO TORRES JANUARY 2011

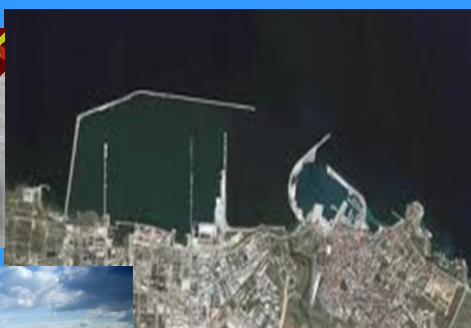
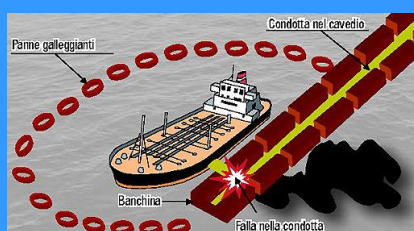
- However, an unknown amount of the product was spilled outside the port.
- Due to the adverse weather and sea conditions, the maritime Authority formally requested the Coast Guard aerial patrolling, satellite images and the involvement of the MoE for the intervention of the contracted response vessel present in the area



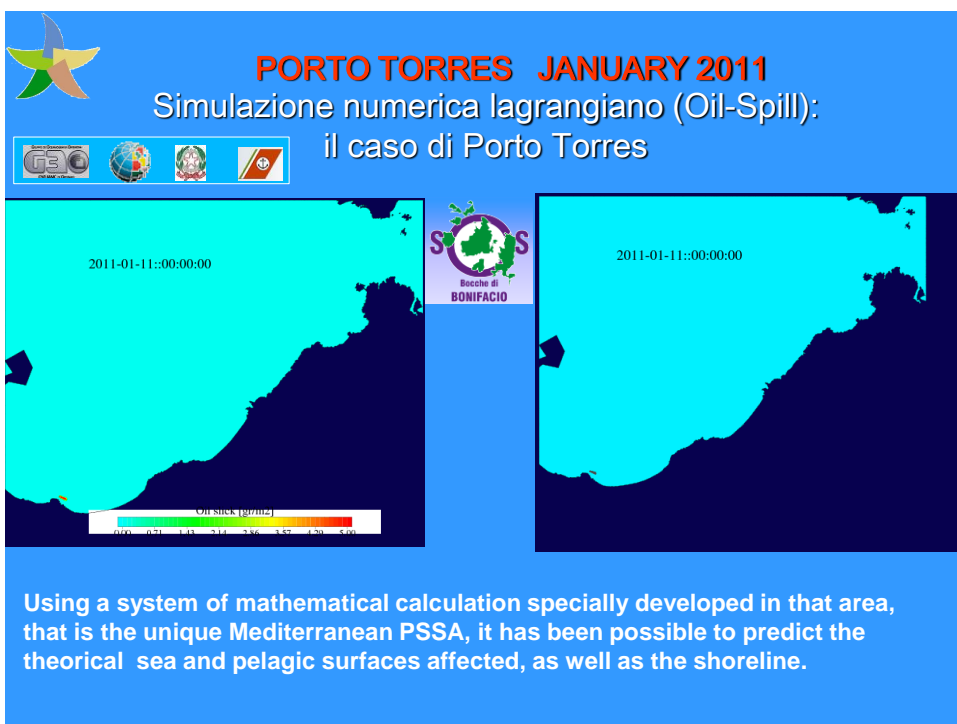
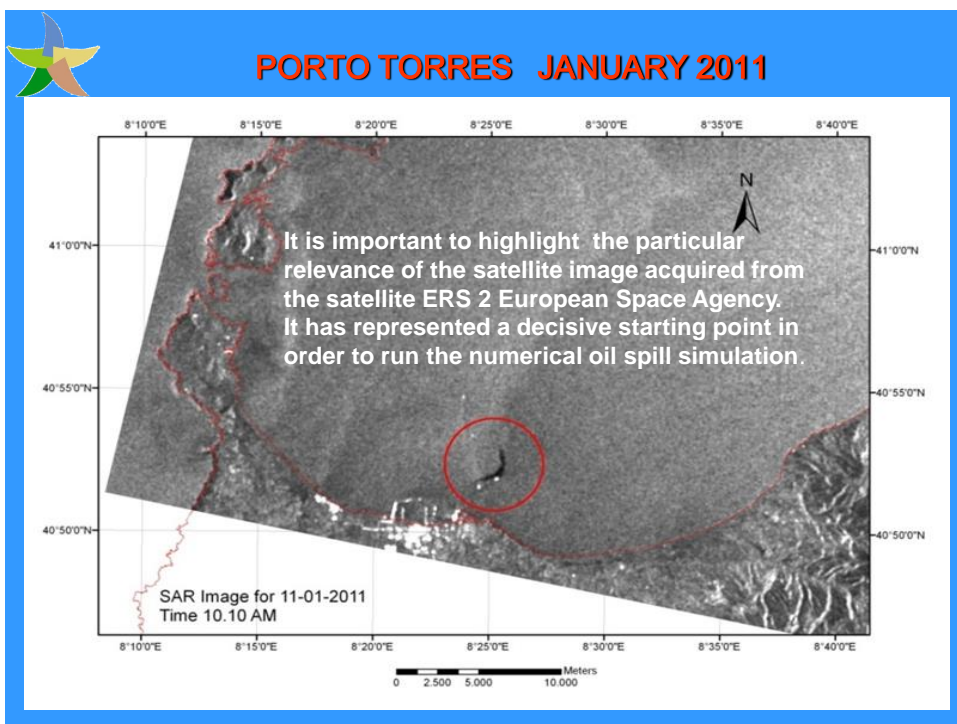
PORTO TORRES JANUARY 2011


