



OIL SPILL Project

MARINE ENVIRONMENTAL PREPAREDNESS IN DENMARK

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ABOUT THIS DOCUMENT

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*Cover photo by Kia F. Petersen:
Marine Home Guard personnel aboard '911 BOPA'
laying out an oil boom at a regular sailing*

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OIL SPILL PROJECT

The project *Enhancing oil spill response capability in the Baltic Sea region (OIL SPILL)* improves cross-border and cross-sectorial cooperation between and among relevant stakeholders in oil spill response in shallow waters and coastal areas in the Baltic Sea Region (BSR).

The overall goal is to strengthen oil spill response capability at all levels: key responsible ministries, operative competent authorities, key non-governmental organisations, relevant universities, and the petrochemical industry.

13 Partner organisations from six BSR countries form the OIL SPILL consortium. Their core activities include joint tabletop, simulator, and live field exercises, the sharing of knowledge, and the dissemination of best practices.

OIL SPILL budget is 2.0 M €, and the Project is co-funded by the EU's Interreg Baltic Sea Region programme. The Project is in operation in 2019–2021.

1. INTRODUCTION

In the last two decades, there has been two major oil spills – Baltic Carrier in 2001 and Fu Shan Hai in 2003 – and several smaller spills in Denmark. Much of the national preparedness is thus based on the experience that was formed at the beginning of the century.

According to *the Danish Act for the Protection of the Marine Environment*, the Danish Defence is responsible for oil spill response at the sea and in shallow water areas. The municipalities are responsible for oil spill clean-up in coastal areas and harbours. The responsibility areas of the two authorities are divided by the normal water baseline.

In this document, the different stakeholders who participate in the oil spill response in shallow waters and coastal areas in Denmark and their cooperation are presented.

The stakeholders include Navy's Marine Environmental Response, municipality fire and rescue services, Naval Home Guard, Danish Emergency Management Agency department, and harbours.



GUNNAR SEIDENFADEN AT THE NAVAL BASE IN KORSØR (PHOTO: KIA F. PETERSEN)

2. DANISH ROYAL NAVY

ORGANISATION

Navy's Marine Environmental Response is a military organisation with full-time employees. It is located at the two naval bases in Korsør and Frederikshavn and governed by the Danish Defence Command (DCD) that coordinates the Army, Navy, and Airforce.

SHIPS AND EQUIPMENT

The Navy has seven environment units as well as three barges that can be used to contain the collected oil.

The two Sea Truck Class ships Marie Miljø and Mette Miljø are manned by six persons each. Both ships have two crews, and they are prepared to leave within one hour at all times. They have a reach of 1,000 nautical miles and a top speed of ten knots.

Gunnar Seidenfaden and Gunnar Thorson are Supply Class units and manned by sixteen persons each. They have only one crew per ship but can sail with only twelve persons and are prepared to sail within sixteen hours. The reach is 3,500 nautical miles and top speed twelve knots.

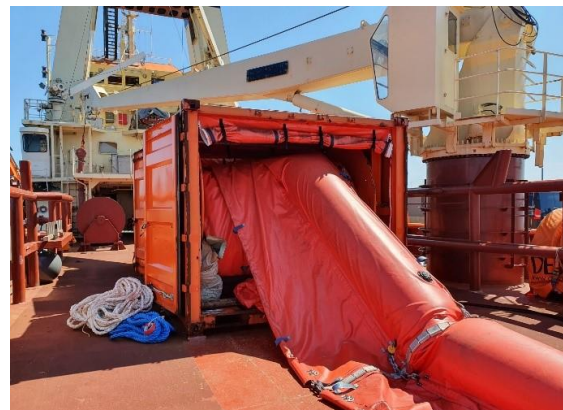
All four oil recovery vessels are equipped with oil booms, pumps, and skimmers to contain and collect oil at sea and in shallow waters. They also have cranes making it possible to use the oil booms without a helping ship – a so-called sweep in which the oil is contained along the side of the ship. research purposes and validation of R&I developments.

Three smaller vessels – Miljø 101, Miljø 102, and the belt skimmer Miljø 103 – do not carry oil booms aboard but can drag them when they are in use. Whereas the larger ships have a draught of respectively 2.3 metres and 3.9 metres, the Miljø 103, for instance, has a draught of only 0.85 metre, making it more efficient for spills in shallow waters.

The Navy also has a mobile environment preparedness team, which consist of three people. They can respond on short notice and assist with e.g., oil samples at a spill for testing and as evidence material if there is a suspicion of illegal discharge.



