



Bonn Agreement Accord de Bonn

Bonn Agreement Aerial Surveillance Programme

Annual report on aerial surveillance for 2017

CONTENTS

Introduction

Commentary

Table 1:	Summary of data relating to National Flights during 2017
Table 2:	Summary of data related to satellite detections in 2017
Table 3:	Summary of data relating to Tour d'Horizon (TdH) flights during 2017
Table 4:	Distribution of the estimated sizes of confirmed/observed oil slicks
Figure 1:	Percentage of mineral oil slicks in size categories observed in the Bonn Agreement area in 2017
Figure 2:	Figure 2: Spanish aerial Surveillance area, Bay of Biscay
Figure 3:	Overview of observed slicks during Bonn Agreement aerial surveillance activities in 2017
Figure 4:	Overview of slicks observed during Bonn Agreement aerial surveillance activities during 2017 categorised by spill type
Figure 5:	Number of flight hours per country 1999 – 2017
Figure 6:	Number of slicks observed 1999 – 2017
Figure 7:	Total flight hours (national and Tour d'Horizon), all observed slicks and their ratio 1986 – 2017
Figure 8:	Number of mineral oil, other substances and unknown slicks observed 2017
Annex 1:	Instructions for filling in the annual reporting format on illegal discharges observed during aerial surveillance
Annex 2:	CleanSeaNet Statistics 2017

Bonn Agreement Aerial Surveillance Programme

Draft Annual report on aerial surveillance for 2017

Introduction

1. The nine countries bordering the North Sea work together within the Bonn Agreement to undertake aerial surveillance using specially equipped aircraft and specialised personnel to detect spills of oil and other harmful substances and enforce international environmental regulations.
2. 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. This report demonstrates the effectiveness of cooperation in aerial surveillance among North Sea countries and their collective effort to detect marine pollution.
3. This report presents the results of aerial surveillance operations undertaken as a collective effort under the Bonn Agreement. In addition to national flights carried out under the Bonn Agreement in their own parts of the maritime area and other aerial surveillance undertaken for national purposes, the Bonn Agreement countries also coordinate 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;
 - b. *Coordinated Extended Pollution Control Operations* (CEPCO), where some neighbouring countries cooperate to survey intensively an area with high traffic density during a relatively short period (e.g. 24 hours). Contracting Parties may also decide to organise a so called “Super CEPCO” where Bonn Agreement Contracting Parties, often together with countries from neighbouring regions, cooperate in the surveillance of a specific area over a period of up to 10 days.
4. This report compiles, in Tables 1 - 4, data for all the surveillance 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. In the 2008 reporting round a draft revised reporting format has been used which was then harmonised with the Helsinki Commission. OTSOPA 2013 agreed to update the reporting format to include data on confirmed detections/observations of “other substances” and “unknowns”, as Contracting Parties had identified increasing numbers of these types of spills.

Commentary

5. 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 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.
6. For most of the detections observed/confirmed as oil slicks or other substances, the source of the slick (i.e. the polluter) has not been identified. Most visible slicks, however, come from shipping and offshore installations.

7. A summary report on the EU-EMSA CleanSeaNet Service that supports Bonn Agreement Contracting Parties with satellite images is at Appenix 2. The report presents CleanSeaNet data for the North Sea for the period 1 January 2017 – 31 December 2017.

8. This report includes estimates of the total amounts of oil discharged based on the aerial surveillance data. These oil volume estimates have been obtained by means of a simple addition of the estimated (minimum)¹ volumes of the various mineral oil slicks detected/observed at the sea surface for a given year, per type of flight and per country. These estimates use the Bonn Agreement Colour Code until 2003 and from 2004 use its replacement, the more scientifically underpinned Bonn Agreement Oil Appearance Code (BAOAC), as the standard oil volume estimation method. The use of the BAOAC (just like the older Bonn Agreement colour code) results in a best estimate of the amount of oil detected on the sea surface within a reliable order of magnitude. It leads to a minimum and maximum estimated quantity, which basically reflects the respective use of the minimum and maximum oil layer thicknesses defined for each oil appearance. More detailed information on the BAOAC, the oil slick appearances and the use of the code can be found in the [Bonn Agreement Aerial Operations Handbook](#) and the [BAOAC Photo Atlas](#).

9. However, as only limited aerial surveillance is conducted, it can be concluded that there is the potential for other incidents of oil in the sea not being detected over the course of any one year. Moreover, oil slicks are often detected with no known source, and already weathered to a certain degree, thus the amount estimated may be less than originally discharged. The Contracting Parties to the Bonn Agreement therefore consider the aerial surveillance data currently available to be too sparse and too diverse to allow for a reliable overall annual estimation of oil inputs in the entire Bonn Agreement area and that such estimates should be interpreted as indicative only.

10. 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 from the offshore oil and gas industry into the OSPAR maritime area through discharges and spillages of oil for 2017 will be update in this report after it has been reported by the Offshore Industry Committee in 2018. 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.

11. In 2017 Contracting Parties observed 66 mineral oil slicks in the Bonn Agreement area and for all of these, volumes were estimated (as outlined in table 4). Figure 1 shows the percentage of slicks subdivided into different size categories. No spills over 100m³ were observed.

¹ As agreed within the Bonn Agreement, the minimum oil volumes should preferably be used for enforcement and statistical purposes, whereas the maximum oil volumes should preferably be used in the context of oil pollution response.

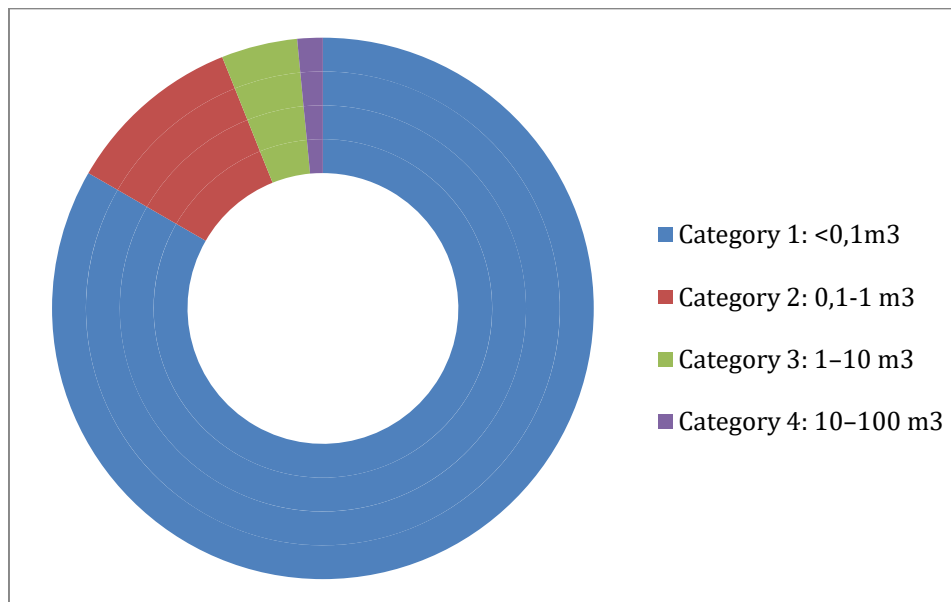


Figure 1: Percentage of national mineral oil slick detections in size categories observed in the Bonn Agreement area in 2017

12. Detections of other substances (including HNS) and unknown detections have also been reported as part of the annual aerial surveillance reporting. This has been included as national evidence and has pointed to an increase in spills of other substances and therefore it was agreed that this should be tracked at a regional level. In 2017 there were 105 detections of other substances and 143 detections of unknown substances. These have been outlined in Figure 4 and are mainly in the areas of highest shipping density.