Emerald tanker started to download the product: 10:01:11 22:18 hours
and stopped the download: 11:01:11 16:06 hours

Data provided by information report of the Harbour of Porto Torres (SS) and the Coast Guard Headquarter (Rome)




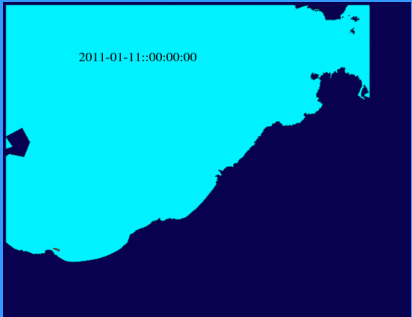
product transported
Heavy fuel oil (BTZ) specific
weight 0.9129
Amount of product transported
27489.873 tons



PORTO TORRES JANUARY 2011

- The oil slick that was spilled into the sea, having a specific gravity of 0.91, has gone adrift following the sea currents and winds presents in the area but, after approximately 24 hours in large part below the sea surface in the form of semi-submerged tars;
- This behaviour explains the difficulty of their perception with remote sensing instruments placed on board the Coast Guard specialized aircraft during his night flight and by the patrolling of the naval units

PORTO TORRES JANUARY 2011

- The water-oil emulsions recovered both from the harbour than at open sea, from the response vessels has been a total amount of about 28.1 m³
- A similar estimation can not be easily made in relation to the material recovered on the shoreline, because it was collected together with sand, seaweed, sea water and other substances and moreover left to the local authorities, coordinated by the Region.
- It is however, reasonable to estimate, on the basis of the amount of material washed up and already recovered, that has been recovered an amount that can be understood around 20 m³ of oil.





SHIP'S DETAILS

DEADWEIGHT: 8900
 GROSS: 114.147
 DRAUGHT: 8.200
 LENGTH OVERALL: 289.590
 BREADTH MOULDED: 35.500



END OF CONSTRUCTION: JUNE 2006

PEOPLE ON BOARD: 4229
 - 3206 PASSENGERS
 - 1023 CREW (76 UPPER-DECK PERSONNEL – 57 ENGINE PERSONNEL AND 890 HOTEL PERSONNEL)

