Bonn Agreement
Accord de Bonn

Bonn Agreement Aerial Surveillance Programme

Annual report on aerial surveillance for 2008

CONTENTS

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Introduction

1. The eight countries bordering the North Sea which work together within the Bonn Agreement undertake aerial surveillance using specially equipped aircraft and specialised personnel to detect spills of oil and other harmful substances and enforce international environmental regulations. This report deals with the aerial surveillance undertaken as a collective effort under the Bonn Agreement. In addition, the North Sea countries also undertake other aerial surveillance for individual national purposes.

2. In addition to national flights carried out under the Bonn Agreement in their own parts of the maritime area (the objectives of these are described in Annex 3), the Bonn Agreement countries also co-ordinate flights of the following types :

   a. *Tour d'Horizon* (TdH) flights - monthly flights carried out by countries in turn to survey the offshore area of the North Sea where offshore oil and gas activities take place (not all countries participate in these);

   b. *Co-ordinated Extended Pollution Control Operations* (CEPCO), where some neighbouring countries co-operate to survey intensively an area with high traffic density during a relatively short period (e.g. 24 hours).

3. This report compiles, in Tables 1 - 5, data for all the flight types undertaken for Bonn Agreement purposes. These Tables are based on data related to the number of flight hours, the number of spills and their estimated volume. This report differs from those for 2000-2002 in that the data on the number of oil spills was related in those reports to the geographical coverage of the surveillance by side-looking airborne radar (SLAR). Following the revision of the reporting format by BONN 2003, this is no longer the case. Definitions of some of the terms used in these tables are given in Annex 1. In the 2008 reporting round a draft revised reporting format has been used. The format was revised in coordination with the Helsinki Commission in order to harmonise reporting procedures under both regional agreements.

4. Denmark, in close cooperation with Sweden and Norway, hosted a major surveillance operation, the Super CEPCO 2008. This operation was carried out from the Military Airbase Aalborg, Air Transport Wing Aalborg on 21 – 30 April 2008 in the Skaw area. Total flight time was 185 hours. The objectives were:

   a. to perform continuous monitoring of ship-source marine pollution;

   b. to validate satellite detections and help develop guidelines for satellite surveillance;

   c. to catch polluters and develop rapid effective follow-up procedures;

   d. to assist with drafting European guidelines on oil pollution monitoring and detection.

5. Fifty-five observations were made of which 17 were identified as mineral oil. Two polluters were caught red-handed (one discharge turned out to be sewage water). The case was handed over to local police and the owner agreed to pay a fine of 30,000 DKK. The second discharge was mineral oil. The ship was fined 25,000 DKK and this has been paid.

6. Among the lessons learnt were:

   a. the size of the Super CEPCO should be kept within the limits of the capacity and resources available;

   b. it was difficult to coordinate / organise oil sampling buoys as most countries have different regulations;

   c. participating aircraft should be equipped with satellite telephones to avoid communication problems;

d. diplomatic clearance for aircraft and vessels should be obtained well in advance.

7. Details on the oil-slicks identified during the Tour d'Horizon flights, including maps of the flight routes and location of oil-slicks, and on the outcome of investigations by Government inspectors into those oil-slicks are set out in Annex 2.

8. Annex 3 includes the following information about each Contracting Party:

a. size of the Exclusive Economic Zone (EEZ) in km^2;

b. any major traffic routes in the EEZ;

c. the number of any oil/gas rigs in the EEZ;

d. the existence of satellite programmes;

e. a short description of the objective of the flights.

9. The report demonstrates the effectiveness of co-operation in aerial surveillance among North Sea countries and their collective effort to detect marine pollution. The North West European Waters – the main part of which is formed by the North Sea – have been declared a Special Area by the International Maritime Organization for the purpose of MARPOL Annex I (Oil). This took effect on 1 August 1999, from which date the discharge of all oily wastes at sea in the Special Area is prohibited.

Commentary

10. The results of the follow-up of "identified polluters" (see Tables 1 and 3) are not included in this report since it may take a year or more to obtain the outcome of court or administrative proceedings in the country responsible for such proceedings (acting as flag state, coastal state or port state). . In cooperation with the North Sea Network of Investigators and Prosecutors (NSN) the Bonn Agreement has published the North Sea Manual on Maritime Oil Pollution Offences (2009) providing detailed information *inter alia* on the legal and organisational framework, national laws of North Sea states and technical and operational means of securing evidence.

11. For about 80% of the detections observed/confirmed as oil slicks, the source of the slick (i.e. the polluter) has not been identified. Most visible oil slicks, however, come from shipping and offshore installations.

12. This report includes estimates of the total amounts of oil discharged based on the aerial-surveillance data. These estimates use the Bonn Agreement Colour Code until 2003 and from 2004 use its replacement, the Bonn Agreement Oil Appearance Code. The Contracting Parties to the Bonn Agreement consider that the data currently available are too sparse and too diverse to allow reliable overall estimation of oil inputs, and that such estimates should be interpreted as indicative and not totally accurate. Joint aerial surveillance exercises are organised on a regular basis to harmonise measurement techniques and to improve the accuracy and comparability of the data e.g. with a view to analysing them statistically.

13. The quantities of oil discharged into the North Sea by the offshore industry are reported to the OSPAR Commission by the countries under whose jurisdiction offshore oil extraction takes place (the total quantity of oil discharged into the OSPAR maritime area through discharges and spillages of dispersed oil in 2007 was 9025 tonnes). There are at present no equivalent reliable figures for the amount of oil input to the North Sea from land-based sources or from shipping.

14. In 2008 Contracting Parties reported estimated volumes for 288 slicks in the Bonn Agreement area. Figure 1 shows the percentage of slicks subdivided into different size categories.

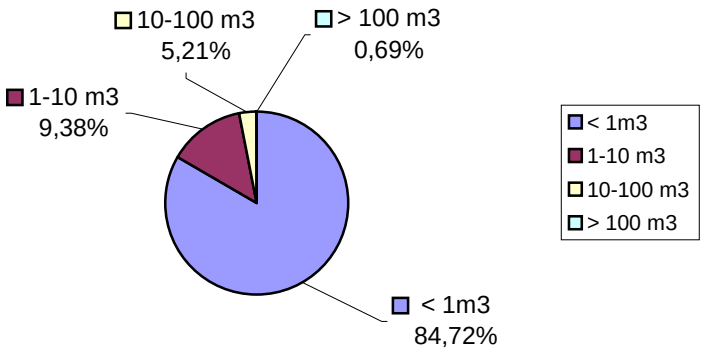


Figure 1: Percentage of slicks in size categories observed in the Bonn Agreement area in 2008

15. Two slicks of over 100m^3 were reported by Denmark. However, most slicks were in a size-category that did not warrant action to combat them, since they would evaporate, dissolve and disperse naturally.

16. An overview of the locations of slicks observed during 2008 is given in Figure 2 (Map). A common HELCOM / Bonn Agreement map, showing the location of oil spills observed by aerial surveillance and their estimated minimum volumes in the Baltic Sea and North Sea areas in 2008, is given in Figure 3. Overviews of the major traffic routes in the EEZs of the Netherlands and Norway are given in Figures 4 and 5. When examining Figures 2, 3, 4 and 5, the reader should take account of the following:

a. the density of ship traffic, and thus the associated likelihood of observing slicks, are highest in the traffic corridor along the south-eastern shore of the Bonn Agreement area;

b. Contracting Parties' flight hours reported in Table 1 are mostly spent surveying the national zones of interest, which in most cases correspond with the national EEZ or continental shelf areas. There are large differences in the sizes of these zones of interest and the respective total numbers of hours spent surveying them. This implies that the relative frequency with which areas are visited – and thus the potential density of the observations – varies significantly between Contracting Parties.

17. The format of the report's tables 1 – 5 was modified in 2000 and in 2003. The 2000 to 2002 data reflects the relation of the observation with SLAR coverage through the concept of 'BA flight hour' (i.e. one hour of airborne remote sensing over the sea at a standardised speed of 335 km per hour). As a result of this revision of the reporting format in 2000, the flight hour data up to 1999 are absolute numbers and from 2000 to 2002 the flight hour data are standardised on SLAR-coverage, i.e. corrected for relative aircraft speed. For the countries for which the average aircraft speed is significantly different from the standard speed (e.g. Belgium and UK), the data up to 1999 and from 2000 will not be comparable. As a result of a new revision of the reporting format in 2003, from 2003 onwards, the data are again absolute numbers.

Table 1. Summary of data relating to National Flights during 2008

Country	No. of flight hours			No. of detections			Detections confirmed/observed as oil spills			Satellite detections		Estimated volume M^3 (1)	No. of polluters				Remarks
	Daylight	Darkness	Sum	Daylight	Darkness	Sum	Daylight	Darkness	Overall	Detected	Confirmed		Rigs	Ships	Other/ Unknown	Total	
Belgium	188.83	37.08	225.91	13	0	13	9	0	9	13	0	5	0	1	8	9	(2) (3)
Denmark	182.60	71.30	253.9	128	32	160	105	18	123	90	30	960	26	14	83	123	
France	681	24.3	705	35	1	36	31	1	32			70	0	8	24	32	
Germany	598.25	272.8	871	34	20	54	29	19	48	108	12	20	0	1	47	48	
Netherlands	601.8	212.3	814	114	36	150	25	0	25	208	25	70	5	15	0	20	
Norway	230	0	230	14	0	14	14	0	14	34	6	20	6	1	7	14	(4)
Sweden	130	30	160	4	0	4	4	0	4	10		0	0	0	4	4	
UK	629.45	34.35	663.8	80	2	82	77	0	77	237	17	150	31	17	34	82	
Total	**3242**	**682.13**	**3924.16**	**422**	**91**	**513**	**294**	**38**	**332**	**700**	**90**	**1,295**	**68**	**57**	**207**	332	

(1) The data currently available do not allow reliable overall estimation of oil inputs. These estimates should therefore be interpreted as indicative and not totally accurate. They have therefore been rounded to the nearest 5 m^3 (the nearest 1 m^3 for estimated amounts below 5 m^3).

(2) Of the 13 detections in own EEZ: 3 are unknown – unidentifiable substances; 1 was confirmed as vegetable oil; 9 were confirmed as oil spills of which 1 was accidental (Thornton I).

(3) Of the 13 detections outside own EEZ: 10 are unknown – unidentifiable substances of which 5 at night; 2 were confirmed as vegetable oil (SAMISTAL); 8 were confirmed as oil spills; 1 was confirmed as a chemical spill (Clipper Barbera).

