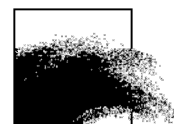


ROYAL BELGIAN INSTITUTE OF NATURAL SCIENCES

MANAGEMENT UNIT OF THE NORTH SEA
MATHEMATICAL MODELS (MUMM)

SECTION 15
MARINE ECOSYSTEM MANAGEMENT



ACTIVITY REPORT 2010

Of the Belgian North Sea Aerial Survey Programme

Report MUMM

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Activity report aerial surveillance 2010

Table of contents

1

(0.) Introduction

2

1. Routine pollution control flights

2

2. On call flights

3

3. Fishery control flights

3

4. International missions in the framework of the Bonn Agreement

4

- Co-ordinated Extended Pollution Control Operation, CEPCO 4
- Tour D'Horizon 4
- Participation in POLMAR Manche 2010 5

5. Scientific observations

5

- Monitoring of marine mammals at sea 5
- Monitoring seals in the Scheldt estuary 5
- Remarkable observations of natural phenomena 6

6. Surveillance of activities at sea that need an environmental permit

6

- Follow-up of the activities of the installation and exploitation of wind farms 6
- Follow up of the aquaculture activities and surveillance of experimental fishery zones 6
- Follow up of sand and gravel extraction activities 6

(0.) Introduction

MUMM's observation aircraft has flown 331 hours in 2010, of which 247 flight hours were spent on aerial surveillance above the North Sea, 10 hours on observations above the Scheldt estuary and around 73 hours on transit between the airport and the North Sea. The different observation and surveillance tasks of the aircraft can be subdivided in the following categories (each of which is being further addressed below):

1. Routine pollution control flights;
2. 'On call' flights organised during an incident or following an alarm;
3. Fishery control flights;
4. International missions, operations and exercises in the framework of the Bonn Agreement or in cooperation with neighbouring countries;
5. Follow-up of activities at sea that require an environmental permit;
6. Scientific observations and monitoring of the sea or the Scheldt estuary.

1. Routine pollution control flights

In 2010, 153 flight hours were performed in execution of the main surveillance task, being pollution control at sea and along the coasts in the Belgian North Sea area (the zone of joint responsibility as defined in the Bonn Agreement, which corresponds to the Belgian marine areas and the surrounding waters).

In total, 25 spills were observed. 23 spills were observed during the day; one spill was observed at night and was probably an oil spill. In only one case (end 2010) a suspect trail of an unknown substance has been observed in the wake of a ship which was sailing in British waters; the findings of this observation have been reported immediately to the competent British authorities for further investigation and follow-up. The low number of ships caught red-handed can mainly be attributed to the fact that over the last years, there has been a remarkable decreasing trend in the number of oil slicks observed at sea. This decreasing oil pollution detection frequency is gradually stabilizing (see Fig. 1).

During transit, take off and landing procedures, 7 oil spills were observed in the port of Antwerp, 2 in the port of Zeebruges and 2 in the port of Ostend. The information on these spills was systematically reported to the Maritime Police for follow-up.