ON BOARD ABOUT 2243 M³ OF OIL

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NATIONAL EMERGENCY

DECLARED BY THE PRIME MINISTER

**TECHNICAL SCIENTIFIC
COMMITTEE**

SUPPORTS THE SPECIAL
COMMISSIONER FOR THE ASSESSMENT
OF ALL TECHNICAL ISSUES

ADVISORY COMMITTEE

SUPPORTS THE SPECIAL COMMISSIONER
FOR THE STRATEGIC DECISIONS

SPECIAL COMMISSIONER

PROJECT SUPERVISORS

**UNIT OF
CRISIS**

THE ACCIDENT AREA HAS BEEN DECLARED AN "ENVIRONMENTAL EMERGENCY AREA", AND THE ITALIAN PRIME MINISTER HAS DESIGNATED AS SPECIAL COMMISSIONER, THE CHIEF OF CIVIL PROTECTION DEPARTMENT, FOR THE COORDINATION OF ALL OPERATIONS CONCERNING THE EMERGENCY (ENVIRONMENTAL, SEARCH AND RESCUE. SHIP REMOVAL OPERATIONS).

AFTERWARDS THE COMMANDER OF LIVORNO HARBOUR MASTER/COAST GUARD, HAS BEEN APPOINTED PROJECT SUPERVISOR FOR ANTIPOLLUTION AND WRECK REMOVAL ACTIVITIES.

PERTINENT EXPERTS BELONGING TO PUBLIC INSTITUTIONS, BOTH NATIONAL AND LOCAL LEVEL, WERE BEEN INVOLVED WITHIN THE TWO COMMITTEES IN SUPPORTING THE SPECIAL COMMISSIONER

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ENVIRONMENTAL ASPECT OF COSTA CONCORDIA EMERGENCY

INSIDE THE COSTA CONCORDIA WRECK WERE PRESENT THE FOLLOWING POTENTIAL POLLUTANTS:

- BUNKER OIL 2.243 M³ (2.040 M³ OF IFO 380 AND 203 M³ OF MARINE DIESEL PLUS UNCERTAIN QUANTITY OF LUBRICATING OIL)
- SEWAGE AND TREATMENT PRODUCT 642 M³ (OF WHICH ONLY 240 M³ WERE RECOVERABLE)
- CHEMICAL PRODUCTS AND OTHER POLLUTANT FOR HOTEL, DECK AND ENGINE PURPOSES COMPLETELY IDENTIFIED IN QUANTITY AND LOCATION
- FLOATING WASTE
- WASTE ON THE SEA BED
- GREENHOUSE GAS

ON THE BASIS OF SPECIFIC ASSESSMENT, DIFFERENT CONTINGENCY PLANS HAVE BEEN DEVELOPED AND ADOPTED TO CARRY OUT THE RECOVERY OF THE MARINE POLLUTANTS

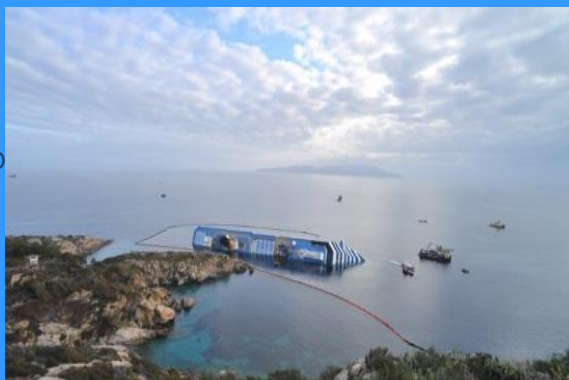
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ANTIPOLLUTION OPERATIONAL PLAN

OCEANIC, COASTAL AND ABSORBENT BOOMS WERE FIXED AROUND THE WRECK TO CONTAIN ANY OIL-POLLUTION

AN OIL-POLLUTION RESPONSE VESSELS FLEET REMAINED CONTINUOUSLY IN THE AREA



UNTIL NOW NO OIL SPILL HAS BEEN REGISTERED UNLESS THE PRESENCE OF IRIDESCENT SLICKS AFTER ADVERSE WEATHER CONDITIONS, PROBABLY DUE TO WASHING OUT OF INSIDE WATER