(4) Only 75 hours were flown by the main surveillance aircraft in 2008. This was due to 5 months of heavy maintenance on the aircraft, followed by the accident in June.

Table 2. Summary of data relating to Co-ordinated Extended Pollution Control Operations (CEPCO) flights during 2008

Country	No. of flights	No. of flight hours			No. of detections			Detections confirmed/ observed as mineral oil spills	Estimated volume m^3	No. of polluters			
		Daylight	Darkness	Sum	Daylight	Darkness	Sum			Rigs	Ships	Unknown	Total
Total		**100**	**85**	**185**	**9**	**0**	**9**	**9**	**3.795**	**0**	**2**	**7**	**9**

Table 3. Summary of data relating to Tour d'Horizon (TdH) flights during 2008

Country	No. of flights	No. of flight hours			No. of detections			No of detections identified as oil	Estimated volume m^3	No. of polluters				Remarks
		Daylight	Darkness	Sum	Daylight	Darkness	Sum			Rigs	Ships	Unknown	Total	
Belgium	5	12.17	0	12.17	13	0	13	13	17	11	0	2	13	
Denmark	2	9.4	0	9.4	3	0	3	2	9.64			3	3	
France				0			0						0	
Germany				0			0						0	
Netherlands	5	12.16	0	12.16	19	0	19	17	3	15	0	0	15	
Norway				0			0						0	
Sweden	5	13	0	13	2	0	2	2	0.03			2	2	
UK	3	9.66	0	9.66	0	0	0	0	0.00	0	0	0	0	
Total	**20**	**56.39**	**0**	**56.39**	**37**	**0**	**37**		**29**	**26**	**0**	**7**	**33**	

Table 4. Summary of data relating to all flights during 2008

Country	No. of flight hours			No. of detections			Detections confirmed/ observed as oil spills			Satellite detections		Estimated volume M^3 (1)	No. of polluters		
	Daylight	Darkness	Sum	Daylight	Darkness	Sum	Daylight	Darkness	Overall	Detected	Confirmed		Rigs	Ships	Unknown
Belgium	193.83	49.25	243.08	26	0	26	9	0	22	13	0	23	11	1	10
Denmark	284.60	165.70	450.3	140	32	172	114	18	134	90	30	973	26	16	93
France	681.10	24.30	705.4	35	1	36	31	1	32	0	0	72	0	8	24
Germany	598.25	272.80	871.05	34	20	54	29	19	48	108	12	17	0	1	47
Netherlands	606.80	224.46	831.26	133	36	169	25	0	42	208	25	74	20	15	15
Norway	230.00	0.00	230	14	0	14	14	0	14	34	6	17	6	1	7
Sweden	135.00	43.00	178	6	0	6	4	0	6	10	0	0	0	0	6
UK	632.45	44.01	676.46	80	2	82	77	0	77	237	17	149	31	17	34
Total	**3362**	**823.52**	**4185.55**	**459**	**91**	**559**	**303**	**38**	**375**	**700**	**90**	**1,322**	**94**	**59**	**240**

(1) The data currently available do not allow reliable overall estimation of oil inputs. These estimates should therefore be interpreted as indicative and not totally accurate. They have therefore been rounded to the nearest 5 m^3 (the nearest 1 m^3 for estimated amounts below 5 m^3). The total has been rounded independently.

Table 5. Distribution of the estimated sizes of confirmed/observed oil slicks

Country	Category I: < 1 m^3	Category II: 1 – 10 m^3	Category III: 10 – 100 m^3	Category IV: > 100m^3	Not quantified	Number of Slicks
Belgium	7	2	0	0		9
Denmark	89	10	4	2		105
France	24	6	2	0		32
Germany	15	1	1	0	37	54
Netherlands	23	0	2	0		25
Norway	12	1	1	0		14
Sweden	4	0	0	0		4
UK	70	7	5	0		82
Total	**244**	**27**	**15**	**2**	**37**	**325**

Figure 2: Overview of slicks observed during Bonn Agreement aerial surveillance activities during 2008

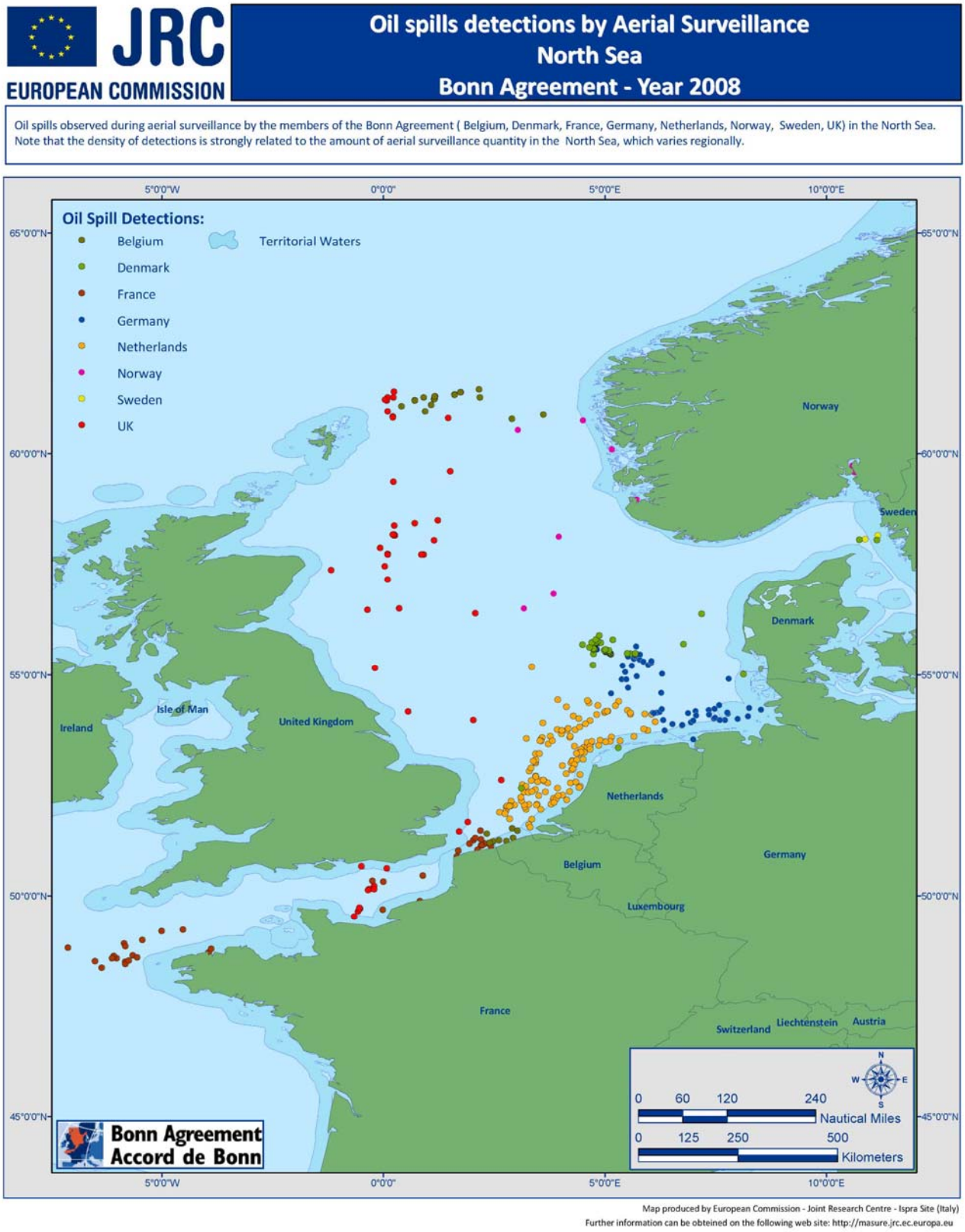


Figure 3: Common HELCOM / Bonn Agreement map showing the location of oil spills confirmed/observed by aerial surveillance within the Baltic Sea and North Sea areas in 2008