13. An overview of the locations of oil slicks observed during 2017 is given in Figure 3. An overview of slicks observed during Bonn Agreement aerial surveillance activities during 2017 categorised by spill type is given in Figure 4. When examining Figures 3 and 4 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. These are mainly detected via national flights, whereas most slicks found associated to oil and gas installations in the central part of the North Sea are mainly observed and detected during TdH campaigns and via the CSN satellite service of EMSA (See Annex 2 and Bonn 18/3/3);
- 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.

14. The format of the report's tables 1 – 4 was modified in 2000, 2003, 2013 and 2014. 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. In 2013 the format was updated to include data on confirmed detections/observations of "other

substances” and “unknowns”, as Contracting Parties had identified increasing numbers of these types of spills and agreed to collect this data for the 2012 report.

15. Figures 5, 6 and 7 outline the number of flight hours per country, the number of mineral oil slicks observed per country and the ratio of flight hours to mineral oil slicks. The ratio of slicks to flying hours has reduced from 2016.

16. Figure 8 relates to the new additional data on other substances and unknowns, which has been collected at the regional level since 2012. It outlines the number of spills confirmed observed as mineral oil and other substances and those that could not be identified as unknown, broken down by country. Contracting Parties will continue to gather this information in future years to identify trends in spills other than mineral oil.

17. Three Bonn Agreement Contracting Parties (Belgium, Denmark and The Netherlands) participating as partners in the European CompMon project² (2015-2016), *inter alia* performed airborne compliance monitoring of fuel sulphur content through exhaust gases in the North Sea SECA³. They hereby voluntarily piloted effective targeting of ships for the enforcement of IMO Marpol Annex VI, using SOx sniffer sensors on board of aircraft, with the aim to increase the efficiency of on-board inspections in port. In 2017 these aerial monitoring efforts by Belgium gave the following results: 80 of the 187 hours were used for MARPOL Annex VI monitoring in the Quadripartite zone of joint responsibility, using a SOx sniffer sensors on board of the aircraft, 870 ships were effectively monitored for sulphur concentration, with the aim to increase the efficiency of on-board inspections in port by targeting ships at sea. 94% of the ships were compliant and 6% was found to be non-compliant.

18. In 2017, 745 flight hours of pollution surveillance were performed in the Spanish waters of the Bay of Biscay. As a result, six spills were detected, three confirmed as mineral oil and three unknowns. Five slicks were in the size-categories (<1m³) and one, just above 4m³.

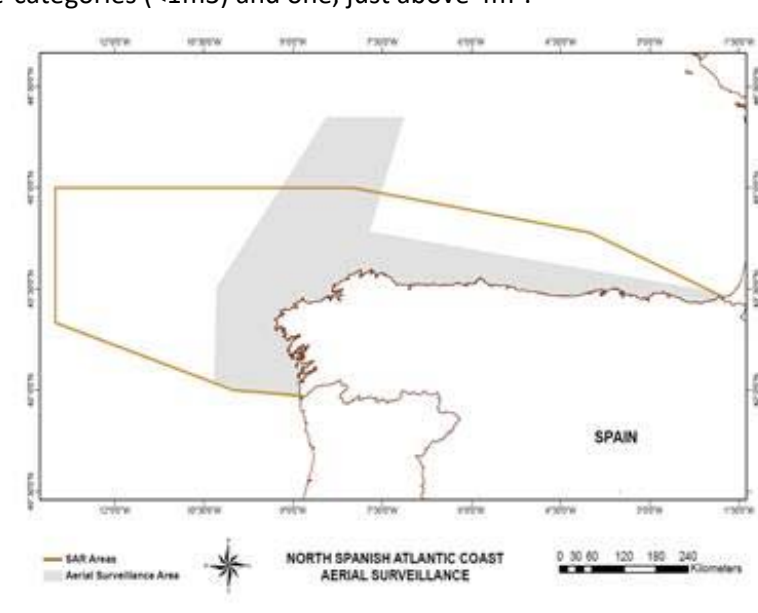


Figure 2: Spanish aerial Surveillance area, Bay of Biscay

² <http://compmon.eu/>

³ Sulphur Emission Control Area

Table 1. Summary of data relating to National Flights during 2017

Country	No. of flight hours			No. of detections inside national EEZ			Detections confirmed / observed as mineral oil spills			No. of polluters (mineral oil)				Estimated volume (m ³)	Detections confirmed / observed as other substances	No. of polluters (other substances)				Unknown detections	No. of polluters (unknown detections)				Remarks
	Daylight	Darkness	Total	Daylight	Darkness	Total	Daylight	Darkness	Total	Rigs	Ships	Other	Unknown			Rigs	Ships	Other	Unknown		Rigs	Ships	Other	Unknown	
Belgium	171:00	16:20	187:20	2	0	2	0	0	0	0	0	0	0	0.00	1	0	0	0	1	1	0	0	0	1	
Denmark	238:53	25:54	264:17	28	0	28	9	0	9	6	0	0	3	0.55	6	0	3	0	3	13	0	1	0	12	
France	217:00	3:00	220:00	2	0	2	2	0	2	0	0	0	2	5.80	0	0	0	0	0	0	0	0	0	0	
Germany	535:35	350:35	886:10	24	17	41	6	4	10	1	0	0	9	0.33	9	0	4	0	5	22	0	1	0	21	
Ireland	614:00	0:00	614:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Netherlands	878:15	232:35	1110:50	157	23	180	10	0	10	1	1	0	8	2.14	80	0	24	2	54	90	0	11	1	78	
Norway	353:00	2:00	355:00	29	0	29	20	0	20	9	5	0	6	0.32	7	1	4	0	2	2	0	0	0	2	
Sweden	218:10	8:10	226:19	0	26	26	10	0	10	0	0	0	10	0.02	2	0	2	0	0	14	0	1	0	13	
UK	119:15	0:00	119:15	6	0	6	5	0	5	2	3	0	0	43.67	0	0	0	0	0	1	0	0	0	1	
Total	3345:08	638:34	3983:11	248	66	314	62	4	66	19	9	0	38	52.83	105	1	37	2	65	143	0	14	1	128	

Remarks: Besides the 2 detections made inside the waters of Belgium, the Belgian aircraft also made 9 spill detections outside its waters in the Quadripartite zone of joint responsibility (5 in UK, 2 in FR waters, 2 NL waters), These spill detections have been reported to these respective countries and included in their national detection data for 2017.

Table 2: Summary of data related to satellite detections in 2017

Country	Satellite detections					
	Detected	Confirmed mineral oil	Confirmed other substances	Confirmed "unknown" spills	Confirmed natural phenomena	Nothing found
Belgium	7					
Denmark	270	13	9	8	2	84
France	27				2	10
Germany	101	2	9	2	6	29
Ireland	15		1	1	2	7
Netherlands	147	3	13	3		7
Norway	493	124	20	1	4	75
Sweden	19				3	7
UK	650	181	27	5	3	302
Total	1729	323	79	20	22	521

Confirmed oil spills in this table are in addition to those in Table 1. Note that the confirmed mineral oil detections are not always

confirmed by remote sensing aircraft and can be confirmed by other means.