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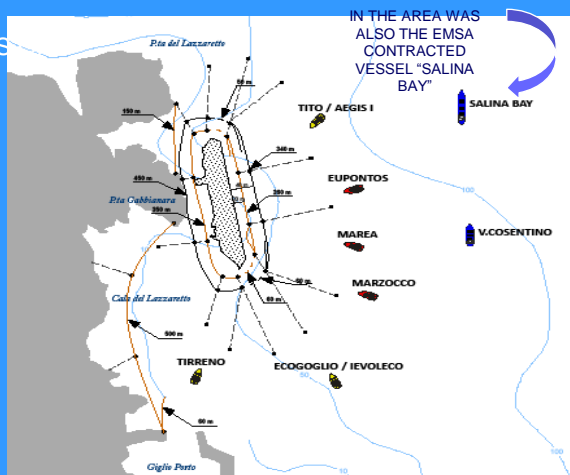


ANTIPOLLUTION OPERATIONAL PLAN

ON JANUARY 14TH LIVORNO COAST GUARD ORDERED TO COSTA CROCIERE COMPANY TO ACT IN ORDER TO REMOVE THE DANGER OF OIL POLLUTION AND THE WRECK

A.O.P. CONTAINS MEASURES

- RESPONSE VESSELS FLEET (8 UNITS – worse case scenario)
- OIL REMOVAL OP.
- SEWAGE REMOVAL OP.
- BOOMS DEPLOYMENT
- OILED WILD LIFE CARE
- SHORELINE CLEAN UP



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OIL REMOVAL OPERATIONS

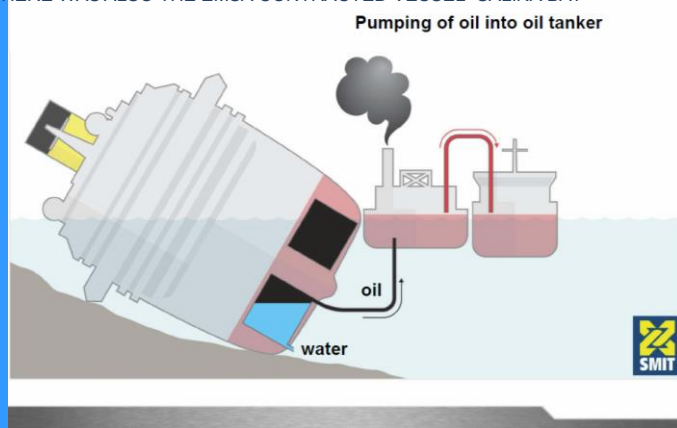
OIL RECOVERING OPERATIONS WERE IMPLEMENTED BY "SMIT SALVAGE" AND "TITO NERI" COMPANIES ORDERED BY COSTA CROCIERE

OIL REMOVAL ASSETS ON THE SPOT:

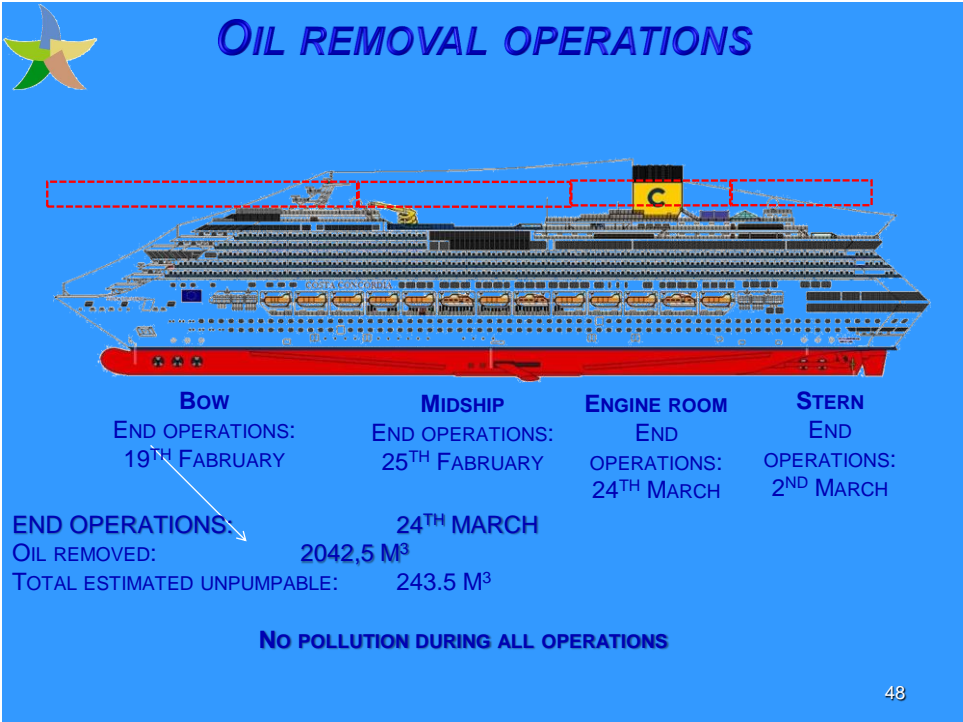
- BARGE "MELORIA"
- TANKER "ELBA"