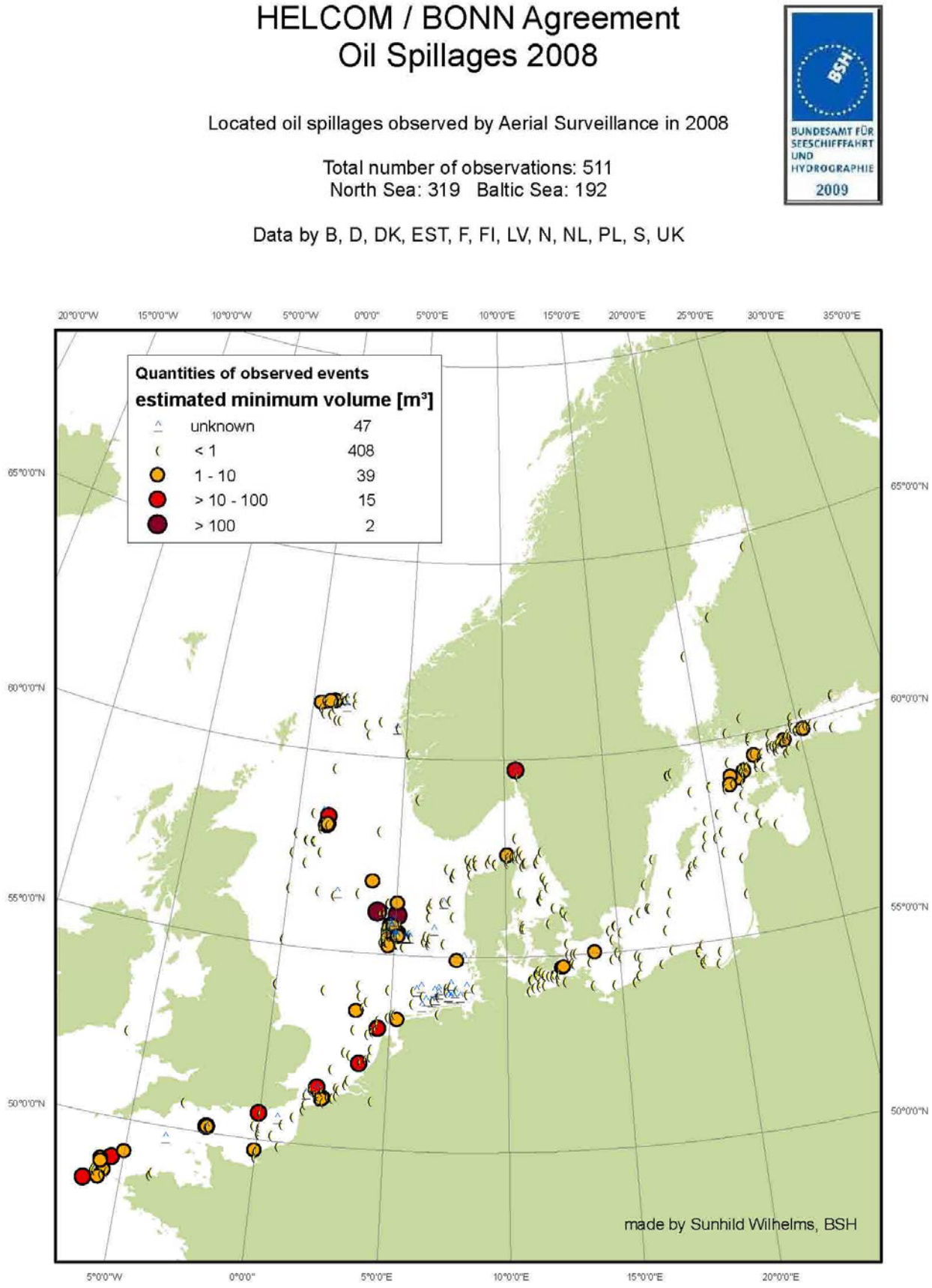


Figure 4: Maritime traffic routes off the Netherlands

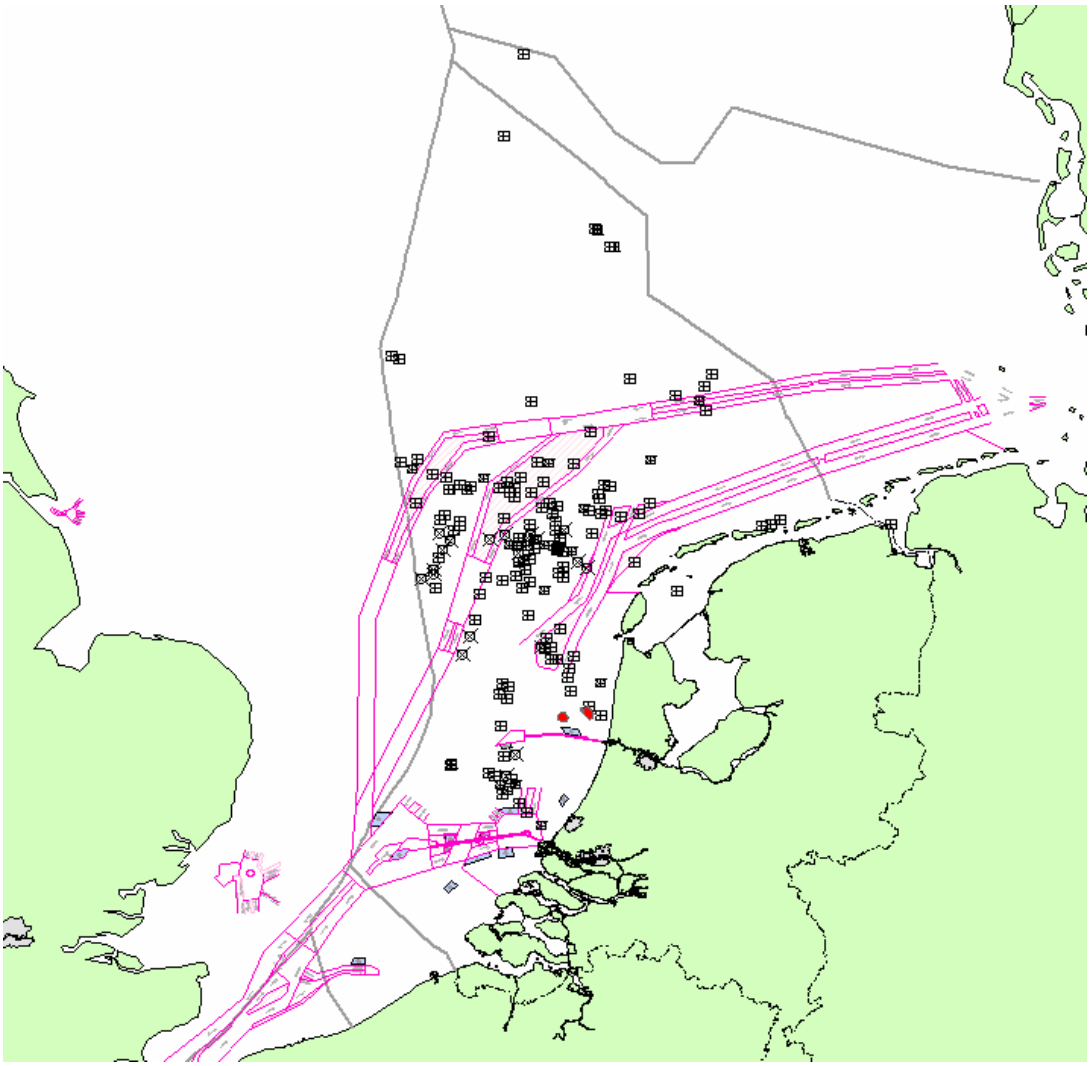


Figure 5: Maritime traffic routes off Norway

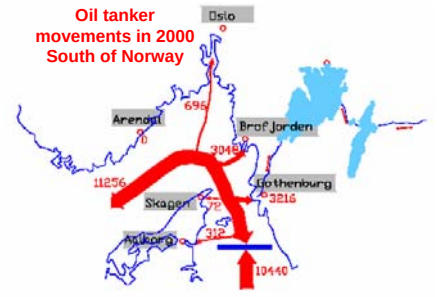
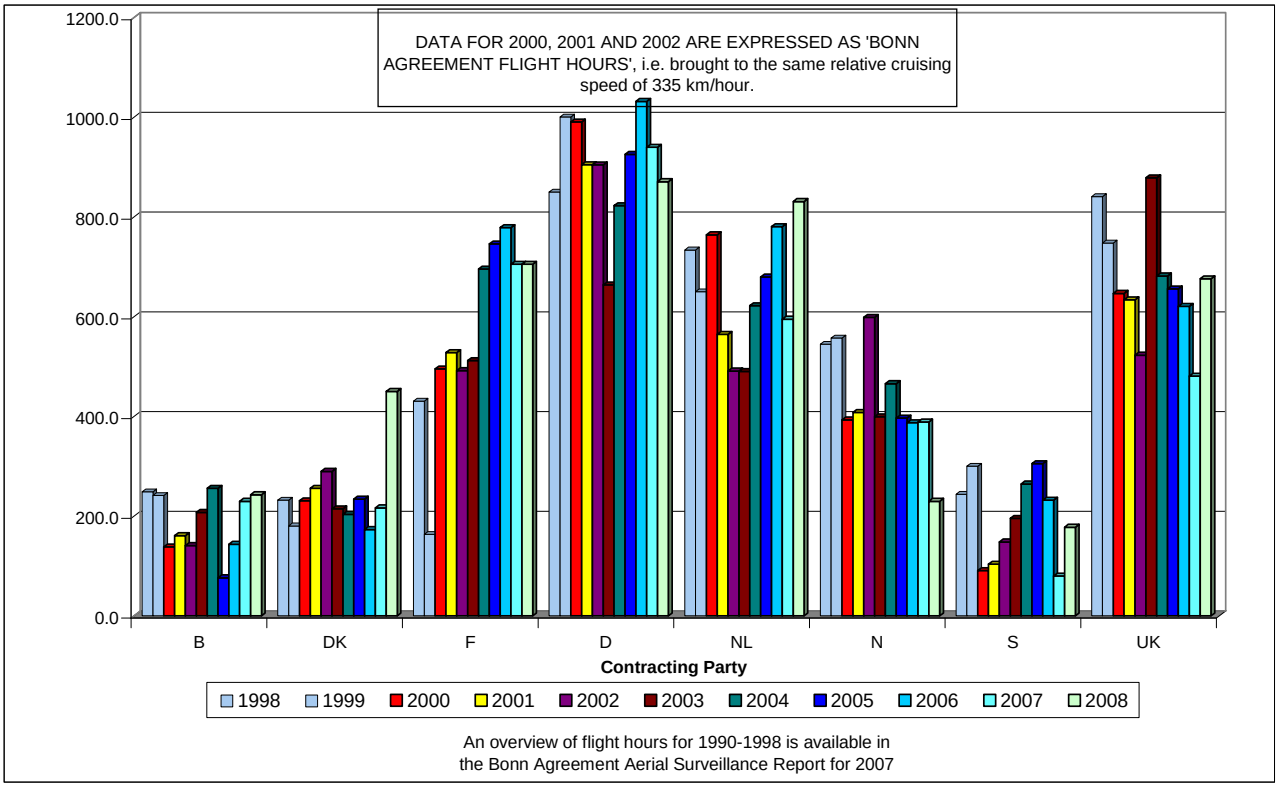
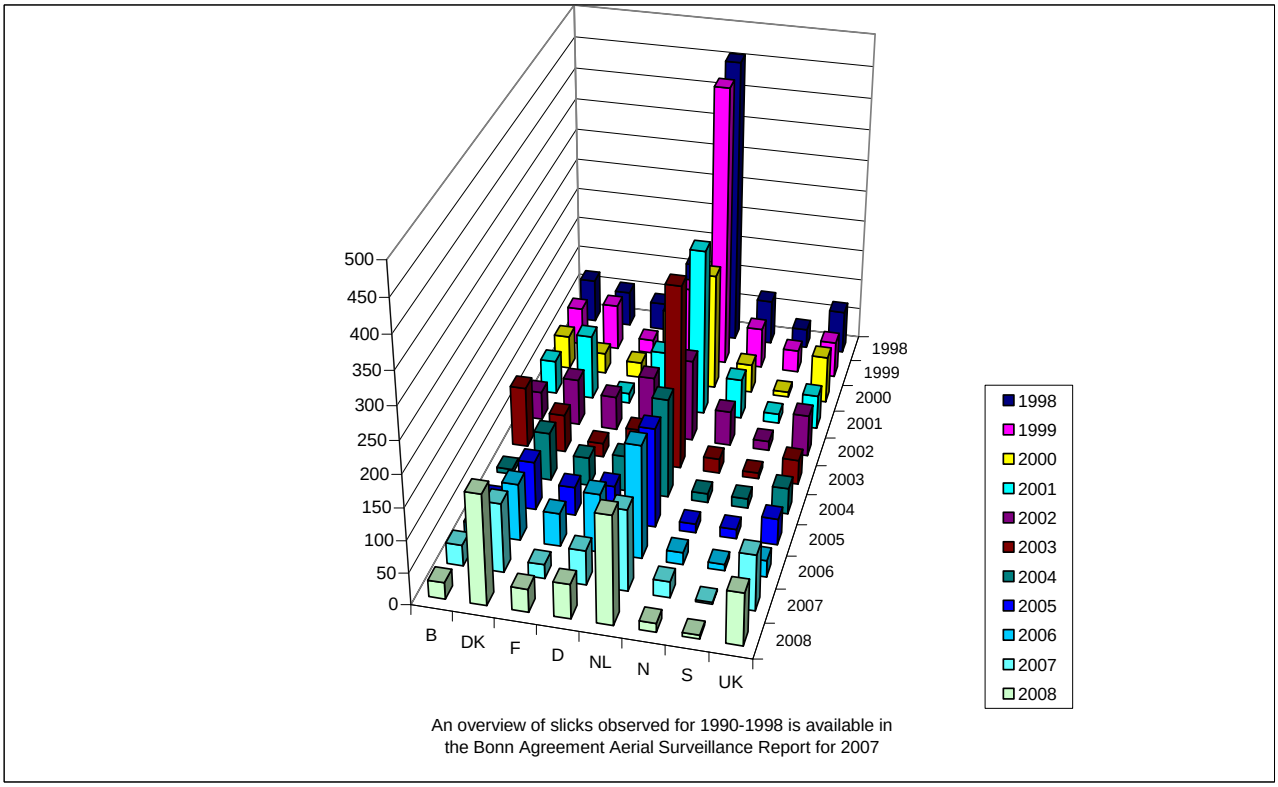