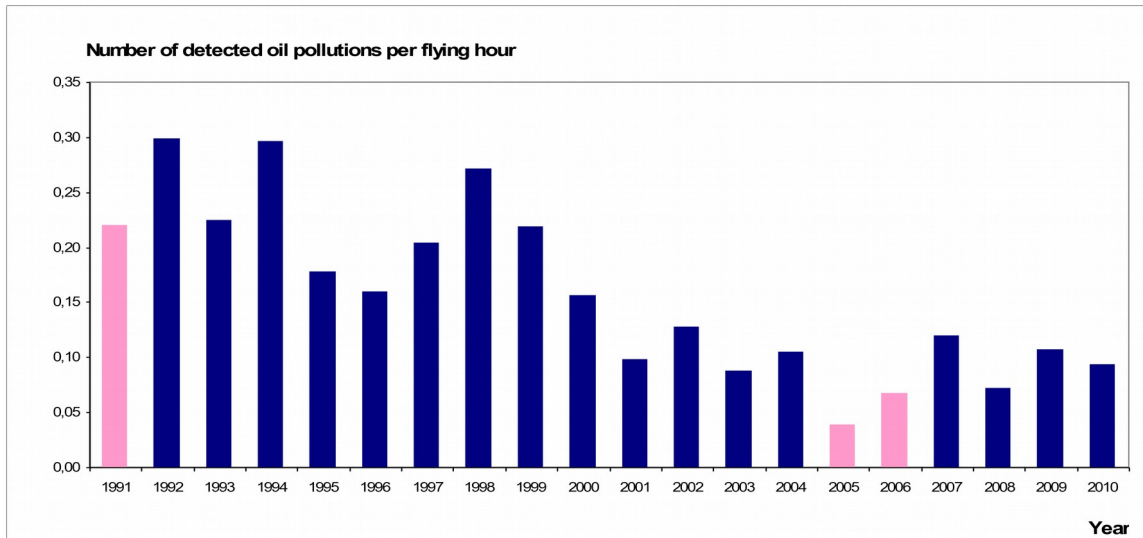


Figure 1: Frequency of oil slicks detected per flight hour (Belgian North Sea Aerial Survey programme). 1991, 2005 and 2006 are transition years (programme start-up phase in 1991, and transfer and conversion of remote sensing aircraft in 2005 and 2006).

2. On call flights

In 2010 no special ‘on call’ flights were performed following an urgent call or accident at sea. During one planned observation flight though, on May 18 2010, the aircraft changed its route to fly over a stranded ship (the ‘*Sluisgracht*’, which had stranded along the navigation route ‘*Scheur*’ on the shallow sandbank ‘*Vlakte van de Raan*’). However, no pollution was observed around the ship.

3. Fishery control flights

The fishery control flights are executed on behalf of and in cooperation with the Fishery Inspection Service (DZV) of the Flemish government. In the framework of the surveillance on fishery activities in the North Sea, especially with respect to the access limitations in force for fishery vessels in shallow coastal waters (3 nautical miles limit) and the territorial sea (12 nautical miles limit), 39h40 were performed in 2010. Hereby, extra attention was given to international missions and to night time observations. In 2010, 392 fisheries vessels were observed and identified during these flights. The fishery inspectors observed two infringements: one vessel was found fishing in the 12 nautical miles zone, despite the fact that it was not allowed to fish in that area; a second vessel was found to be fishing illegally in the 3 nautical miles zone. The other observations provide interesting information that can be used for at-sea control by patrol vessels or for the verification of the vessels’ positions mentioned in their logbooks or derived from the VMS satellite system.

4. International missions in the framework of the Bonn Agreement

The aerial surveillance efforts in the North Sea are coordinated at international level within the framework of the Bonn Agreement. Each country organises its own national surveillance programme, but apart from that also international operations, missions or exercises are being planned. In 2010 MUMM participated in 3 such international missions: Super CEPCO, Tour d'Horizon and POLMAR Manche.

1. *Co-ordinated Extended Pollution Control Operation, CEPCO*

A CEPCO surveillance operation consists of continuous pollution control flights performed by several aircraft from different North Sea countries, with the aim to ensure a continuous aerial surveillance in a high risk area for illegal oil spills (e.g. a very densely navigated area) for a period of minimum 24 hours. Aircrew participating in this operation continuously verify to what extent the ships sailing in the surveyed area respect the international MARPOL discharge regulations. Furthermore, when a ship is caught red-handed, the judicial follow-up procedures that were undertaken are evaluated, to see whether and how they can be optimized.

In 2010, a major CEPCO operation, called 'Super CEPCO', was organised for the third time. From 15 to 17 October 2010, the Belgian aircraft flew 6h40 in the framework of this Super CEPCO operation, as part of a multiple-days surveillance effort jointly performed by French, Dutch, British, German, Danish and Swedish aircraft in the eastern part of the Channel and the Dover Strait. French, British and Belgian waters were continuously monitored for operational discharges from ships. During this operation, the Belgian crew observed one illegal oil discharge in British waters. The collected information on that spill was immediately transferred to the competent national Authorities of the coastal State.

2. *Tour D'Horizon*

In line with the annual operations programme of the Bonn Agreement, the Belgian aircraft performed a so-called 'Tour d'Horizon' (TdH) campaign in 2010, for the control of offshore oil and gas platforms in the central and northern part of the North Sea. During this TdH mission, all detected and observed slicks were systematically evaluated and reported to the national authorities of the coastal State involved, regardless of whether the pollution originated from a platform or a ship. The Belgian TdH mission took place from 6 to 10 September 2010. The Belgian aircraft flew over Dutch, Danish, British, Norwegian and German waters, for a total flying time of 21h10. During this mission, 9 oil slicks were observed:

- In 6 cases the polluter could be identified: two oil slicks could be linked to British platforms and 4 other slicks originated from Norwegian platforms.
- In the 3 remaining cases, the detected pollution could not be linked to a ship or to a platform.