Table 3. Summary of data relating to Tour d'Horizon (TdH) flights during 2017

Country	No. of flights	No. of flight hours			No. of detections in TdH area			No. of polluters (mineral oil)				Estimated min volume (m³)	Estimated max volume (m³)	Detections confirmed/observed as other substances	No. of polluters (other substances)				Unknown detections	No. of polluters (unknown detections)				Remarks
		Daylight	Darkness	Total	Daylight	Darkness	Total	Rigs	Ships	Other	Unknown				Rigs	Ships	Other	Unknown		Rigs	Ships	Other	Unknown	
Belgium	6	18:55	0:00	18:55	26	0	26	22	0	0	4	7.04	70.12	0	0	0	0	0	0	0	0	0	0	
Denmark	3	8:47	0:00	8:47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
France																								
Germany	5	15:00	0:00	15:00	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1				1	
Ireland																								
Netherlands	9	32:10	0:00	32:10	24	0	24	23	0	0	1	23.80	168.86	0	0	0	0	0	0	0	0	0	0	
Norway																								
Sweden	4	10:40	0:00	10:40	3	0	3	3	0	0	0	3.80	7.88	0	0	0	0	0	0	0	0	0	0	
UK	3	16:25	0:00	16:25	2	0	2	0	0	0	2	2.54	14.56	0	0	0	0	0	0	0	0	0	0	
Total	30	101:57	0:00	101:57	56	0	56	48	0	0	7	37.19	261.42	0	0	0	0	0	1	0	0	0	1	

Table 4. Distribution of the estimated sizes of confirmed/observed oil slicks from National Flights

Country	Not quantified	Category 1: <0,1m³	Category 2: 0,1-1 m³	Category 3: 1-10 m³	Category 4: 10-100 m³	Category 5: >100m³	Number of Slicks	Number of quantified Slicks	%
Belgium	0	0	0	0	0	0	0	0	0.00
Denmark	0	7	2	0	0	0	9	9	13.64
France	0	1	0	1	0	0	2	2	3.03
Germany	0	10	0	0	0	0	10	10	15.15
Ireland	0	0	0	0	0	0	0	0	0.00
Netherlands	0	6	3	1	0	0	10	10	15.15
Norway	0	20	0	0	0	0	20	20	30.30
Sweden	0	10	0	0	0	0	10	10	15.15
UK	0	1	2	1	1	0	5	5	7.58
Total	0	55	7	3	1	0	66	66	100
%	0.00	83.33	10.61	4.55	1.52	0.00	100.00		

Figure 3: Overview of slicks observed during Bonn Agreement aerial surveillance activities during 2017

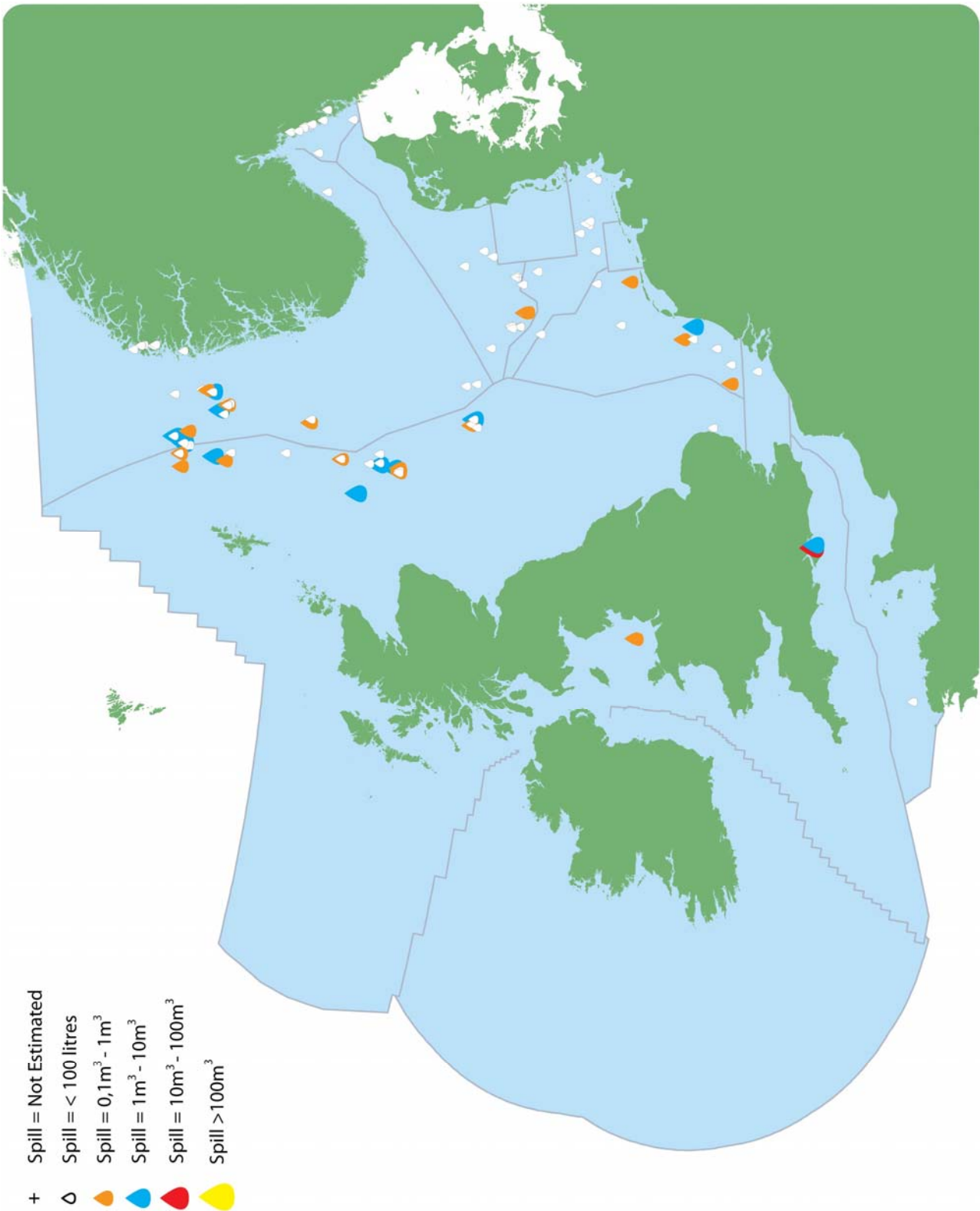


Figure 4: Overview of slicks observed during Bonn Agreement aerial surveillance activities during 2017 categorised by spill type