BELT SKIMMER FOR OIL COLLECTION AT SEA
(PHOTO: KIA F. PETERSEN)



OIL BOOMS ABOARD GUNNAR SEIDENFADEN (PHOTO: KIA F. PETERSEN)

ACTIVATION AND ROLE

The Maritime Environmental Response is activated by the Maritime Assistance Service (MAS) in Karup. MAS can be contacted directly from the ship needing help – or others who have spotted an oil spill. As prescribed in *the Danish Act for the Protection of the Marine Environment*, the Navy is responsible for coordinating all responses of pollutions at sea and in shallow waters.

Fortunately, large oil spills are not common, so the two large ships Gunnar Seidenfaden and Gunnar Thorson have not been activated for the same oil spill in Danish waters since the Baltic Carrier accident in 2001. However, they still sail the waters most days a year for monitoring and practicing.



MARINE HOME GUARD VESSEL '911 BOPA' IN DRAGOR (PHOTO: KIA F. PETERSEN)

3. THE NAVAL HOME GUARD

ORGANISATION

The Naval Home Guard is a volunteer organisation under the military. Their primary task is to assist the Navy, police, and other authorities with operations at sea. The entire Home Guard counts 16,000 volunteers, of whom around 5,000 are volunteers in the Naval Home Guard. They are divided into 30 flotillas all along the coasts of Denmark.

SHIPS AND EQUIPMENT

The Naval Home Guard has 30 ships of three different classes. All ships have sampling boxes aboard, which can be used to take samples of oil and other pollutants. The ships are also

equipped with an RHIB (rigid hull inflatable boat) with a top speed of 30 knots, thus ensuring fast transport and a quick operation start. Thirteen of the ships are large enough to have oil booms aboard as well.

Each ship has several staff groups of 12 people, but they can sail with fewer as well. Having more than one staff for each ship helps to ensure the readiness to sail within one hour – even though all are volunteers. Currently, the Naval Home Guard is also testing a new type of ship, the MIF-M. They are smaller and quicker but should still be able to solve the same kinds of tasks. Furthermore, with a staff of only four people, they can set off from the harbour even quicker.

ACTIVATION AND ROLE

The Naval Home Guard can be activated by the Navy through MAS or the Joint Operation Centre (JOC), the Police, and other authorities depending on the task. In case of an oil spill, MAS will activate the nearest ship and its staff. With a response time at a maximum of one hour and often half the time, the Naval Home Guard is typically the first to arrive. Their role is to secure evidence by taking samples from the spill and to start containing it if the ship has oil booms aboard. Otherwise they will wait for another ship to arrive and then help by dragging their oil booms to collect the oil.

It is only a few times a year that an actual oil spill operation is initiated. However, the ships are often sent to possible oil spills spotted by other ships or the Air Force's aircraft to take samples. In the spring and summertime, it is usually pollen that lays as a shiny layer on the water, looking like oil.



A RHIB IS LIFTED OFF THE SHIP BY CRANE (PHOTO: KIA F. PETERSEN)



SAMPLING BOX WITH DIFFERENT EQUIPMENT TO ENSURE SAFE AND SECURE SAMPLING OF OIL AND OTHER SUBSTANCES AT SEA (PHOTO: KIA F. PETERSEN)



THE NEW SHALLOW WATER VESSELS AT THE DEMA CENTER IN NAESTVED (PHOTO: KIA F. PETERSEN)

4. DANISH EMERGENCY MANAGEMENT AUTHORITY

ORGANISATION

The Danish Emergency Management Agency (DEMA) is a national rescue service with six centers across the country. Five of the centers are manned by officers, sergeants, and conscripts, and the sixth by officers, sergeants, and volunteers. They also have volunteers, who are former conscripts at the centers. In total, DEMA can activate up to 1,500 people and 500 in the reserves.

SHIPS AND EQUIPMENT

DEMA has five smaller boats which can be used for oil sampling and reconnaissance, and also for oil collecting to some degree. This year, 18 new shallow water vessels have been purchased. These vessels are equipped with oil skimmers, cranes, grabs, basins, and oil bags. The four smaller ships can carry up to 2,400 liters of oil and the larger ships up to 6,000 liters. The smaller ships can be transported in military airplanes, making them usable in e.g., Greenland or around the Baltic Sea.