Figure 6: Number of flight hours per country 1998 – 2008



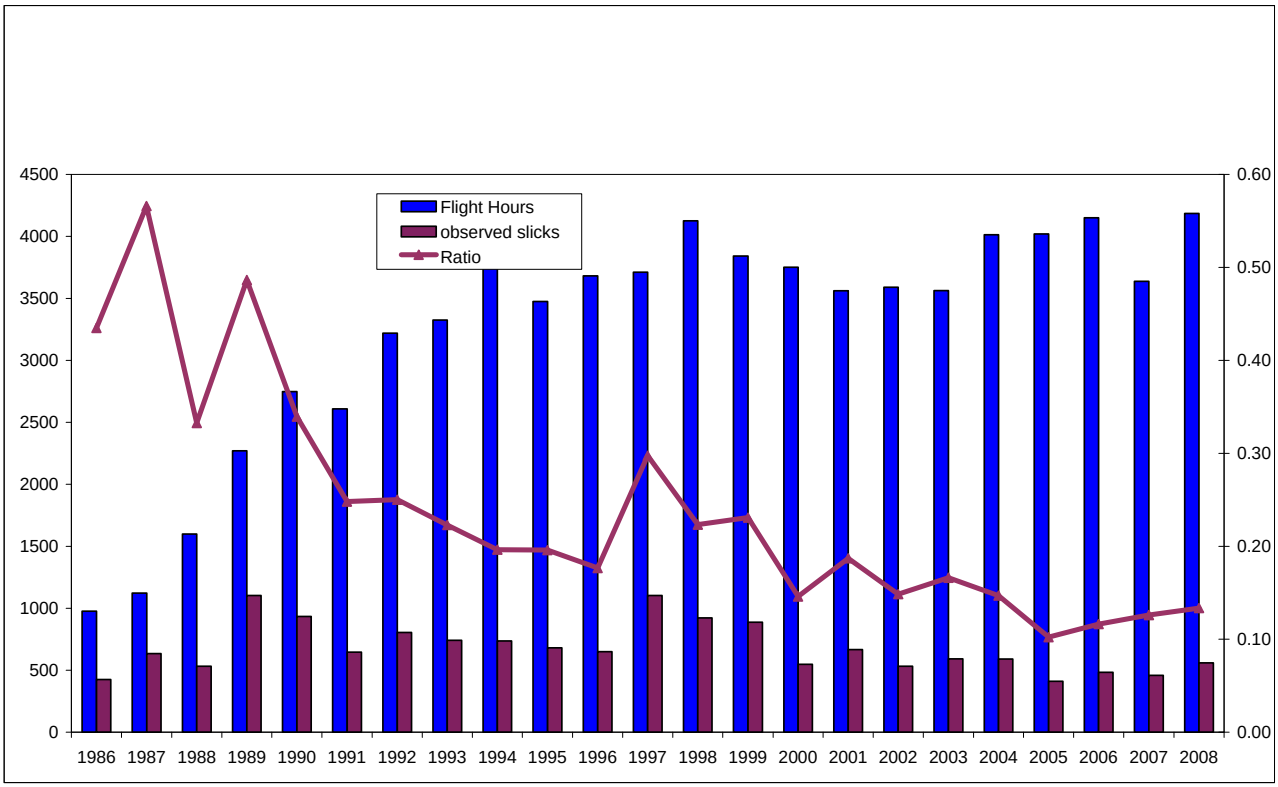
An overview of flight hours for 1990-1998 is available in the Bonn Agreement Aerial Surveillance Report for 2007

Figure 7: Number of slicks observed 1998 – 2008



An overview of slicks observed for 1990-1998 is available in the Bonn Agreement Aerial Surveillance Report for 2007

Figure 8: Total numbers: all flight hours and all observed slicks 1986 – 2008 and their ratio



ANNEX 1

Definitions used in the reporting of data from aerial and satellite surveillance

Aerial surveillance

Country	Name of the Contracting Party reporting.
One Flight	Unit of operation between take-off and next landing.
No. of flight hours	Nationally allocated flight hours carried out by trained observers on behalf of the Contracting Party.
Day (daylight)	From 30 minutes after Morning Civil Twilight, until 30 minutes before Evening Civil Twilight as given in the Air Almanac.
Night (darkness)	From 30 minutes before Evening Civil Twilight, until 30 minutes after Morning Civil Twilight as given in the Air Almanac.
Detections	Number of first reports on possible pollutions obtained in aerial operations (raw data). This will be sensor data, without visual observation.
Detections confirmed	Number of the total detections (first reports) that have been verified and/or identified by means of instruments or visually and are confirmed by a trained operator as a mineral oil pollution.
Estimated volume of a spill	The volume of one spill calculated using the Bonn Agreement Oil Appearance Code, the lower figure (BAOAC minimum).
Identified polluter	Name of vessel, platform or other source positively identified as the polluter.
Slick	An area of (possible) pollution.
Spill	A collection of one or more slicks originating from the same source.
Remarks	This column should be used to report on particular situations.

Satellite Surveillance

Satellite detections	The number of satellite detections is the number of reports obtained through satellite detections within the EEZ of the contracting party – including those obtained from other countries
Confirmed mineral oil	The number of verified/investigated satellite detections consisting of mineral oil. A trained operator will have visually observed mineral oil
Confirmed other oil or chemical	The number of verified/investigated satellite detections consisting of vegetable or fish oil or chemical.
Confirmed natural phenomena	The number of verified/investigated satellite detections consisting of algae or natural phenomena as currents, waves, ice etc.
No detections	The number of verified/investigated satellite detections that nothing has been found.

ANNEX 2

Additional information on the Tour de Horizon flights

Report on Tour de Horizon flights carried out during 2008

Introduction

The Tour de Horizon (TdH) flights for 2008 were flown as follows:

- April: Belgium
- July: United Kingdom [instead of May – cf. planning Annex 6 of BONN 08/15/1]
- July: The Netherlands
- August: Sweden
- October: Denmark

The flights took place on 16 days between 21 April and 10 October 2008, more specifically:

- From 21 to 25 April;
- From 9 to 11 July;
- From 29 to 31 July;
- From 02 to 04 August;
- From 9 to 10 October.

All flight data were sent to Belgium for compilation.

Detections

- 37 detections were made: 21 in the British area, 7 in the Norwegian area, 2 in the Dutch area, and 7 in the Danish area.
- 34 detections were identified as mineral oil, 3 detections could not be specified.
- 26 detections were associated with offshore installations (16 in the UK area, 7 in the Norwegian area, 3 in the Danish area and 1 in the Dutch area). The source of pollution of the remaining 9 mineral oil detections and the 2 (of the 3) unknown detections could not be established.
- Considering the *minimum* oil volume estimates, detections were quantified as follows:
    - 0 detections more than 100 m^3;
    - 1 detection between 10-100 m^3 (32.6 m^3);
    - 3 detections between 1-10 m^3 (3.56, 9.66, and 9.10 m^3 resp.);
    - 8 detections between 0.5 and 1 m^3;
    - 8 detections between 0,1 and 0,5 m^3;
    - 14 detections lower than 0,1 m^3.
- Considering the *maximum* oil volume estimates, detections were quantified as follows:
    - 1 detection more than 100 m^3 (102.02 m^3);
    - 6 detections quantified between 10-100 m^3 (41.52, 10.71, 12.27, 36.8, 10.6 and 67.45 m^3 resp.);
    - 14 detections between 1-10 m^3;
    - 3 detections quantified as between 0.5 and 1 m^3;
    - 5 detections between 0.1 and 0.5 m^3;

- 5 detections below 0.1 m^3.

- All countries reported that no 'first alert' satellite detections were obtained for any of the 'aerial' TdH detections (no satellite detection validation effort reported).

Five maps have been added to this report (see Fig. 9 to 13) showing the various flight routes of the five aircraft that performed TdH flights in 2008, and/or the location of the detections that were made during those flights. The positions of the offshore platforms (in British, Danish, Dutch and Norwegian waters respectively) have also been added in order to enhance the illustrations.

Detection reporting

Belgium performed only post-flight reporting of detections by fax, mainly due to technical problems with the marine VHF during the TdH mission. Denmark, the Netherlands and the United Kingdom reported that they performed a correct reporting of their flight results/detections, in accordance with the recommended reporting procedures described in the Aerial Surveillance Handbook.

Detection investigation

Platform detection investigation reports were received from government inspectors from the United Kingdom, Norway and Denmark. The government inspectors assessments are listed in the 'Detection Investigation Summary' overview (see pp. 9-12). From this overview, it can be concluded that:

- Most oil slicks observed during the TdH 08 campaigns were assessed as sheens resulting from permitted discharges of oil in produced water.