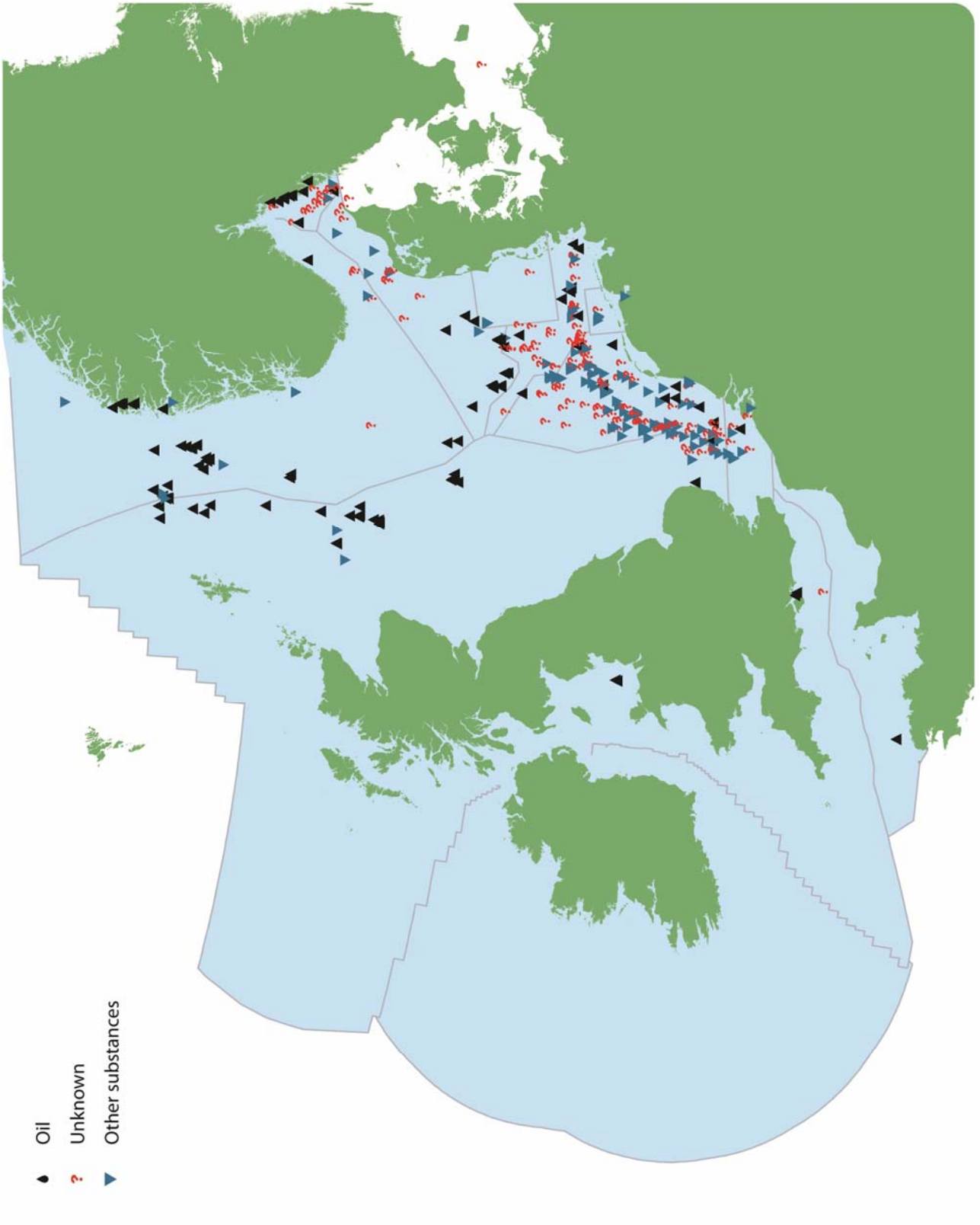


Figure 5: Number of national and Tour d'Horizon flight hours per country 1990 – 2017

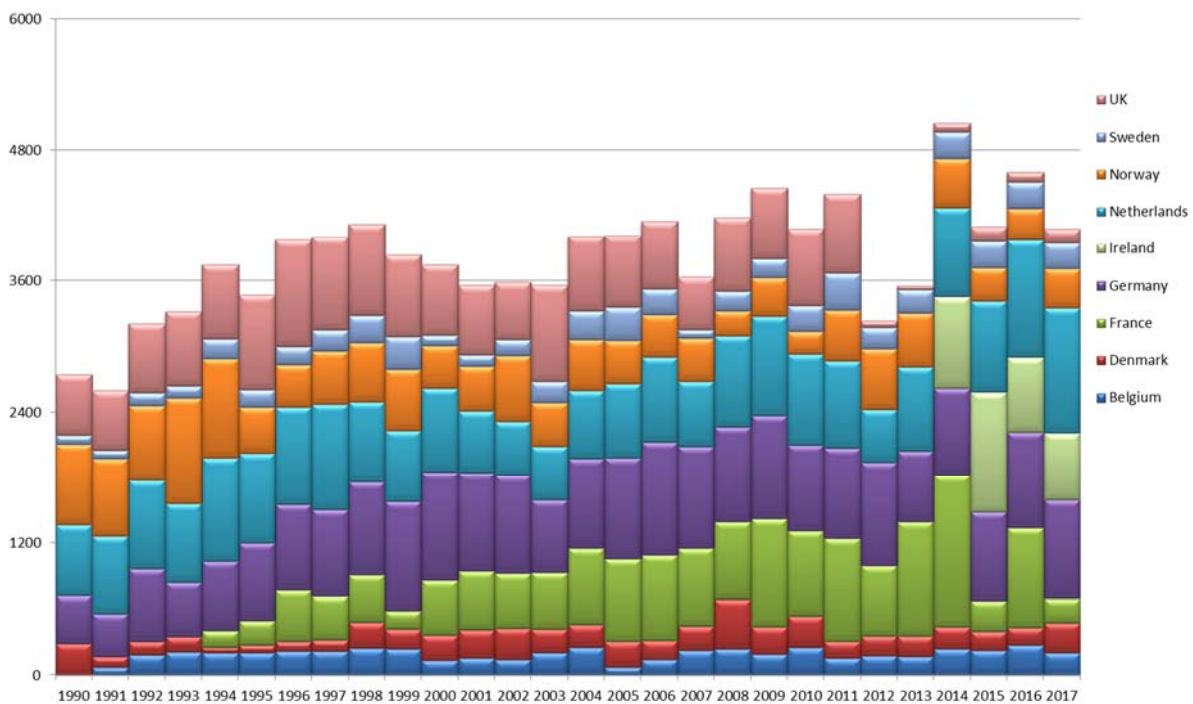


Figure 6: Number of slicks observed during national flights 1990 – 2017

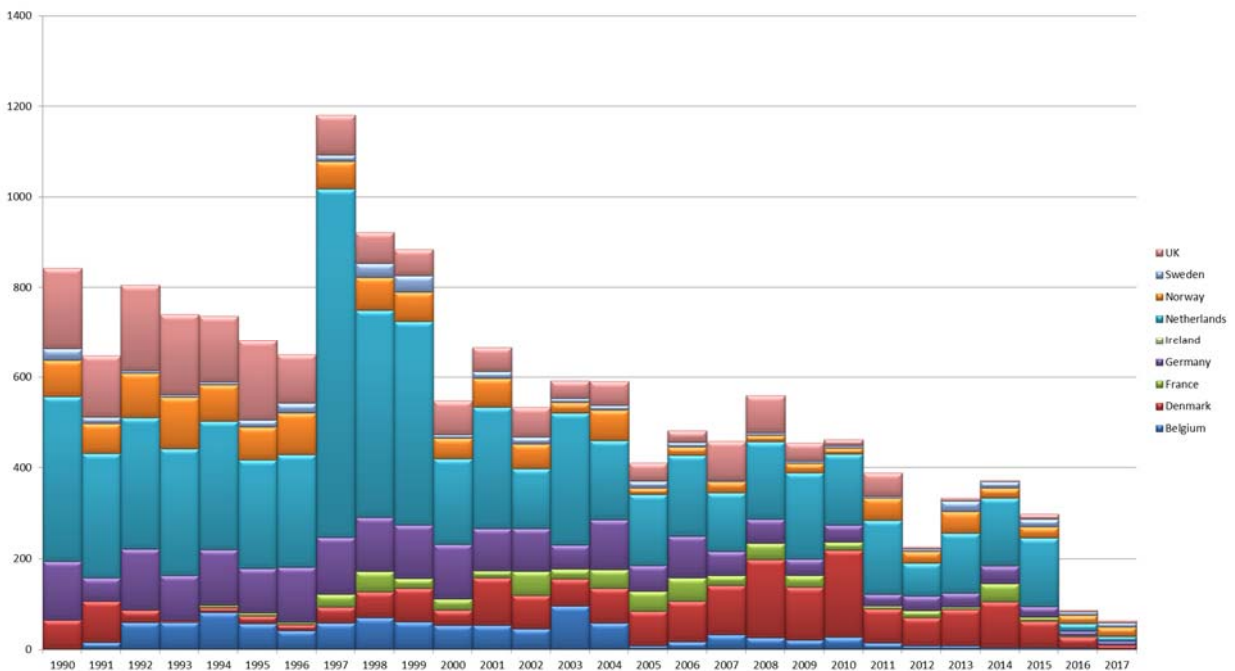


Figure 7: Total flight hours (national and Tour d'Horizon), all observed slicks and their ratio 1986 – 2017