THE GRAB IS PLACED BELOW DECK, ALLOWING MORE SPACE ON THE SHIP WHEN NOT IN USE (PHOTO: KIA F. PETERSEN)

Each fire and rescue center will have three ships that can be deployed quickly in the local area. The ships can be transported by trucks. Thus, they can be used in all parts of Denmark relatively quickly – compared to sailing as the top speed is 12 knots – if an oil spill requires more than the three ships appointed to one center. Each ship is manned by two to four people.

At all six centers, they have two types of oil booms: larger booms usable at coasts and smaller ones for lakes and streams. The large oil booms can be placed from the coast and then dragged out by the ships or held in place by manpower. DEMA also has different oil skimmers and sampling equipment.

ACTIVATION AND ROLE

DEMA can be activated by the Navy through the Maritime Assistance Service (MAS) or by the affected municipal, either through the environment department, local fire and rescue service, or the police. DEMA is activated if special equipment is needed or in the case of large spills that require many people and equipment. Since the Navy, municipality, or police will usually lead the operation, DEMA has an assisting role.

5. ELSINORE MUNICIPALITY FIRE DEPARTMENT

ORGANISATION

The Elsinore Municipality Fire Department is a public body. It is one of 28 municipal fire and rescue services in Denmark. The fire department's oil and chemical response in coastal areas is coordinated with three other municipalities, so they cover a more significant part of the North Zealandic coast under one joint plan.

This chapter focuses on Elsinore Municipality Fire Department. The fire department's staff consists of full-time and part-time employees, along with 30 volunteers. If an oil spill has or threatens to hit the coast, the crisis staff will be activated. The staff will coordinate the response with the affected municipalities. At the operation site, an incident commander will coordinate the practical part of the response.

SHIPS AND EQUIPMENT

Elsinore Municipality Fire Department has an RHIB (rigid-hull inflatable boat), which can be used for different sea responses, including monitoring of oil spills. Besides, they have oil booms that can be placed from the coast or dragged by other boats.

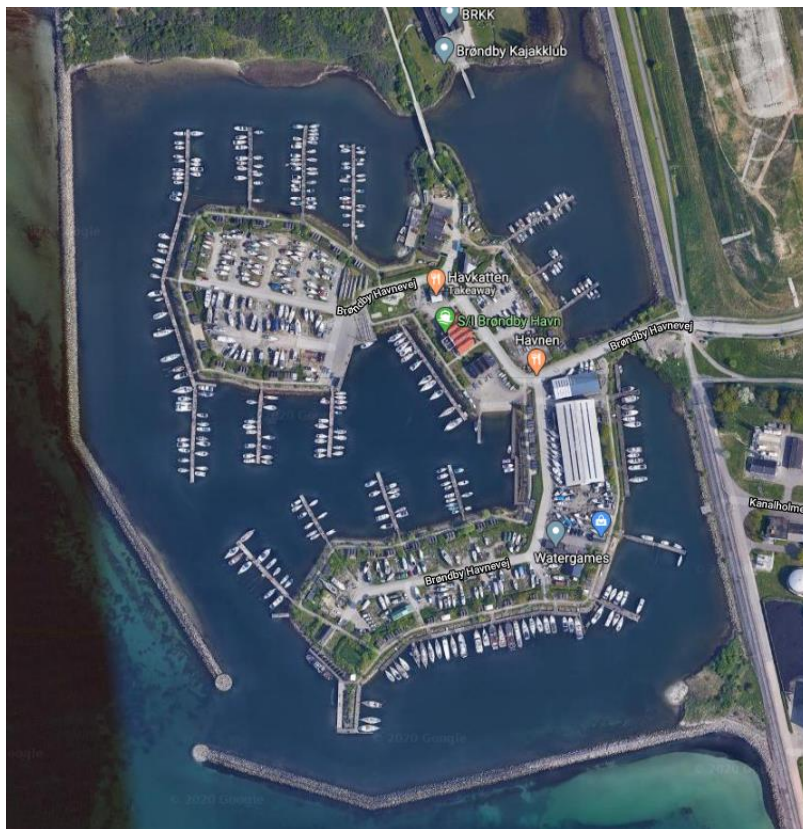
If an acute oil spill occurs, the part-time staff will respond. They can be assisted by the municipality's employees if necessary. In the case of a more massive spill, the volunteers can assist as well. Furthermore, if the spill is placed far out in the sea but threatens to drift ashore, the volunteers can also serve as first responders as longer response time is allowed.