- IN THE AREA THERE WAS ALSO THE EMSA CONTRACTED VESSEL "SALINA BAY"

Started: 12/02/2012
Completed: 24/03/2012



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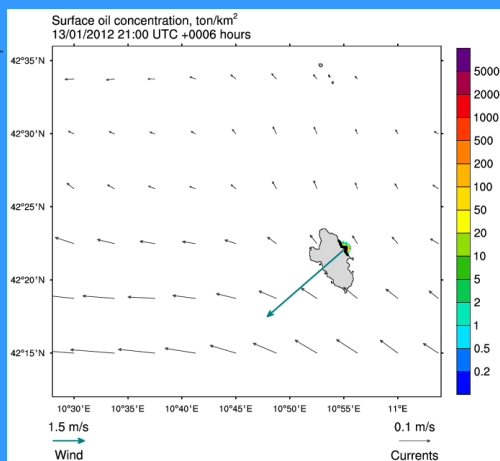




OIL SPILL DRIFTING

ITALIAN COAST GUARD OPERATIONAL CENTRE HAS PROVIDED DAILY FORECAST ABOUT A POSSIBLE FUEL-OIL SEA DRIFTING, USING THE FORECAST MODEL NAMED "MEDSLIK II" DEVELOPED BY NATIONAL INSTITUTE FOR GEOPHYSICS AND VOLCANOLOGY

THIS INFORMATION WAS CONSIDERED VERY IMPORTANT TO HELP LOCAL MARITIME AUTHORITY TO BE BETTER PREPARED IN ORDER TO SET UP APPROPRIATED PREVENTION MEASURES AND OPTIMIZING ANTIPOLLUTION RESPONSE OPERATIONS