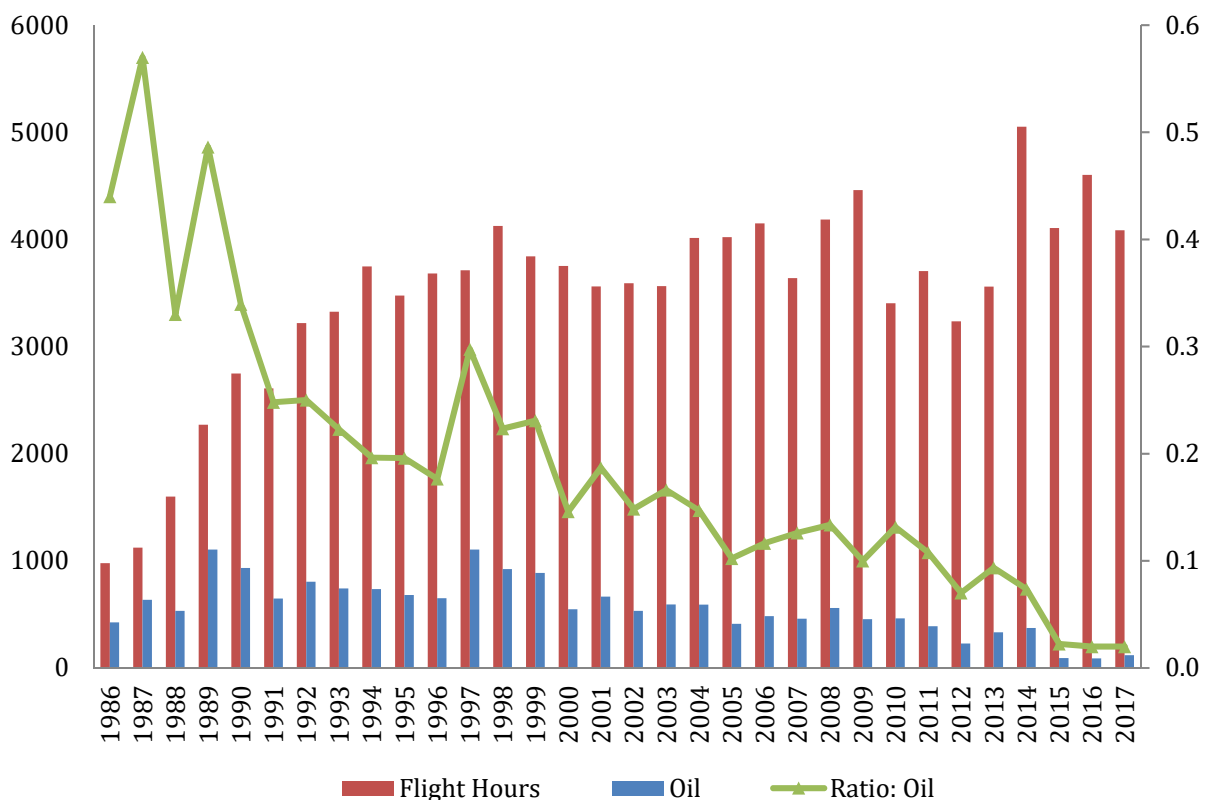
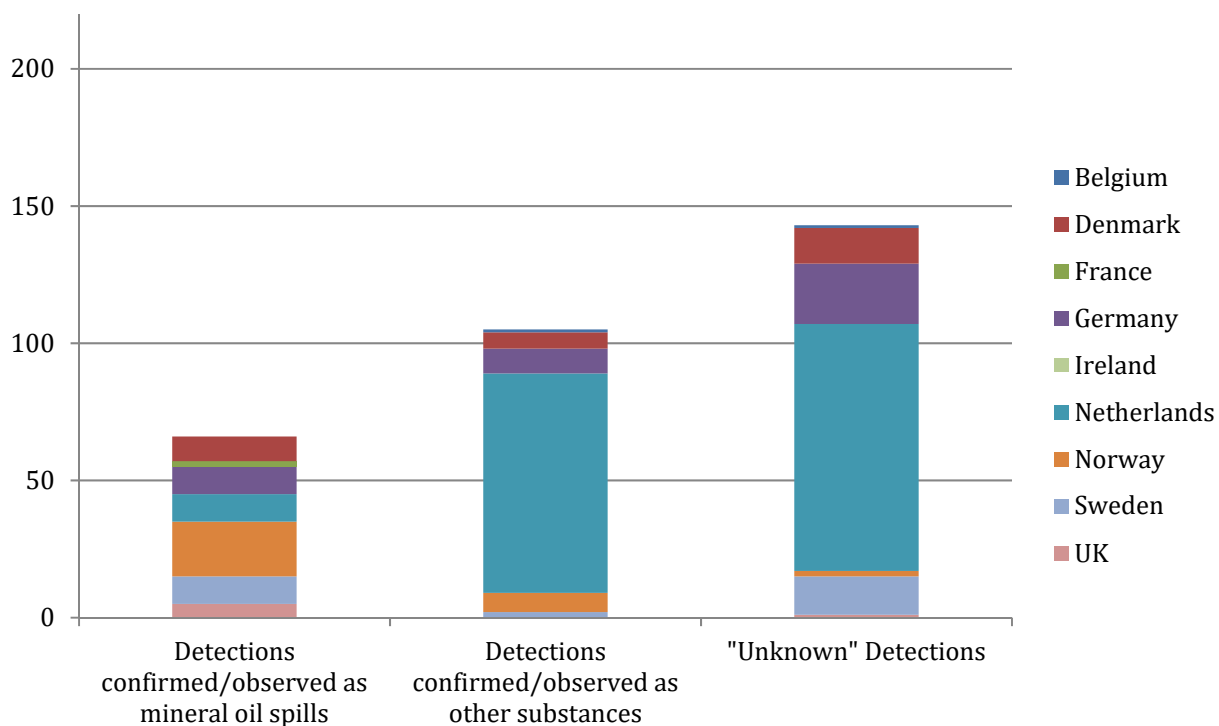


Figure 8: Number of mineral oil, other substances and unknown slicks observed 2017



ANNEX 1

Instructions for filling in the joint Bonn Agreement/HELCOM annual reporting form on illegal discharges observed during aerial surveillance

Reporting format

The Contracting Parties will report on their entire annual surveillance activity in the reporting year. This is data obtained during flights over their National Exclusive Economic Zone and outside their responsibility zone e.g. (Super) CEPCO or Tour de Horizon. The following format explanations and data standards should be used to complete the attached MS Excel reporting sheet – meeting the outlined standards is of the utmost importance to ensure inclusion of Contracting Parties data in the Bonn Agreement Aerial Surveillance database.