ACTIVATION AND ROLE

The maritime environmental preparedness in the four municipalities can be activated through three different channels: MAS, the national emergency number, or directly by a citizen informing the municipalities. Either way, the fire and rescue service in the affected municipality will be activated. They will then respond to oil spills at the coast and in harbors. It is the municipalities as authorities that are responsible for the clean-up. However, the task is partly handed over to the fire and rescue services, which have the 24-hour service, making them easier to contact and mobilize. Thus, it is a coordinated response between the municipality and fire and rescue service from the initial response to the cleaning and disposal of the oil.



THE RHIB AT THE FIRE AND RESCUE STATION IN ELSINORE
(PHOTO: KIA F. PETERSEN)



THE YACHTING HARBOUR IN BRØNDBY (IMAGE: GOOGLE MAPS)

4. BRØNDBY HARBOUR

ORGANISATION

Brøndby Harbour is a private yachting harbour. It was built in 1979, and with around 550 berths, it is classified as a medium-sized yachting harbour. However, the staff only includes three permanently employed and a few extra people in the peak season.

SHIPS AND EQUIPMENT

The harbour has oil booms that are stored in two different depots so that they can be used quickly in all parts of the harbour. In addition, the harbour has smaller boats, two barges, and a motor-driven raft, which can be used to place the oil booms. The booms can be placed around the spill or at the harbour's entry to avoid the spill spreading – from the harbour towards the sea or vice versa. If an oil spill happens on land, the spill will fall to a trench built along the harbour to avoid the oil running into the sea. There is a filter system in the trench, which will ensure that the water is cleaned from the oil before it runs into the sea.

ACTIVATION AND ROLE

If an oil spill happens, the harbour master oversees the operation. Typically, it will be the users of the harbour who discover the oil spill and contact the harbour master. He will then contact the relevant authorities if necessary, as it is the local fire and rescue service that handles large spills that require using the oil booms. The harbour master will also contact a company with a vacuum tanker to collect the oil if the fire and rescue service is unable to collect it.

The harbour has also a flushing system, which is used to empty boat's septic tanks. However, the same system can also be used to collect small amounts of oil. In this way, the harbour personnel can handle most oil spills on their own as the larger accidents happen only about four times a year.

5. COOPERATION

Cooperation is the number one necessity to ensure an efficient response operation if a large oil spill occurs in Danish waters. Depending on the oil spill's size and location, either the Navy or a municipality will lead the operation. The list of authorities and organisations who can take part in the response in one way or another is long.

The Navy and municipality can cooperate with each other as well as with other municipalities and fire and rescue services, harbours, the Marine Home Guard, DEMA, the police, the Environmental Protection Agency, the Nature Agency, Dansk Miljørådgivning (Danish Environment Counselling), and private entrepreneurs.

The tasks include the collection, deposition, transportation, and destruction of the oil. Collaboration is also possible with other countries with whom the Danish State has cooperation agreements.

The cooperation is ensured through joint plans and exercises. The companies close to the coasts or harbours that might play a critical role due to emission of pollutants can also participate during an operation.

6. EXERCISES

The different authorities that compose the maritime preparedness participate in various exercises. The Navy organises five national exercises every year. The exercises change between the twelve police districts in which the different authorities and entrepreneurs participate. They also shift between the two Naval bases, so each actor can participate in their own area. The Navy also organises two national exercises per year for the entire Navy environmental preparedness.

The Navy participates also in BALEX DELTA, an international full-scale exercise organised annually by one of the Baltic Sea Region countries. All Danish authorities can also participate in the international exercises organised in bi- and multilateral agreements such as the SWEDENGER plan by Sweden, Denmark, and Germany.

The 28 municipal fire and rescue services in Denmark organise their own exercises as well, some coordinating the exercises with each other as their response plans are joint. Likewise, the Naval Home Guard's many staffs train oil spill response several times a year.

At Brøndby Harbour, the staff does not plan exercises for they frequently "train" with the small real-life scenarios happening at the harbour. Likewise, they do not plan exercises in DEMA for the conscripts. They are at the centres for only nine months, and therefore there is not enough time for extra exercises besides the education in oil spill response. However, DEMA still participates in the national exercises.