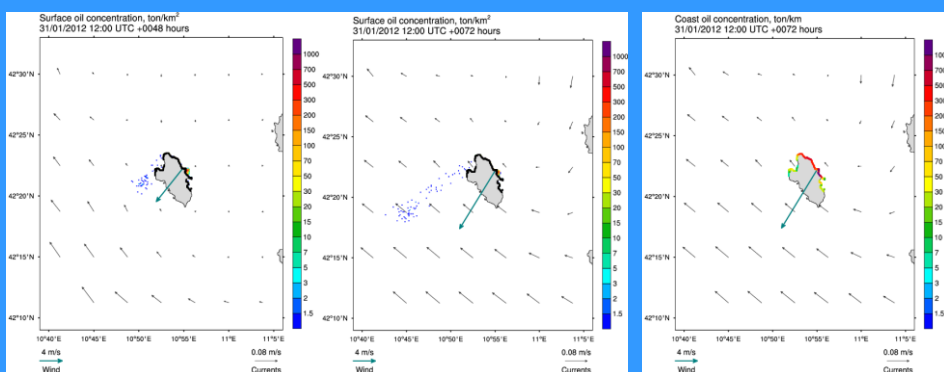


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OIL SPILL DRIFTING

THE MODEL USED BY ITALIAN COAST GUARD OPERATIONAL CENTRE – I.M.R.C.C. HAS PROVIDED OIL SPILL BULLETIN VALID FOR 72 HOURS



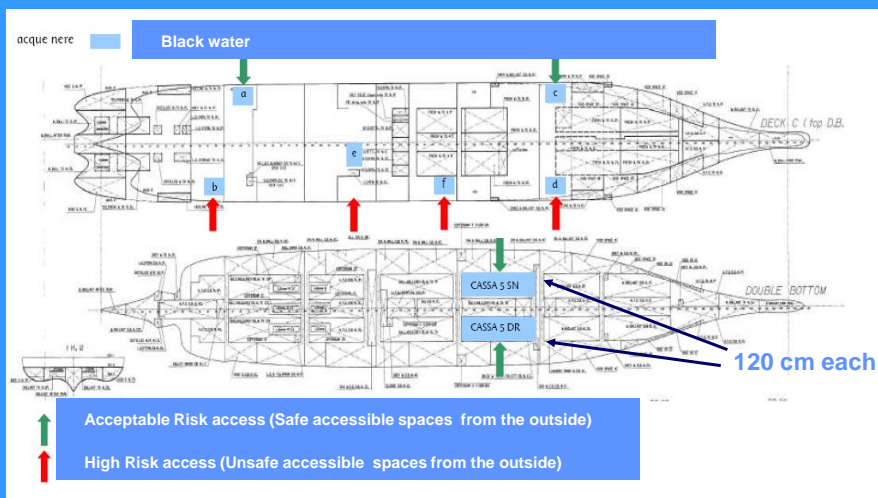
48 AND 72 HOURS AFTER THE POSSIBLE START OF THE OIL SPILL

OIL CONCENTRATION ON THE BEACHES IS VISUALIZED WITH COLOURS FROM BLUE TO PURPLE IN TON/KM. CURRENTS (BLACK ARROWS) AND WIND FORECASTS (GREEN ARROW) ARE SHOWN IN THE BACKGROUND

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SEWAGE REMOVAL



Total Black water removed quantity: 240 cm

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THE ENVIRONMENTAL MONITORING PLAN

AN ENVIRONMENTAL MONITORING PLAN HAS BEEN DESIGNED AND IMPLEMENTED

MAIN OBJECTIVES ARE:

- TO COLLECT INFORMATION ABOUT HEALTH STATUS OF MARINE ENVIRONMENT AROUND THE WRECK EVALUATING EVENTUAL EFFECTS OF THIS POTENTIALLY POLLUTING SOURCE;
- TO ENHANCE THE KNOWLEDGEMENT OF SPECIFIC MARINE ECOSYSTEMS PARTICULARLY SENSITIVE TO THE POLLUTION (E.G. POSIDONIA MEADOW)



THE ENVIRONMENTAL MONITORING FORESEES THE FOLLOWING ANALYSES:

- WATER COLUMN
- SEDIMENTS
- BIOTA (BIOACCOMULUMATION OF POLLUTANTS AND BIOMARKERS ALSO ON ORGANISMS PLACED IN CAGES-MUSSEL WATCH)
- SURVEY OF THE SEAFLOOR THROUGH ROV AND MULTIBEAM TO SELECT THE MAIN BENTHIC POPULATION AND ASSEMBLAGES

TILL NOW NO EVIDENT SIGNAL OF POLLUTION HAS BEEN RECORDED - ALL RESULTS ARE PUBLIC (WEB SITE)

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ENVIRONMENTAL MONITORING PLAN

Sampling in the monitoring points showed that values of:

- ✓ chemical-physical parameters,
- ✓ organic substance,
- ✓ solvents,
- ✓ detergents,
- ✓ microbiological parameters
- ✓ and toxicity tests

are in line with parameters measured at sufficient distance from the vessel

 ARPA REGIONALE per la protezione ambientale della Toscana		MONITORAGGIO AMBIENTALE EMERGENZA COSTA CONCORDIA				
PRELIEVI DI MERCOLEDÌ 21 MARZO 2012						
LUOGO DI PRELIEVO						
PARAMETRO	unità di misura	PRUA NAVE - P2	POPPA NAVE - P4	BIANCO - P5 (1 miglio a largo)	DISSALATO RE -P6	BIANCO CALA CALDAIE P-10
PARAMETRI CHIM.-FIS. BASE						
pH		8,36	8,39		8,33	8,41
Ossigeno disciolto	mg/L	8,12	8,10		8,17	10,2
Ossigeno disciolto	% sat	97,5	98,0		100,9	98,5
Clore attivo	mg/L			<0,1		
Solfuri	mg/L					
trasparenza	m			16,5		
SOSTANZA ORGANICA E NUTRIENTI						
Total Organic Carbon (TOC)	mg/L	<1	1,1	1,0	<1	<1
ammonio	mg/L	<0,03	<0,03	<0,03	<0,03	<0,03
azoto totale	mg/L	0,24	0,24	0,12	0,23	0,09
fosforo totale	mg/L	0,006	<0,006	<0,006	<0,006	<0,006
SOLVENTI						
Benzene	µg/L	<0,1	<0,1	<0,2	<0,1	<0,1
Toluene	µg/L	0,2	<0,1	<0,2	<0,1	<0,1
Etilbenzene	µg/L	<0,1	<0,1	<0,2	<0,1	<0,1
m-p-xilene	µg/L	<0,2	<0,2	<0,2	<0,2	<0,2
o-xilene	µg/L	<0,1	<0,1	<0,2	<0,1	<0,1
clorobenzene	µg/L	<0,1	<0,1	<0,1	<0,1	<0,1
1,1,1 tricloroetano	µg/L	<0,05	<0,05	<1	<0,05	<0,05
1,2 dicloroetano	µg/L	<0,05	<0,05	<2	<0,05	<0,05
Cloruro di metilene	µg/L	<5,0	<5,0	<2	<5,0	<5,0
Tetracloroetilene	µg/L	<0,05	<0,05	<0,01	<0,05	<0,05
Tricloroetilene	µg/L	<0,05	<0,05	<0,01	<0,05	<0,05
Triclorometano	µg/L	<0,05	<0,05	<0,01	<0,05	<0,05
1,2 -dicloropropano	µg/L	<0,05	<0,05	<0,01	<0,05	<0,05
Cloruro di vinile	µg/L	<0,05	<0,05	<0,05	<0,05	<0,05
DETERGENTI						
Tensioattivi cationici	mg/L					
Tensioattivi anionici	mg/L	<0,05	<0,05	0,06	<0,05	0,06
IDROCARBURI						
Idrocarburi C6 -C10	µg/L	<100	<100	<100	<100	<100
Idrocarburi C >10-C40	µg/L	<100	<100	<100	<100	<100
IPA	µg/L					
TEST TOSSICITA'						
test con V. fischeri		negativo	negativo	negativo	negativo	negativo*
PARAMETRI MICROBIOLOGICI						
coliformi totali	MPN/100ml	10	73	<10	<10	<10*
escherichia coli	MPN/100ml	<10	<10	<10	<10	<10*
enterococchi intestinali	UFC/100ml	2	1	0	0	0*
* LR = Limite di rilevabilità						
analisi non eseguita						
analisi in corso						
valori misurati il 24 gennaio (P5), 16 e 21* marzo(P10)						

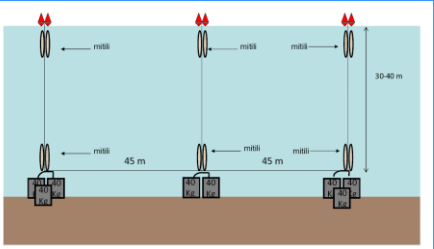
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ENVIRONMENTAL MONITORING PLAN
Mussel watching

3 Monitoring stations with mussels placed nearby the vessel

- Each station is composed of:
- ✓ 3 concrete bodies at the sea bed
 - ✓ buoys at the sea surface
 - ✓ mussels



Mussel station near the cruiser stern (North)

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Thanks for your attention!