When reporting the annual data to the Bonn Agreement Secretariat, Table 1 should include only those spills that are inside the reporting Contracting Party's own national EEZ.

Each Contracting Party will send (using Table 6) a compilation of the spills detected in other Contracting Parties' EEZs to the Contracting Party in question at the end of February of the following year. The receiving Contracting Party will compare the data with their annual national data, delete any duplicates and complete their national data where needed. By doing so, all Contracting Parties will be able to obtain a full annual national dataset containing all spills inside their EEZ – inclusive of those detected by other Contracting Parties – and report this dataset (reflected in tables 1, 5 and 6) to the Bonn Agreement Secretariat by the end of March.

Once received by the Secretariat, Aerial Surveillance data will be quality controlled to ensure the data standards have been met- any queries will be forwarded to agreed contact points for resolution before the data is included in the database.

Where applicable, all values are to be presented using a comma as a decimal separator (", ") and a space as a thousand separator (" "). All coordinates are to be calculated using WGS84 and to be presented as decimal degrees.

Reporting deadlines

The deadlines for the submission of aerial surveillance data are:

- a. the end of February for reporting data on spills in the EEZs of other Contracting Parties to the Contracting Parties concerned; and
- b. the end of March for the submission of full national data sets to the Secretariat.

Please:

- do not remove, add or adjust any columns or calculations included in the MS Excel reporting sheet.
- only fill out the reporting sheet as it is delivered to you each year, do not use old versions. They may appear to be replicas but subtle variations are present due to the on-going streamlining of the reporting process at the Secretariat.

Table 1. National flights

This data should be completed for flights which were conducted in the EEZ of the reporting Contracting Party

Country	Year	No. of flight hours			No. of detections inside national EEZ			Detections confirmed / observed as mineral oil spills			No. of polluters (mineral oil)				Estimated volume (m ³)	Detections confirmed/observed as other substances	No. of polluters (other substances)			
		Daylight	Darkness	Total	Daylight	Darkness	Total	Daylight	Darkness	Total	Rigs	Ships	Other	Unknown			Rigs	Ships	Other	Un

Column Header	Format Example	Explanation
Country	Netherlands	Full country name the reported data applies to
Year	2013	The year that the reported data applies to
No. of flight hours – Daylight	136:24	The number of flight hours and minutes carried out in daylight - From 30 minutes after Morning Civil Twilight, until 30 minutes before Evening Civil Twilight as given in the Air Almanac – shown as a colon separated value. No decimal values
No. of flight hours – Darkness	86:23	The number of flight hours and minutes carried out in darkness - From 30 minutes before Evening Civil Twilight, until 30 minutes after Morning Civil Twilight as given in the Air Almanac – shown as a colon separated value. No decimal values
No. of flight hours – Total	222:47	= (No. of flight hours - Daylight) + (No. of flight hours – Darkness) – shown as a colon separated value. No decimal values
No. of detections inside national EEZ - Daylight	67	The number of detections in daylight, within the EEZ of the country reporting the data - From 30 minutes after Morning Civil Twilight, until 30 minutes before Evening Civil Twilight as given in the Air Almanac
No. of detections inside national EEZ – Darkness	23	The number of detections in darkness, within the EEZ of the country reporting the data - From 30 minutes before Evening Civil Twilight, until 30 minutes after Morning Civil Twilight as given in the Air Almanac
No. of detections inside national EEZ – Total	90	= (No. of detections inside own EEZ – Daylight) + (No. of detections inside own EEZ – Darkness)

Detections confirmed / observed as mineral oil spills –daylight	12	Of the “No. of detections inside own EEZ – Daylight” the total number of those detections observed as mineral oil and confirmed as mineral oil
Detections confirmed / observed as mineral oil spills – Darkness	5	Of the “No. of detections inside national EEZ – Darkness” the total number of those detections observed as mineral oil and confirmed as mineral oil
Detections confirmed / observed as mineral oil spills – Total	17	= (Detections confirmed / observed as mineral oil spills – Daylight) + (Detections confirmed / observed as mineral oil spills – Darkness)
No. of polluters (mineral oil) – Rigs	2	The number of offshore installations positively identified as the source of the oil detection
No. of polluters (mineral oil) – Ships	2	The number of ships positively identified as the source of the oil detection
No. of polluters (mineral oil) – Other	90	The number of oil detections which do not fit into either the “Rigs” or “Ships” category
No. of polluters (mineral oil) – Unknown	86	The number of oil detections which could not be associated with a source
Estimated Volume (m ³)	27,36	Volume of all spills confirmed/observed as mineral oil as calculated using the Bonn Agreement Oil Appearance Code using the lower figure (BAOAC minimum) – presented as a decimal value using a comma as a decimal separator
Detections confirmed/observed as other substances (‘OS’)	3	The number of detections observed as other substances or confirmed as other substances (‘OS’) – independent of the time of day the detection was made
No. of polluters (other substances) – Rigs	2	The number of offshore installations positively identified as the source of the OS detection
No. of polluters (other substances) – Ships	2	The number of ships positively identified as the source of the OS detection
No. of polluters (other substances) – Other	90	The number of OS detections which do not fit into either the “Rigs” or “Ships” category

No. of polluters (other substances) – Unknown	86	The number of OS detections which could not be associated with a source
Unknown ('UNK') detections	70	The number of detections that could not be visually verified as mineral oil or other substances ('unknowns' or 'UNK') (((No. of UNK detections inside national EEZ – Total) – (Detections confirmed / observed as mineral oil spills – Total)) - Detections confirmed/observed as other substances)
No. of polluters (unknown detections) – Rigs	2	The number of offshore installations positively identified as the source of the UNK detection
No. of polluters (unknown detections) – Ships	2	The number of ships positively identified as the source of the UNK detection
No. of polluters (unknown detections) – Other	90	The number of UNK detections which do not fit into either the "Rigs" or "Ships" category
No. of polluters (unknown detections) – Unknown	86	The number of UNK detections which could not be associated with a source
Remarks	Source of rig spills identified as...	Any additional textual information to inform on particular situations

Table 2. Satellite detections

To be completed by NORWAY only (satellite data for the other Bonn Agreement countries will be taken directly from the EMSA CleanSeaNet report)

Country	Year	Detected	Confirmed mineral oil	Confirmed other substances	Confirmed unknown spills
Column Header	Format Example	Explanation			
Country	France	Full country name the reported data applies to			
Year	2013	The year that the reported data applies to			
Detected	215	The number of satellite detections inside national EEZ			
Confirmed mineral oil	7	The number of satellite detections confirmed as mineral oil			
Confirmed other substances	3	The number of satellite detections confirmed as other substances			
Confirmed unknown spills	2	The number of satellite detections which could not be visually verified			
Confirmed natural phenomena	1	The number of satellite detections confirmed as natural phenomena			
Nothing found	202	The number of verified satellite detections where nothing could be found			

Table 3. Coordinated Extended Pollution Control Operations (CEPCO)

