

Surveillance of oil pollution on the sea (Denmark)

Theme: Protection of Water

Surveillance of oil pollution on the sea. The National Audit Office of Denmark (the NAOD)

1. The purpose of the examination.

The report examines the effectiveness of measures taken by the state to discover oil pollution in Denmark's territorial waters, and identifying and prosecuting oil polluters in the period 1995-2000.

It is prohibited to empty oil in Danish territorial waters, that is, 12 nautical miles from the coast.

Since 1983, it has been prohibited to empty oil in the Baltic Sea. A similar prohibition has been in effect in the North Sea since February 1, 1999.

The purpose has been to assess, whether:

- the surveillance effort is organised so that the state's aircrafts and satellite surveillance discover the oil spills,
- the pollution source is identified, and
- offenders are penalized.

2. Audit results.

a. Traffic of ships.

The NAOD examination showed that in the period 1995-2000 there was increased ship borne traffic in Danish waters and that the establishment of a major oil disembarkation terminal in Primorsk in Russia calls for a well functioning readiness against oil pollution.

The Ministry of Defence informed that the main pollution source of the Danish waters is illegal leakage from ships passing through the Skagerrak, the North Sea and in the Femer Belt.

Table 1. Passing ships in Danish waters during the years 1995 – 1999:

Number	Going north	Going south	In all
1995	52.050	52.850	104.900
1996	55.680	55.373	111.053
1997	60.286	59.832	120.118
1998	60.593	60.549	121.142
1999	60.447	60.322	120.769

b. Surveillance effort.

With the aim of meeting the recommendations of the Helsingfors convention, and in order to generally improve the oil pollution control; the Danish Environmental Protection Agency launched a three-year trial period with aircraft surveillance in 1989. Initially, the surveillance included 300 propeller hours annually, in 1995, the number increased to 450 propeller hours. As responsible for the flying hours needed, the Danish Environmental Protection Agency increased its flight hours by 100 % to 1000 propeller hours, equivalent to 500 jet hours.

Table 2. Planned and actual propeller hours in 1995-2000.

Year	1995	1996	1997	1998	1999	2000
Planned	450	450	450	1000	1000	1000
Actual	450	450	450	941	902	1002

Satellite surveillance has, on an experimental basis, been used for marine environment surveillance since October 1998, and from 2001 it became a permanent part of the Defence's oil pollution surveillance.

Defence has contracted for a fixed number of pictures to be supplied every year. For 2001, the Defence plans to receive 90 satellite pictures. The disadvantage of using satellite surveillance is that the observations must be verified visually, which in turn requires aircrafts or ships and takes time.

c. Observations of oil spills.

The number of observations varied in the period of 1995-2000. In 1999, it was at its highest with 220 substantiated oil observations, whereas the lowest number – 150 observations – was made in 1997, and in 2000 the number of observations was 151. In conclusion, in the period 1998-1999, the state's aircraft and satellite surveillance discovered an increasingly number of oil spills, but it was not until 2000 that aircrafts and satellites discovered more than half of the number of oil spills.

In 2000, the marine environmental surveillance discovered more oil spills with aircrafts and satellites than other sources; however, other sources still discover a significant proportion of the number of oil pollutions.

Table 3. Discovered oil spills in 1995-2000:

Number	1995	1996	1997	1998	1999	2000
Sea environmental flight surveillance	0	1	6	42	43	35
Satellite	0	0	0	12	42	52
In all flight and satellite	0	1	6	54	85	87
Other	188	171	144	147	135	64
In all	188	172	150	201	220	151

d. Identification and discovery frequency.

Various analyses are used for establishing evidence: lab tests of oil samples, databases of oil types, and various calculation models of oil slick movements at the sea. Analyses of the oil samples are made according to the North-test methodology, which the National Environment Research Institute of Denmark has participated in developing.

The North-test methodology is based on analysing samples from the pollution source as well as from the suspected source, and by comparing these analyses, it may be determined whether the samples are identical or not. On the basis of this, the polluter may be identified.

The examination showed that it was difficult to discover reliable research methodology.

The share of identified polluters has been between 12-22 % in the period 1995-2000. The share of identification was 19 % in 2000.

The examination of the NAOD has further shown that the extended expansion of the surveillance system (including the 100 % increase in the number of flight hours) only to a minor extent increased the number of identified polluters. A contributory factor may be that only about 1 % of the flights are carried out as night flights in spite of the Defence's assumption that illegal discharges are often being made in the dark and in low visibility weather.

Table 4. Identified polluters in 1995-2000.

	1995	1996	1997	1998	1999	2000
Number of oil observations	188	172	150	192	199	151
Identified polluters	24	21	33	27	31	28
Identified polluters in percentage	12	12	22	14	15	19

There are no night flights in spite of the Defence's assumption that illegal discharges are often being made in the dark and in low visibility weather.
The source of pollution is only identified in very few cases.

e. Prosecution.

The NAOD examination showed that the number of penalised oil polluters has not increased in the examined period. The NAOD demonstrated that only very few cases have been presented to the State Prosecuting Attorney. The Danish authorities' less effective efforts to stop pollution of the Danish waters are also considered to have a negative preventive effect.

f. Effectiveness in the system.

The NAOD assesses that the total effort in relation to oil pollution at sea is not effective. As long as aircraft and satellite surveillance are the core elements in deterring from oil pollution, it is necessary to increase the effect of these significantly. It is relatively unimportant that more oil polluters are discovered by the Defence's surveillance system, as long as the pollution sources are not identified. This means that the effort has to be targeted so that the oil spills are discovered sufficiently early to identify more polluters and ensure they are punished far more frequently.

3. Audit benefits

When the new Danish government came into power on November 20, 2001 initiatives were taken to follow up on NAOD's report, regarding an increased effort to fight oil pollution, as an item in the government programme.

The effort has, among other things, included so called environmental radio calls to ships from The Danish Navy Operative Command sailing through the Danish seas. Authorities inform the ships of the Danish rules for emptying waste oil, and inquire about the cargo. This has resulted in the number of reports about waste oil puddles have been almost reduced to half the number.

On the basis of the successful Danish experiences, initiatives are underway to preventively call all the ships in the Baltic Sea region. In Helcom-regi (Baltic Marine Environment Protection Commission - The Helsinki Commission, see also www.helcom.fi) the issue will be dealt with a meeting in March 2003 among the nine Baltic Sea countries, and most likely the system will be introduced all over the Baltic Sea.

4. Methodology

The used methodology was traditional performance audit efficiency analysis. No specific audit environmental concept was applied. The audit lessons learned to be shared with other SAIs are few, but it is still an important environmental subject, since the illegal oil spills in fact pollute more than accidents with tankers.