DRAGØR NAVAL HOME GUARD PRACTICING THE USE OF OIL BOOMS (PHOTO: KIA F. PETERSEN)

7. CHALLENGES

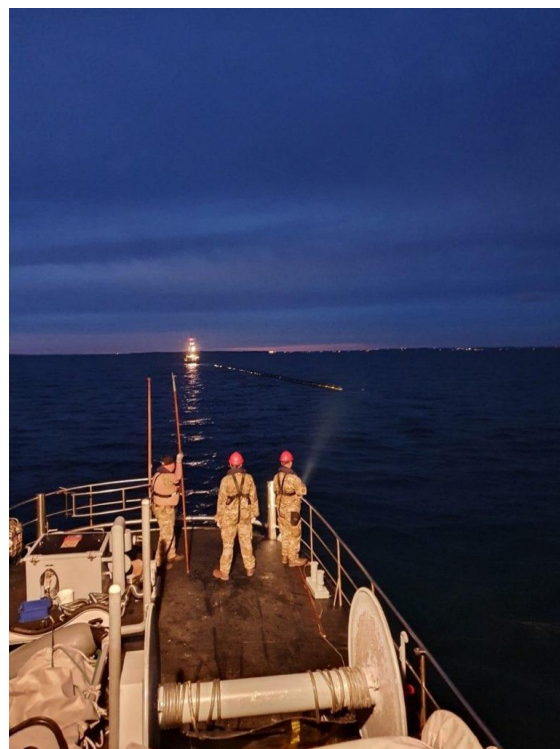
In the Danish Maritime Preparedness, there are few but vital challenges. One is the condition of the Navy's ships. The four large ships were all built and launched around 1980. With almost 40 years of service, the ships require regular maintenance at a dockyard, thus being out of service for some time. If the vessels Marie Miljø or Mette Miljø are out of service, Gunnar Seidenfaden or Gunner Thorson will change from 16 hours' response time to two hours, which alters the work schedule for all crew members at the ship.

In 2016, the Ministry of Defence decided to purchase new ships that would replace the four environment units. However, this action was removed from the Defence Agreement in 2018. At some point, however, it will be necessary to replace the ships, but the timing is still unknown.

One of these previously planned new ships would have been 'a chemical ship' able to handle chemical spills. The Navy's current ships are not built for chemical spills. The interior fittings are not sealed, meaning that they would allow the toxic gases to enter. In case of a chemical spill in Danish waters, we will have to rely on our international agreements with Sweden and Germany with chemical ships.

An oil spill in shallow waters will most likely hit the coast. Therefore, the municipality and fire and rescue service – responsible for the coast clean-up – decide when an operation should end. A law or national guideline that describes when a clean-up operation can be ended does not exist at the moment.

This issue can be a challenge when deciding whether enough oil has been removed for the environment to recreate itself and to avoid harm to citizens using the area. Especially because oil spills happen so rarely, the practical expertise is not created. Likewise, the distinction between shallow water and the open sea is not clearly defined, making the responsibility unclear if an oil spill happens close to the coast. Thus, it will be decided at request or after an initial response is launched by either the Navy or the affected municipality.



DURING THE EXERCISE, THE WIRE HOLDING THE OIL BOOM RIPPED, CHALLENGING THE PERSONNEL TO GET HOLD OF IT AGAIN (PHOTO: KIA F. PETERSEN)

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Photo: SPR / Jonas Brandt

OIL SPILL

Enhancing oil spill response capability in the Baltic Sea Region

Unlike on the open sea and in international waters, combatting oil spills in shallow waters and coastal areas is often complicated. The division of tasks and responsibilities between Competent Authorities and other stakeholders, such as NGOs, is often unclear. The focus of OIL SPILL is on strengthening oil spill response capability in the Baltic Sea Region (BSR) by enhancing cooperation structures, procedures, and skills between and within the relevant stakeholders.

Fostering cooperation between competent authorities and volunteers in oil spill response

Coastal oil spill response is an arduous, long-term operation. Voluntary oil spill response capability is therefore critical in achieving optimal results and minimising environmental harm. OIL SPILL project aims to develop and promote co-operation between authorities and volunteers. Essential in optimising volunteer contribution is to establish a co-operation model for both authorities and volunteers. The OIL SPILL project aims to promote this co-operation in oil spill response.

OIL SPILL outputs

Project's overall objective is to strengthen oil spill response capability in the BSR at the levels of key responsible ministries, operative Competent Authorities, key NGOs, relevant Universities and the petrochemical industry. OIL SPILL outputs include the following:

- Identifying administrative or other procedures to improve cross-border harmonisation;
- Clarifying key legal issues at all levels (incl. ministries, Competent Authorities and NGOs);
- Building up (inter)national training schemes;
- Organising relevant training events, incl. using simulators; and
- Organising cross-border exercises

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