Country	Year	No. of flight hours			No. of detections inside CEPCO area			Detections confirmed / observed as mineral oil spills			No. of polluters (mineral oil)				Estimated volume (m³)	Detections confirmed/observed as other substances	No. of polluters (other substances)			
		Daylight	Darkness	Total	Daylight	Darkness	Total	Daylight	Darkness	Total	Rigs	Ships	Other	Unknown			Rigs	Ships	Other	Unknown
Column Header				Format Example				Explanation												
Country				Netherlands				Full country name the reported data applies to												
Year				2013				The year that the reported data applies to												
No. of flight hours – Daylight				136:24				The number of flight hours and minutes carried out in daylight - From 30 minutes after Morning Civil Twilight, until 30 minutes before Evening Civil Twilight as given in the Air Almanac – shown as a colon separated value. No decimal values												
No. of flight hours – Darkness				86:23				The number of flight hours and minutes carried out in darkness - From 30 minutes before Evening Civil Twilight, until 30 minutes after Morning Civil Twilight as given in the Air Almanac – shown as a colon separated value. No decimal values												
No. of flight hours – Total				222:47				= (No. of flight hours - Daylight) + (No. of flight hours – Darkness) – shown as a colon separated value. No decimal values												
No. of detections inside CEPCO area - Daylight				67				The number of detections in daylight, within the predefined CEPCO area - From 30 minutes after Morning Civil Twilight, until 30 minutes before Evening Civil Twilight as given in the Air Almanac												
No. of detections inside CEPCO area – Darkness				23				The number of detections in darkness, within the predefined CEPCO area - From 30 minutes before Evening Civil Twilight, until 30 minutes after Morning Civil Twilight as given in the Air Almanac												
No. of detections inside CEPCO – Total				90				= (No. of detections inside CEPCO area – Daylight) + (No. of detections inside CEPCO area – Darkness) within the predefined CEPCO area												
Detections confirmed / observed as mineral oil spills – Daylight				12				Of the “No. of detections inside CEPCO area – Daylight” the total number of those detections observed as mineral oil and confirmed as mineral oil												
Detections confirmed / observed as mineral oil spills – Darkness				5				Of the “No. of detections inside CEPCO area– Darkness” the total number of those detections												

		observed as mineral oil and confirmed as mineral oil
Detections confirmed / observed as mineral oil spills – Total	17	=(Detections confirmed / observed as mineral oil spills – Daylight) + (Detections confirmed / observed as mineral oil spills – Darkness)
No. of polluters (mineral oil) – Rigs	2	The number of offshore installations positively identified as the source of the oil detection
No. of polluters (mineral oil) – Ships	2	The number of ships positively identified as the source of the oil detection
No. of polluters (mineral oil) – Other	90	The number of oil detections which do not fit into either the “Rigs” or “Ships” category
No. of polluters (mineral oil) – Unknown	86	The number of oil detections which could not be associated with a source
Estimated Volume (m3)	27,36	Volume of all spills confirmed/observed as mineral oil as calculated using the Bonn Agreement Oil Appearance Code using the lower figure (BAOAC minimum) – presented as a decimal value using a comma as a decimal separator
Detections confirmed/observed as other substances (‘OS’)	3	The number of detections observed as other substances or confirmed as other substances (OS) – independent of the time of day the detection was made
No. of polluters (other substances) – Rigs	2	The number of offshore installations positively identified as the source of the OS detection
No. of polluters (other substances) – Ships	2	The number of ships positively identified as the source of the OS detection
No. of polluters (other substances) – Other	90	The number of OS detections which do not fit into either the “Rigs” or “Ships” category
No. of polluters (other substances) – Unknown	86	The number of OS detections which could not be associated with a source
Unknown (‘UNK’) detections	70	The number of detections which could not be visually verified as mineral oil or other substances (‘unknowns’ or ‘UNK’) (((No. of detections inside CEPCO area – Total) – (Detections confirmed / observed as mineral oil spills – Total)) - Detections confirmed/observed as other substances)
No. of polluters (unknown)	2	The number of offshore installations positively

detections) – Rigs		identified as the source of the UNK detection
No. of polluters (unknown detections) – Ships	2	The number of ships positively identified as the source of the UNK detection
No. of polluters (unknown detections) – Other	90	The number of UNK detections which do not fit into either the “Rigs” or “Ships” category
No. of polluters (unknown detections) – Unknown	86	The number of UNK detections which could not be associated with a source
Remarks	Source of rig spills identified as...	Any additional textual information to inform on particular situations

Table 4. Tour d’horizon flights

Country	Year	No. of flights	No. of flight hours			No. of detections in TdH area			No. of polluters (mineral oil)				Estimated volume (m ³)	Detections confirmed/observed as other substances	No. of polluters (other substances)		
			Daylight	Darkness	Total	Daylight	Darkness	Total	Rigs	Ships	Other	Unknown			Rigs	Ships	Other

Column Header	Format Example	Explanation
Country	Netherlands	Full country name the reported data applies to
Year	2013	The year that the reported data applies to
No. of flights	Number (Int)	The number of flights carried out by all Contracting Parties combined
No. of flight hours – Daylight	136:24	The number of flight hours and minutes carried out in daylight - From 30 minutes after Morning Civil Twilight, until 30 minutes before Evening Civil Twilight as given in the Air Almanac – shown as a colon separated value. No decimal values
No. of flight hours – Darkness	86:23	The number of flight hours and minutes carried out in darkness - From 30 minutes before Evening Civil Twilight, until 30 minutes after Morning Civil Twilight as given in the Air Almanac – shown as a colon separated value. No decimal values
No. of flight hours – Total	222:47	= (No. of flight hours - Daylight) + (No. of flight hours – Darkness) – shown as a colon separated value. No decimal values

No. of detections in TdH area- Daylight	67	The number of detections in daylight, during the TdH routing - From 30 minutes after Morning Civil Twilight, until 30 minutes before Evening Civil Twilight as given in the Air Almanac
No. of detections in TdH area- Darkness	23	The number of detections in darkness, during the TdH routing - From 30 minutes before Evening Civil Twilight, until 30 minutes after Morning Civil Twilight as given in the Air Almanac
No. of detections in TdH area- Total	90	= (No. of detections during TdH routing - Daylight) + (No. of detections during TdH routing - Darkness)
Detections confirmed / observed as mineral oil spills – Daylight	12	Of the “No. of detections inside own EEZ – Daylight” the total number of those detections observed as mineral oil and confirmed as mineral oil
Detections confirmed / observed as mineral oil spills – Darkness	5	Of the “No. of detections inside national EEZ – Darkness” the total number of those detections observed as mineral oil and confirmed as mineral oil
Detections confirmed / observed as mineral oil spills – Total	17	= (Detections confirmed / observed as mineral oil spills – Daylight) + (Detections confirmed / observed as mineral oil spills – Darkness)
No. of polluters (mineral oil) – Rigs	2	The number of offshore installations positively identified as the source of the oil detection
No. of polluters (mineral oil) – Ships	2	The number of ships positively identified as the source of the oil detection
No. of polluters (mineral oil) – Other	90	The number of oil detections which do not fit into either the “Rigs” or “Ships” category
No. of polluters (mineral oil) – Unknown	86	The number of oil detections which could not be associated with a source
Estimated Volume (m ³)	27,36	Volume of all spills confirmed/observed as mineral oil as calculated using the Bonn Agreement Oil Appearance Code using the lower figure (BAOAC minimum) – presented as a decimal value using a comma as a decimal

		separator
Detections confirmed/observed as other substances (OS)	3	The number of detections observed as other substances or confirmed as other substances (OS) – independent of the time of day the detection was made
No. of polluters (other substances) – Rigs	2	The number of offshore installations positively identified as the source of the OS detection
No. of polluters (other substances) – Ships	2	The number of ships positively identified as the source of the OS detection
No. of polluters (other substances) – Other	90	The number of OS detections which do not fit into either the “Rigs” or “Ships” category
No. of polluters (other substances) – Unknown	86	The number of OS detections which could not be associated with a source
Unknown (UNK) detections	70	The number of detections which could not be visually verified as mineral oil or other substances (‘unknowns’ or ‘UNK’) (((No. of detections during TdH routing – Total) – (Detections confirmed / observed as mineral oil spills – Total)) - Detections confirmed/observed as other substances)
No. of polluters (unknown detections) – Rigs	2	The number of offshore installations positively identified as the source of the UNK detection
No. of polluters (unknown detections) – Ships	2	The number of ships positively identified as the source of the UNK detection
No. of polluters (unknown detections) – Other	90	The number of UNK detections which do not fit into either the “Rigs” or “Ships” category
No. of polluters (unknown detections) – Unknown	86	The number of UNK detections which could not be associated with a source
Remarks	Source of rig spills identified as ..	Any additional textual information to inform on particular situations