- For some reported slicks however, further investigation indicated that the discharge had been caused by a technical deficiency or specific operation:

  - With respect to a slick observed at the 'Cormorant A' site (on 22.04.2008), the platform operator reported having experienced high oil in produced water concentrations throughout that month due to poor hydrocyclone[1] performance; a (regulatory) permit non-conformance notification was submitted to the UK Government on the 2nd of May.

  - With regard to the (major) slick observed at the 'Tern' platform (on 22.04.2008), further investigation showed that the Tern Alpha suffered problems with a demulsifier pump resulting in poor produced oil/water separation and several exceedances of permitted concentration levels, which were recorded and reported to the UK Government between the 20 and 27 of April. Another exceedance of permitted concentration levels was due to a sand blockage in the produced water flash drum level controller.

  - The slick observed near the Sedco 704 (on 22.04.2008) was related to drop out of oil during well test flaring operations, and actions were taken to prevent further release of oil.

Furthermore, it is important to note that:

- For at least two major slicks (North Cormorant and Tern), the oil volumes estimated by the aerial operators was about 10 to 100 times (min.-max. estimates) higher than the volumes reported by the platform operators. In the case of the Tern platform however, the UK Government had also received a number of reports related to a sheen from an unknown source around that time and it was concluded that the large volumes reported during the Belgian flight may have been an accumulation of oil remaining in the area over several days.

[1] Hydrocyclone: advanced oil-water separation system used for oily process water and oil-field produced water applications.

- Unfortunately, in several cases no record exists of reporting by aircrew and/or follow-up by coastal stations, or no report was received of an observed slick. As a result, only limited or no government inspectors assessment info was collected for those cases.

TOUR D'HORIZON 2008 RESULTS

BELGIUM: 21-25 APRIL 2008

No	Date (ddmm)	Time (UTC)	Position (N - E/W)		CP Area	Min. Quan. (m^3)	Max. Quan. (m^3)	Polluter ID
1	22.04	9:02	60° 57.2' N	000° 56.4' E	UK	0.18	2.11	HEATHER A
2	22.04	9:18	61° 06.2' N	001° 04.4' E	UK	0.31	3.92	CORMORANT A
3	22.04	9:22	61° 14.2' N	001° 08.6' E	UK	0.13	1.27	NORTH CORMORANT
4	22.04	9:25	61° 17.6' N	001° 09.6' E	UK	3.56	41.52	NORTH CORMORANT
5	22.04	9:36	61° 16.7' N	000° 54.7' E	UK	9.66	102.02	TERN
6	22.04	9:47	61° 12'.7 N	000° 42.4' E	UK	0.11	1.15	SEDCO 704
7	22.04	9:57	61° 04.0' N	000° 24.4' E	UK	0.84	6.30	(Unk)
8	23.04	12:54	61° 20.0' N	001° 36.3' E	UK	0.03	0.20	THISTLE A
9	23.04	12:56	61° 23.7' N	001° 44.2' E	UK	0.79	10.71	MURCHINSON
10	23.04	13:08	61° 27.1' N	002° 08.6' E	NO	0.05	0.58	SNORRE A
11	23.04	13:27	61° 16.6' N	002° 10.2' E	NO	0.42	3.19	(Unk)
12	23.04	13:49	60° 46.6' N	002° 53.9' E	NO	0.02	0.16	VESLEFRIKK A
13	23.04	14:21	60° 53.2' N	003° 36.7' E	NO	0.91	12.27	TROLL C

- 13 detections/observations of mineral oil.
- No first alert via SAT detection reported.
- No in-flight radio contact established with coastal States, due to technical problems with VHF. Post-flight reporting performed by fax to NCPs.

UNITED KINGDOM: 9-11 JULY 2008

No	Date (ddmm)	Time (UTC)	Position (N - E/W)	CP Area	Min. Quan. (m^3)	Max. Quan. (m^3)	Polluter ID
NO DETECTIONS							

- Standard post-flight reporting performed by fax to NCPs.

NETHERLANDS: 29-31 JULY 2008

No	Date (ddmm)	Time (UTC)	Position (N - E/W)		CP Area	Min. Quan. (m^3)	Max. Quan. (m^3)	Polluter ID
1	29.07	13:09	53º 58.0' N	002º 01.7' E	UK	0.06	1.00	(Unk)
2	29.07	13:50	56º 23.8' N	002º 04.0' E	UK	0.70	7.36	AUK ALPHA
3	29.07	14:20	57º 43.0' N	000º 54.2' E	UK	0.12	1.91	FORTIES DELTA
4	29.07	14:20	57º 43.4' N	000º 51.0' E	UK	0.80	1.39	FORTIES CHARLIES
5	30.07	10:15	58º 25.7' N	000º 42.9' E	UK	0.78	8.30	(Unk)
6	30.07	10:33	58º 02.9' N	001º 08.2' E	UK	0.005	0.04	BRITTANIC
7	30.07	10:51	58° 29.5' N	001°13.6' E	UK	x	x	(Unk)
8	30.07	11:10	59º 36.4' N	001º 30.4' E	UK	0.01	0.03	BERYL BRAVO
9	30.07	14:20	60º 48.2' N	001º 27.2' E	UK	0.45	4.83	NINIAN SOUTH
10	30.07	14:30	60º 57.2' N	000º 56.5' E	UK	0.03	0.38	HEATHER
11	31.07	14:58	61° 23.8' N	001° 44.2' E	UK	x	x	MURCHINSON
12	31.07	9:10	59º 13.1' N	002º 22.1' E	NO	0.03	0.52	BALDER FPU
13	31.07	9:36	58º 11.8' N	002º 28.6' E	NO	0.00	0.02	GUARDIAN
14	31.07	10:15	56º 33.9' N	003º 12.2' E	NO	0.01	0.24	EKOFISK FIELD
15	31.07	10:49	55º 39.0' N	004º 43.8' E	DK	0.06	0.45	(Unk)
16	31.07	10:52	55º 43.2' N	004º 47.6' E	DK	0.007	0.05	TYRA WEST
17	31.07	10:58	55º 43.2' N	004º 48.0' E	DK	0.28	4.55	TYRA EAST
18	31.07	11:04	55º 31.9' N	005º 00.4' E	DK	0.008	0.06	HALFDAN ALPHA
19	31.07	14:04	54º 13.6' N	007º 28.1' E	DK	0.08	0.60	(Unk)

- 17 detections/observations of mineral oils; 2 detections of unknown substance.
- No first alert via SAT detection reported.
- Reporting performed in accordance with the BA recommended procedures.

SWEDEN: 02-04 AUGUST 2008

No	Date (ddmm)	Time (UTC)	Position (N - E/W)		CP Area			Polluter ID
1	02.08	9:40	55° 53.2' N	004° 44.0' E	DK	32.6	36.8	(Unk)
2	02.08	9:42	55° 46.5' N	004° 46.7' E	DK	0.7	10.6	(Unk)

- 2 detections/observations of mineral oil.
- No first alert via SAT detection reported.

DENMARK: 9-10 OCT 2008

No	Date (ddmm)	Time (UTC)	Position (N - E/W)		CP Area	Min. Quan. (m^3)	Max. Quan. (m^3)	Polluter ID
1	09.10	9:42	55° 34'N	005° 29'E	NL	9.10	67.45	OXL NOMAD
2	09.10	11:30	52° 43'N	003° 11'E	NL	0.54	4.05	(Unk)
3	10.10	10:35	61° 13'N	001° 47'E	UK	x	x	(Unk)

- 2 detections of mineral oils; 1 detection of unknown substance.
- No first alert via SAT detection reported.
- Reporting performed in accordance with the BA recommended procedures.

TOUR D'HORIZON 2008 – DETECTION INVESTIGATION SUMMARY

APRIL- BELGIUM

Date (ddmm)	Time (UTC)	Platform	Reported quantity (m^3) Min.	Max.	Government inspectors assessment
22.04	9:02	HEATHER A	0.18	2.11	(UK) Sheen from permitted discharge of oil in produced water thought to be more extensive than normal due to calm weather conditions
22.04	9:18	CORMORANT A	0.31	3.92	(UK) Operator contacted by UK Government and carried out an investigation. Cormorant Alpha experienced high oil in produced water concentrations throughout the month of April due to poor hydrocyclone performance thought to be related to reduced production rates. A regulatory permit non-conformance notification was submitted to UK Government on 2nd May reporting that the monthly average concentration of oil in produced water from the installation was 35.1636mg/l, with a total of 1.6366 tonnes of oil being discharged to sea during the month. Plans were made to re-line the hydrocyclone to improve performance at low flow rates. Sheen observed to be more extensive than usual due to calm weather conditions.
22.04	9:22	NORTH CORMORANT	0.13	1.27	(UK) Operator contacted by UK Government and carried out an investigation. No incidents which may have caused a release of oil to sea identified and oil in produced water being discharged within statutory limits. Total oil in produced water discharged over the two days 21st to 22nd April reported as 0.3749 tonnes at a maximum concentration of 18.2mg/l. It was also noted that the weather conditions were calm at the time which contributed to the sheen being more extensive than usual.
22.04	9:25	NORTH CORMORANT	3.56	41.52	(UK) Operator contacted by UK Government and carried out an investigation. No incidents which may have caused a release of oil to sea identified and oil in produced water being discharged within statutory limits. Total oil in produced water discharged over the two days 21st to 22nd April reported as 0.3749 tonnes at a maximum concentration of 18.2mg/l. It was also noted that the weather conditions were calm at the time which contributed to the sheen being more extensive than usual.