3. *Participation in POLMAR Manche 2010*

On 3 June 2010 the aircraft participated in the 'POLMAR Manche 2010' exercise, an oil pollution combating exercise organised by the French Navy in the vicinity of the Bay of the Somme. At-sea response exercises are considered very useful. They are meant to test and improve the organisation and the intervention of combating units. During this exercise, rice products were discharged at sea in the exercise area to simulate drifting oil slicks.

The mission of the Belgian aircraft was to track down the simulated 'oil' slicks as soon as possible, to evaluate their dimensions, and to report the positions and findings to the response vessels in the area, which subsequently had to be guided towards the slicks in order to start mechanical recovery operations.

5. Scientific observations

4. *Monitoring of marine mammals at sea*

On the basis of aerial counts of marine mammals in the Belgian part of the North Sea, MUMM wants to estimate the densities and the distribution of the harbour porpoise (*Phocoena phocoena*), the most important marine mammal in our area. These observations are coupled to other information (from acoustic studies, or on stranded animals), and allow us to better understand the impact of the installation of wind farms on this species. In 2010, 20h40 were spent on this mission. In total 164 porpoises were identified. After statistical analysis this corresponds to a maximum abundance of about 2100 animals in Belgian waters. Also other marine mammal species were observed, albeit in far lesser densities (8 seals, 6 white beaked dolphins).

5. *Monitoring of seals in the Scheldt estuary*

During every transit flight from the airbase to the sea, the aircraft flies over the Westerscheldt estuary (Dutch area), which harbours a small colony of seals. This Westerscheldt seals colony seems to expand, even with the high, increasing pressure of maritime traffic in this area. The use of this estuarine habitat by these marine mammals, and the factors that influence their numbers and distribution, remain poorly known. Owing to the regular passage of our aircraft over this area, it is an excellent observation platform of opportunity: The high number of transit flights has the advantage that the inter-annual variability of the seals can be monitored. Therefore MUMM recently started performing regularly counts of seals in the Westerscheldt, and this in close contact and collaboration with the Dutch scientific institutes (Rijkswaterstaat-Waterdienst and IMARES) since the information collected from our aircraft can be useful for determining and fine-tuning the necessary management measures.

In 2010, 41 transit flights were used (10,5 hours) for systematic counts of the common seal (*Phoca vitulina*) and the grey seal (*Halichoerus grypus*) in the Westerscheldt. In total

ca. 1900 animals were observed.

6. *Remarkable observations of natural phenomena*

If during routine surveillance flights remarkable natural phenomena are being observed, MUMM will report them and a description will be given. In 2010, some remarkable plankton blooms were observed:

- On 6 and 8 July 2010: massive concentrations of *Noctiluca scintillans* were observed in the Belgian marine waters, and also large numbers of compass jellyfish (*Chrysaora hysoscella*) and blue jellyfish (*Cyanea lamarckii*);
- On 13 July 2010, a large wine red plankton bloom was observed at the sea surface, probably the non toxic flagellate *Mesodinium rubrum*.

6. Surveillance of activities at sea that need an environmental permit

7. *Follow-up of the activities of the installation and exploitation of wind farms*

In the framework of the follow-up of the construction and exploitation phases of wind farms on the Bligh bank (BELWIND) and the Thornton bank (C-POWER), the aircraft regularly surveys the area, amongst others to report on progress to the authorities and to verify the compliance with the environmental permit conditions. During route surveillance flights in the Belgian zone in 2010, 36 observations were made with respect to wind farm activities (corresponding to 3,5 flight hours), which were systematically reported to MUMM and other Coast Guard Partners via the Coast Guard Centre (MIK).

8. *Follow up of the aquaculture activities and surveillance of experimental fishery zones*

Aquaculture projects (mussel culture, another type of economic activity falling under the Belgian environmental permit regime) and experimental fishery activities have also been controlled on a regular basis during observation flights, with the aim to verify the permit conditions and aspects related to safety. The structures that are placed and anchored in the designated aquaculture and experimental fishery areas, have been regularly overflowed in 2010 in order to determine their number, place, and overall condition, and relevant findings were systematically reported to MUMM and other involved Coast Guard Partners.

9. *Follow up of sand and gravel extraction activities*

Finally the aircraft is also used to exercise control on the sand and gravel extractions in the Belgian waters. Every extraction ship, which again needs to have an environmental permit, is equipped with an automatic registration system, a so-called 'black box'. This black box registers *inter alia* the date, time, position, speed, status of the pumps of the

extraction vessel, etc. MUMM is responsible for the technical management and the control of the black box system on behalf of FPS Economic Affairs. By reporting sand and gravel extraction activities observed at sea, the aircraft delivers interesting additional information with respect to the verification of the black box data. In 2010 the aircraft internally reported 15 such observed activities.

COLOPHON

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