22.04	9:36	TERN	9.66	102.02	(UK) Operator contacted by UK Government and carried out an investigation. Tern Alpha suffered problems with a demulsifier pump in April resulting in poor produced oil/water separation and several exceedances of permitted concentration levels were recorded and reported to the UK Government between the 20th and 27th April. There was also an exceedance of a 100mg/l concentration limit which was reported to the UK Government and was traced to a sand blockage in the produced water flash drum level controller. On the 21st of April a total of 0.62 tonnes of oil in produced water was discharged and a further 0.2491 on the 22nd of April. In addition to pollution reports received from Tern Alpha the UK Government also received a number of reports relating to a sheen from an unknown source around this time. Although this was investigated by the UK Government no root cause of the sheen could be established. It was however determined that the large volumes reported during the Belgian flight may have been an accumulation of oil remaining in the area over several days and appearing more extensive than usual and not dispersing quickly due to calm weather conditions.
22.04	9:47	SEDCO 704	0.11	1.15	(UK) Operator contacted by UK Government and carried out an investigation. The Operator submitted a spill notification to the UK Government relating to drop out of oil during well test flaring operations. Actions were taken to prevent further release of oil.
23.04	12:54	THISTLE A	0.03	0.20	(UK) Sheen from permitted discharge of oil in produced water thought to be more extensive than normal due to calm weather conditions.
23.04	12:56	MURCHINSON	0.79	10.71	(UK) Operator contacted by UK Government and carried out an investigation. Discharge of oil in produced water found to be within statutory permitted limits and production was found to be stable with no production upsets identified which may have caused a release of oil to sea. Sheen thought to be more extensive than normal due to calm weather conditions.
23.04	13:08	SNORRE A	0.05	0.58	(NO) has a report that produced water contained a higher quantity of oil (1,2 m3) on the 20. April.
23.04	13:49	VESLEFRIKK A	0.02	0.16	(NO) No data
23.04	14:21	TROLL C	0.91	12.27	(NO) No data

JULY – THE NETHERLANDS

Date (ddmm)	Time (UTC)	Platform	Reported quantity (m^3) Min.	Max.	Government inspectors assessment
29.07	13:50	AUK ALPHA	0.70	7.36	(UK) Sheen from permitted discharge of oil in produced water thought to be more extensive than normal due to calm weather conditions
29.07	14:20	FORTIES DELTA	0.12	1.91	(UK) Operator submitted Permitted Discharge Notification form to UK Government in early August 2008. This was submitted as sheen in the area of the platform was more visible that usual. The Operator confirmed that oil in water discharge was within statutory limits. Sheen thought to be more extensive than normal due to calm weather conditions.
29.07	14:20	FORTIES CHARLIES	0.80	1.39	(UK) Operator submitted Permitted Discharge Notification form to UK Government in early August 2008. This was submitted as sheen in the area of the platform was more visible that usual. The Operator confirmed that oil in water discharge was within statutory limits. Sheen thought to be more extensive than normal due to calm weather conditions.
30.07	10:33	BRITTANIC	0.005	0.04	(UK) Operator contacted by UK Government and carried out an investigation. Discharge of oil in produced water found to be within statutory permitted, limits. Sheen thought to be more extensive than normal due to calm weather conditions.
30.07	11:10	BERYL BRAVO	0.01	0.03	(UK) Operator contacted by UK Government and carried out an investigation. Discharge of oil in produced water found to be within statutory permitted, limits. Sheen thought to be more extensive than normal due to calm weather conditions.
30.07	14:20	NINIAN SOUTH	0.45	4.83	(UK) Operator contacted by UK Government and carried out an investigation. Discharge of oil in produced water found to be within statutory permitted, limits. Sheen thought to be more extensive than normal due to calm weather conditions.
30.07	14:30	HEATHER	0.03	0.38	(UK) Operator contacted by UK Government and carried out an investigation. Discharge of oil in produced water found to be within statutory permitted limits although it was noted that the Heather produced water discharge line was holed above sea level at that time so discharges were being made onto sea surface rather than below it, which may have affected dispersion. It was also noted that the weather conditions were calm at the time which contributed to the sheen being more extensive than usual.

31.07	14:58	MURCHINSON	x	X	(UK) Operator contacted by UK Government and carried out an investigation. Discharge of oil in produced water found to be within statutory permitted, limits. Sheen thought to be more extensive than normal due to calm weather conditions.
31.07	9:10	BALDER FPU	0.03	0.52	(NO) No data
31.07	9:36	GUARDIAN	0.00	0.02	(NO) 30.july, the platform reported a spill of drilling fluid (oil based MUD), 20 litre.
31.07	10:15	EKOFISK FIELD	0.01	0.24	(NO) No data
31.07	10:52	TYRA WEST	0.007	0.05	(DK) Oil discharge: 30 July: 3 mg/l; 31 July: 3 mg/l; 1 August: 9 mg/l.
31.07	10:58	TYRA EAST	0.28	4.55	(DK) Oil discharge (Tyra EA): 30 July: 12 mg/l; 31 July: 10 mg/l; 1 August: 12 mg/l. Oil discharge (Tyra EF): 30 July 15 mg/l; 31 July: 21 mg/l; 1 August: 17 mg/l.
31.07	11:04	HALFDAN ALPHA	0.008	0.06	(DK) Oil discharge: 30 July: 9 mg/l; 31 July: 9 mg/l; 1 August: 6 mg/l.

OCTOBER - DENMARK

Date (ddmm)	Time (UTC)	Platform	Reported quantity (m^3)		Government inspectors assessment
			Min.	Max.	
09.10	9:42	OXL NOMAD	9.096	67.449	(NL) no report received; no follow-up

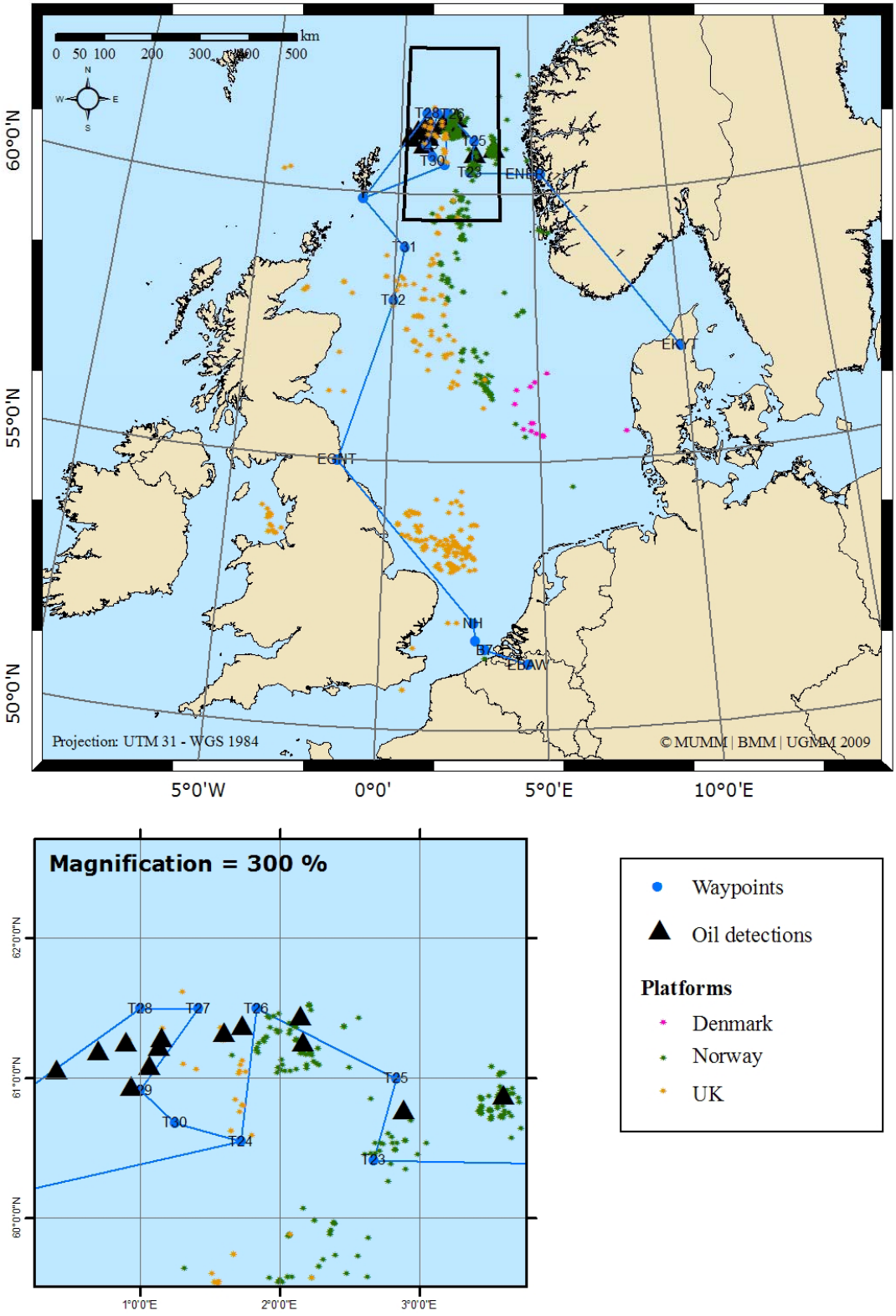


Figure 9: Belgium**: TDH 08 flight route (21-25 April 2008) and detections made (13 mineral oil detections).**

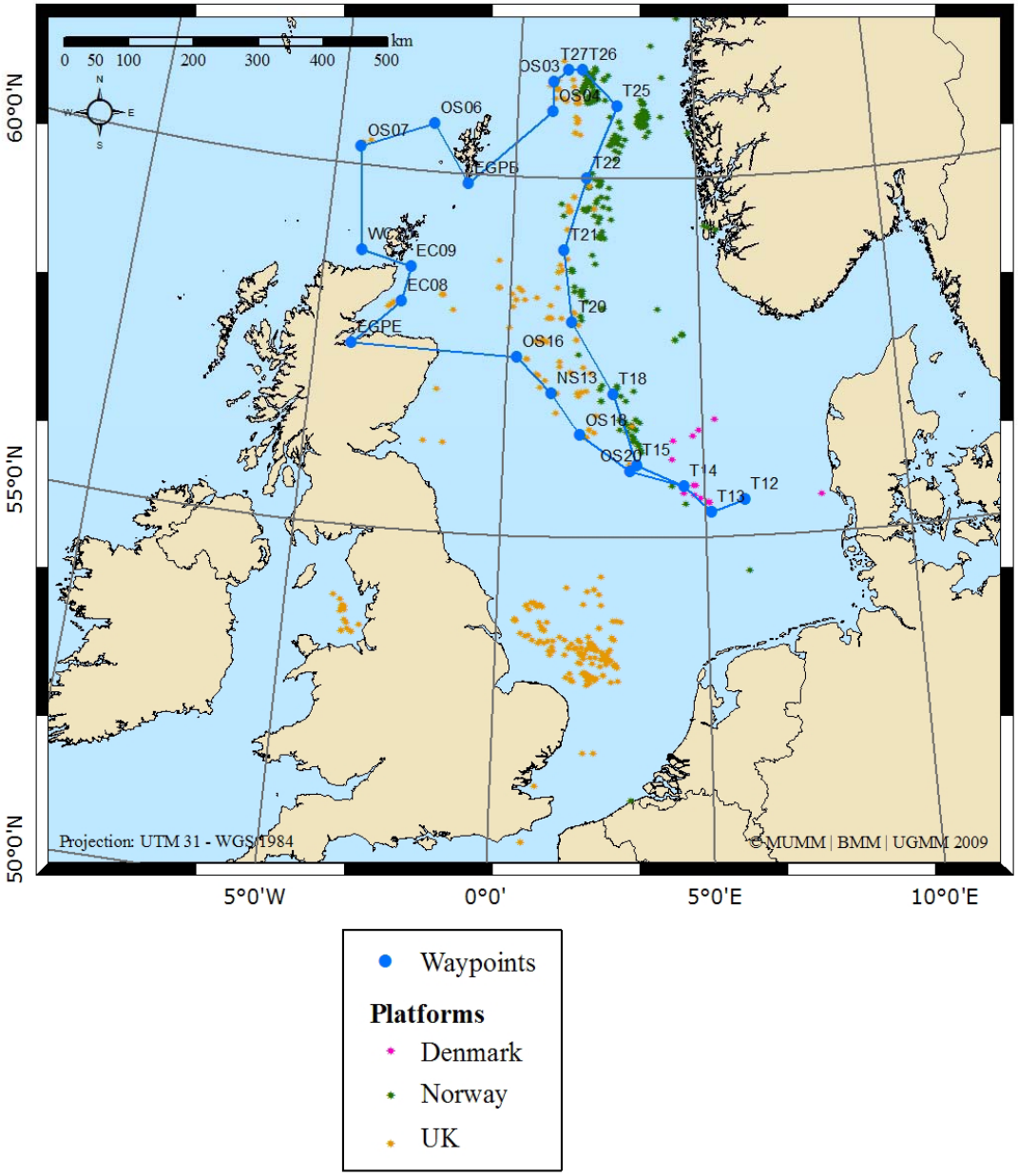


Figure 10: United Kingdom: TdH 08 flight route (9-11 July 2008; no detections made).

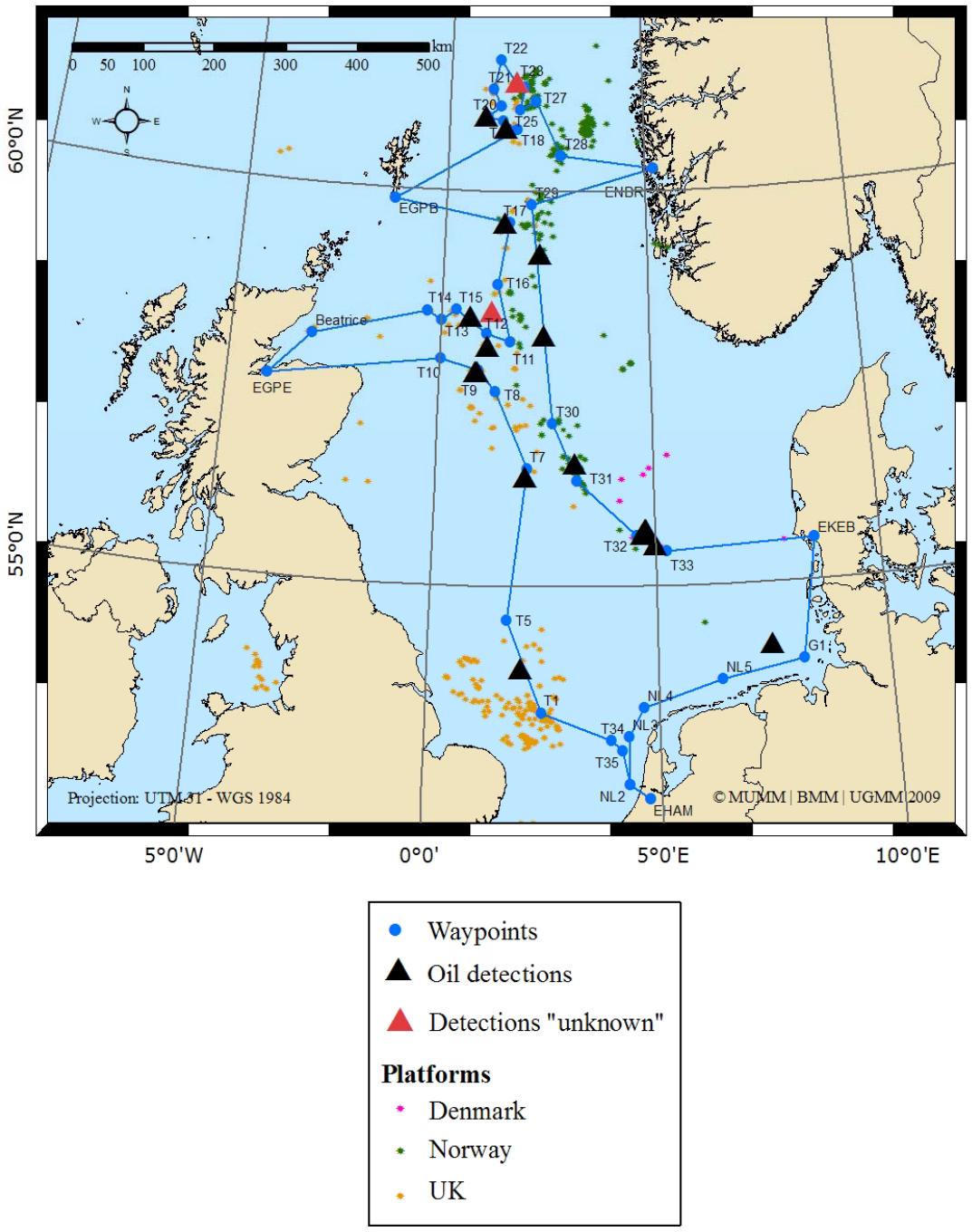


Figure 11: Netherlands: TdH 08 flight route (29-31 July 2008) and detections made (17 mineral oil detections, 2 detections of unknown substance).

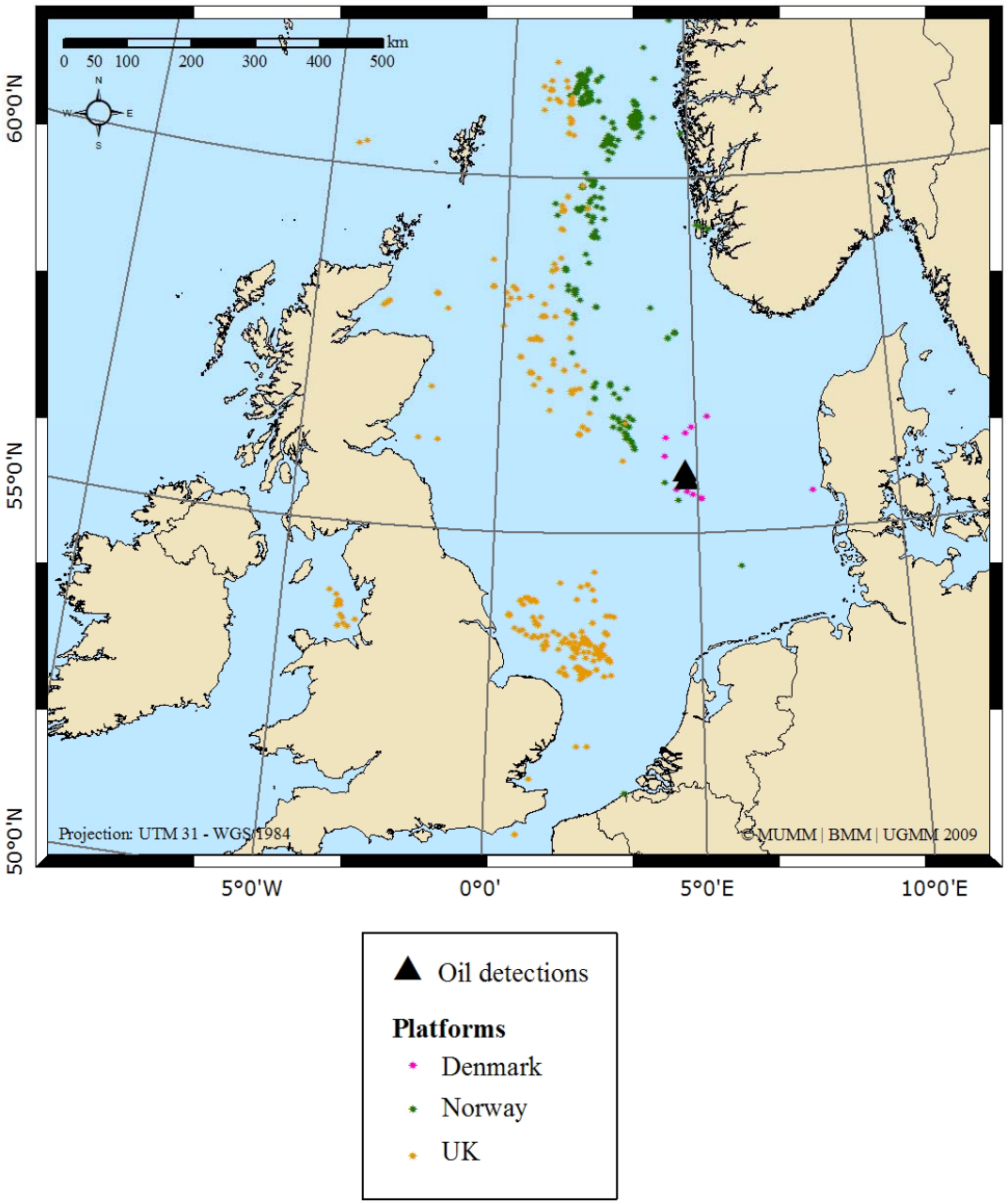


Figure 12: Sweden: Detections made (2 mineral oil detections) during TdH 08 mission (2-4 August 2008; no flight route added).

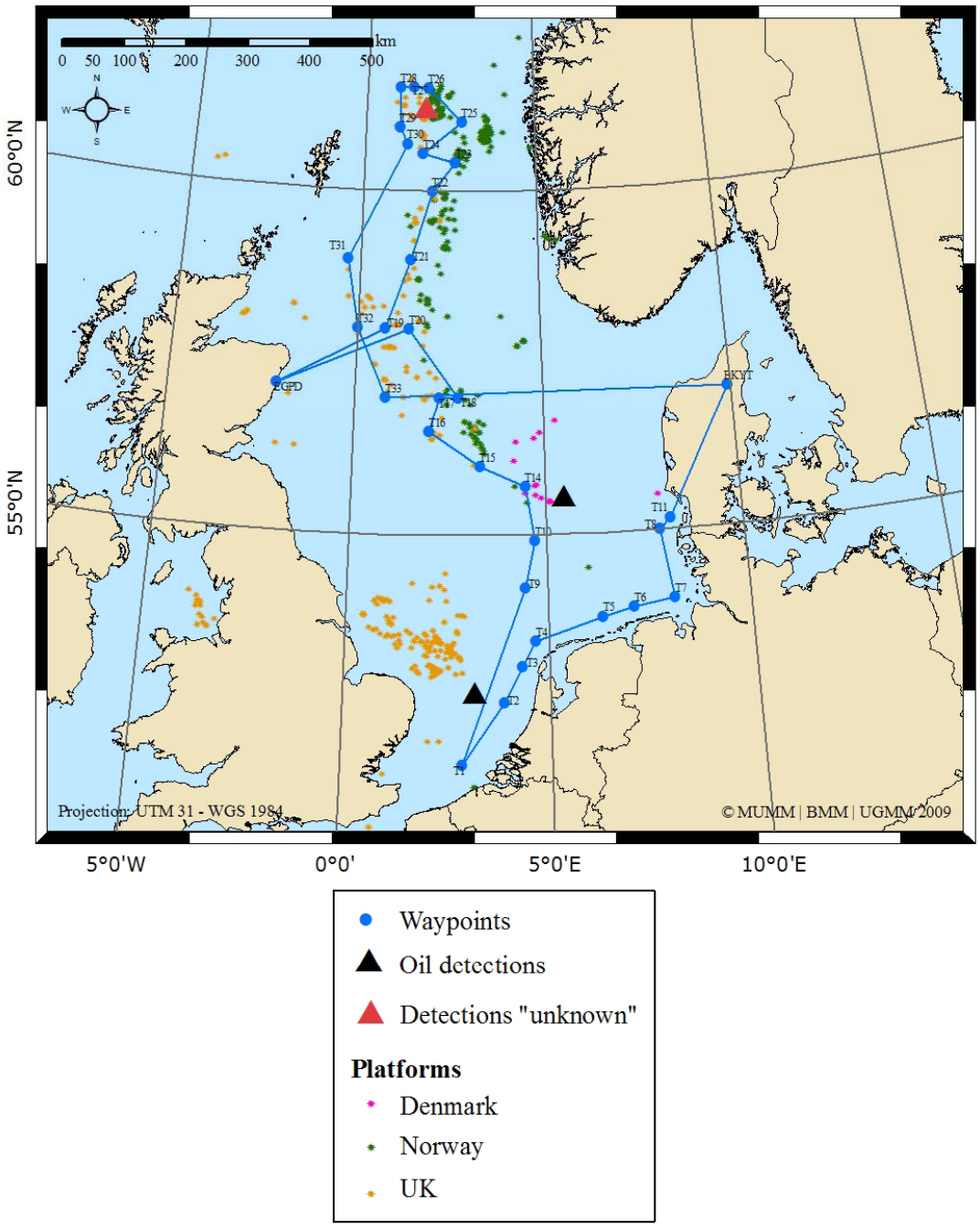


Figure 13: Denmark: TdH 08 flight route (9-10 Oct. 2008) and detections made (2 detections of mineral oil; 1 detection of unknown substance).

ANNEX 3

Summary of information provided by Contracting Parties on EEZs, major traffic routes, oil and gas installations, satellite surveillance programmes and objectives of flights

Size of Contracting Parties' Exclusive Economic Zones (EEZs)

Belgium	3 500 km²
Denmark	105 000 km^2
France	265 000 km^2
Germany	approximately 34 100 km²
Netherlands	46 462 km^2
Norway	approximately 2 000 000 km^2
Sweden	approximately 70 000 km²
UK	The UK has not declared an EEZ. The UK Pollution Control Zone covers more than 300 000 km².

Major traffic routes in Contracting Parties EEZs

Belgium	**North Hinder Traffic Separation Scheme (TSS)** and **West Hinder TSS**
Denmark	**Route T (TANGO)**, leading from the Skaw via the Great Belt to the Baltic. In 2003 a total of 23 240 ships passed the bridge in Great Belt. **The Sound**, leading from the Kattegat past Copenhagen into the Baltic. In 2003, a total of 37 161 ships passed Helsingør (Elsinore).
France	Major traffic route **between Spain and Northern Europe**. The Pas de Calais/English Channel (see under UK for more detail).
Germany	The **German Bight Western Approach** and **Terschelling/German Bight** Traffic Separation Schemes.
Netherlands	See Figure 4
Norway	**Along the northern coast of Norway** and down the west coast. In addition to the normal coastal shipping traffic, there is an increasing traffic of oil/oil products from the north-western part of Russia. **West coast of Norway**. In addition to the normal coastal shipping traffic, there is much transport of crude oil from offshore installations to refineries in the Bergen area. Large amounts of oil products are also shipped out towards the European continent. **Along the southern part of Norway** there are major shipping routes from the Baltic-sea. There is also significant transport to and from refineries and industry along the Oslo Fjord. See Figure 5
Sweden	Along the Swedish south and east coasts there is increased transport of oil and oil products from the Gulf of Finland.
UK	The UK's 18,000 kilometres of coastline is one of the largest in Europe, and the UK economy relies on shipping for 95 per cent of its visible trade. There are several major commodity ports: London, Milford Haven, Teesport, Grimsby / Immingham, Southampton, Forth, Liverpool, Manchester and Medway. The major oil terminals are Teesport, Sullom Voe, Flotta and Hound Point. A large volume of shipping passes through UK waters en route to or from major ports on the European mainland. There are a number of straits, for example the Pentland Firth, Little

	Minch, North Channel and the Dover Strait. The Dover Strait connects the English Channel to the North Sea and is the busiest of all straits used for international navigation, with some 350 through shipping movements per day. Due to this density of shipping, as well as bad weather and strong tidal currents, the risk of collision is ever present.

Number of oil/gas rigs in Contracting Parties' EEZs

Belgium	None
Denmark	9 fixed oil rigs 17 operative oil fields 29 productive sites (installations)
France	
Germany	1 Oil Rig (Mittelplate) and 3 Gas Rigs
Netherlands	151 gas offshore installations 16 oil offshore installations
Norway	53 oil/gas – fields in operation in the Norwegian EEZ. Many of these oil/gas-fields contain several platforms, satellites and sub-sea satellites. 10 PDO approved fields. These are fields which the authorities have approved a plan for development and operation (PDO) or granted a PDO exemption.
Sweden	None
UK	255 oil- and gas-producing fields. Many of these oil/gas-fields contain several platforms, satellites, and sub-sea satellites.

For further details see the OSPAR Offshore Installation database on the OSPAR website: "2009 Biennial update of the Inventory of Oil and Gas Offshore Installations in the OSPAR Maritime Area", Publication No. 334 (2009). http://www.ospar.org/v_publications/download.asp?v1=p00334

Existence of satellite programmes

Belgium	None
Denmark	Planning of aerial surveillance takes into account the dates of satellite surveillance (approx. 100 pictures per year), and is done by the Admiral Danish Fleet HQ and Tactical Air Command in close co-operation.
France	None
Germany	Partner in EU research project OCEANIDES until 2006
Netherlands	None
Norway	The Norwegian Coastal Administration supports a national satellite program called SATHAV. The aim of this program is to coordinate use of satellite data between governmental users, such as the military, the different pollution authorities, meteorological institutes, research institutes, universities etc. The Norwegian Space Agency, which is in charge of this programme, has made a long-term agreement with Canadian Radarsat for unlimited use of Radarsat 2 images for the Norwegian EEZ. Pending the launch of Radarsat 2, ENVISAT and Radarsat 1 images are used in the SATHAV program. Norway only receives High Confidence satellite observations.
Sweden	Established satellite programme for 2004 153 satellite scene images for the Bonn Agreement and HELCOM area.
UK	The UK has been involved in a tripartite satellite surveillance programme with Germany and the Netherlands. This is part of the ENVISAT market development programme. Both ENVISAT and RADARSAT images have been used. New software called VISANT, developed by the programme contractors, Konsberg Satellite Services, Tromso, Norway has been used.

Brief description of the objective of the flights

Belgium	The tasks to be achieved during the flights are: • Pollution Control - to detect deliberate pollution from ships using visual and remote sensing detection means; • Accidental Pollution Monitoring - to detect and evaluate accidental oil pollution from ships (in 2003, the Tricolor and Vicky incidents); • Fisheries Control, with the support of the relevant specialist service; • Traffic Control, with the support of the National Police; • Research and scientific observations.
Denmark	The purposes are : • Show of force • Investigation of possible oil-slicks • Investigation of possible polluters • Collection of evidence
France	Flights are carried out by two types of aircraft • Remote-sensing aircraft dedicated to pollution surveillance ; • General surveillance aircraft dedicated to multi-purpose missions, including pollution surveillance.
Germany	Aerial surveillance flights are undertaken for pollution monitoring and, in case of pollution which can be combated at sea, to optimise the use of response vessels during the recovery operation at sea.
Netherlands	The objective of the flights is law enforcement, prevention of pollution, monitoring of shipping, 'eye in the sky' in case of disasters, and search and rescue.
Norway	The Norwegian Coastal Administration's fixed-wing surveillance mainly targets near-shore activities. The main objectives of surveillance are to identify acute pollution and illegal pollution from ships, and to monitor coastal industry and other coastal and near-coastal activities. Offshore installations are also monitored, but less frequently than in the past. This is because the offshore regulatory system requires the offshore industry to have its own system of monitoring spills from produced water and acute pollution. The Offshore Industry Pollution Law is enforced by the Norwegian Pollution Authorities (except for acute pollution). The Acute Pollution Law is enforced by the Norwegian Coastal Administration. Aims for fixed wing surveillance: 1. The fixed-wing surveillance should constantly cover the Administration's needs for detection, classification, documentation and on-scene evaluation, so that the correct measures for dealing with any pollution are established. 2. The fixed-wing surveillance should have the effect of preventing illegal behaviour. 3. The fixed wing surveillance should at all times be aimed at high-risk activities.
Sweden	Pollution, fishery, ship routings, border, customs-control and search-and-rescue.
UK	The Maritime and Coastguard Agency (MCA) is responsible for minimising the risk of pollution of the marine environment from ships and, where pollution occurs, minimising its impact on UK waters, coastlines and economic interests. The MCA aerial surveillance flight programme varies from month to month to avoid becoming predictable, so as not to undermine the deterrent effect. Aerial surveillance is generally targeted on the areas posing the greatest risk, such as the major shipping routes and around offshore installations.