Table 5. Spill statistics

Volume category		No. of spills detected	Spill IDs
<0,1m ³	1		
<0,1-1m ³	2		
1-10 m ³	3		
10-100 m ³	4		
>100 m ³	5		

Column Header	Format	Explanation
No. of spills detected	7	The total number of detected or observed mineral oil spills, where the volume was estimated, that fit into each category
Spill IDs	UK-01, UK-02, UK-08, UK-14, UK-21, UK-22, UK-55	The Spill IDs (taken from Table 6 – Observed Spills) of all spills which have been counted towards each category

Table 6. Observed spills

Multiple slicks obviously originating from a single spill should not be reported separately but should be combined and the centre point reported as the location.

Country	Year	Spill ID	Flight Type	Date	Time	Wind speed	Wind direction	Latitude	Longitude	Length	Width	Area	Spill category	Estimated volume
---------	------	----------	-------------	------	------	------------	----------------	----------	-----------	--------	-------	------	----------------	------------------

Column Header	Format	Explanation
Country	Belgium	Full country name the reported data applies to
Year	2013	The year that the reported data applies to
Spill ID	BE-01	An unique code which will enable each individual spill to be individually identified (*) <u>Note</u> : in case of a spill consisting of several slicks (multiple slicks clearly originating from 1 spill), only 1 spill ID should be added (and not x '(partial) slick' IDs). In this case, the centre point should be reported as location.
Flight Type	N	The type of flight the detection was made during: National = "N" CEPCO = "C" Super CEPCO = "S"
Date	27/03/2013	The date of the individual detection
Time	08:20	The time of the detection
Wind speed	2	The wind speed in m/s at the time of the detection
Wind direction	210	The wind direction in degrees at the time of the detection
Latitude	51,3683	The latitude of the detection in decimal degrees, using WGS84 - See also Note under 'Spill ID' above for spill consisting of several slicks (*)
Longitude	2,6733	The longitude of the detection in decimal degrees, using WGS84 - See also Note under 'Spill ID' above for spill consisting of several slicks (*)
Length	2,3	The length of the detection in kilometres
Width	0,1	The width of the detection in kilometres

Area	0,092	The area of the detection square kilometres ²
Spill category	OIL	The category the detection falls into from: "OIL", "OS", "UNKNOWN"
Estimated volume	0,01564	Volume of the detection confirmed/observed as mineral oil as calculated using the Bonn Agreement Oil Appearance Code using the lower figure (BAOAC minimum) in m ³
Polluter	Other	Enter "rig", "ship", "other" or "unknown"
Category	1	The category (1, 2, 3, 4 or 5) that the detection falls into: <0,1m ³ = "1" <0,1-1m ³ = "2" 1-10 m ³ = "3" 10-100 m ³ = "4" >100 m ³ = "5"
Casefile	BE-0008	The name of the casefile the detection refers to
Remarks	Case pending	Any additional information to inform on particular situations

Table 7. Observed TdH Spills

Each country should report all observations from their Tour d'Horizon mission directly to the Bonn Agreement Secretariat, regardless of the location of the spills, at the same time as reporting their other surveillance data.

Country	Year	Flight Type	Date	Time	Latitude	Longitude	CP Area	Area Cov	Daylight or Darkness?	Detection ID	If Oil: Min Volume	If Oil: Max Volume	Polluter Type	Polluter ID	Is detection a verification of (CSN) Sat alert?	In flight Report?	Po
---------	------	-------------	------	------	----------	-----------	---------	----------	-----------------------	--------------	--------------------	--------------------	---------------	-------------	---	-------------------	----

Column Header	Format	Explanation
Country	Belgium	Full country name the reported data applies to
Year	2013	The year that the reported data applies to
Flight Type	TDH	The type of flight the detection was made during:

		TDH =Tour D'Horizon
Date	27/03/2013	The date of the individual detection
Time	08:20	The time of the detection
Latitude	51,3683	The latitude of the detection in decimal degrees, using WGS84
Longitude	2,6733	The longitude of the detection in decimal degrees, using WGS84
CP Area	Belgium	The Contracting pater EEZ in which the detection was made
Area covered	0,092	The area of the detection in square kilometres ²
Daylight or Darkness	Daylight	Detection in Daylight or darkness
Detection ID	Oil	The category the detection falls into from: "OIL", "OS", "UNKNOWN"
If Oil: Min Volume	0.073	Minimum spill volume in square kilometres
If Oil: Max Volume	0.03	Maximum spill volume in square kilometres
Polluter type	RIG	Type of Polluter either "RIG", "SHIP" or "UNKNOWN"
Polluter Id	Platform Alpha	The name of the Rig or Ship if identifiable
Is detection a verification of (CSN) Sat alert?	Y	Is detection a verification of (CSN) Sat alert Y or N
In Flight Report	Y	Has an in Flight Report been undertaken Y or N
Post flight Fax sent	N	Has a post flight fax report been sent Y or N
Post flight Email sent	Y	Has a post flight email report been sent Y or N
Reporting made to	National Contact Point	Who has the post flight report been sent to: national focal point or other?
Remarks	Case pending	Any additional information to inform on particular situations

Table 8. TdH Flight Routing

Date	Flight Number	Waypoint Code (Incl. Airports)	Position (only if waypoint not in Aerial Operations Handbook)
------	---------------	-----------------------------------	--

Column Header	Format	Explanation
Date	27/03/2013	The date of the start of the flight
Flight Number	NL: 1046, BE: 13046, UK: Endurance 446, Etc.	The number of the TdH Flight
Way Point Code (Including Airports)	T10, T11, T12, EGNT	The Waypoint codes for the flight taken from the Aerial Operations Handbook including Airports
Position	N XX0 XX,XX' E/W XXX0 XX,XX'	The position of the flight route (only if different from the waypoints in the Aerial Operations Handbook)

Annex 2. CleanSeaNet Statistics



CleanSeaNet Service Statistics for Bonn Agreement

Reporting Period: 01/01/2017 – 31/12/2017

Date: 27 April 2018

Table of Contents

CleanSeaNet Service Statistics for Bonn Agreement	1
1. Introduction	2
2. CleanSeaNet Detections	3
3. Verification activities	5

1. Introduction

This document presents the CleanSeaNet Service (CSN) Statistics for the Bonn Agreement covering 2017. Specifically, this report summarizes:

- CSN service deliveries
- CSN possible oil spills detection
- Coastal States verification activities in the scope of CN

In 2017, the CleanSeaNet service was provided using images from SENTINEL-1, RADARSAT-2 and TERRASAR-X. During this period, CSN delivered for the Bonn Agreement area of interest a total of 857 services. Figure 1, shows the monthly distribution of services.

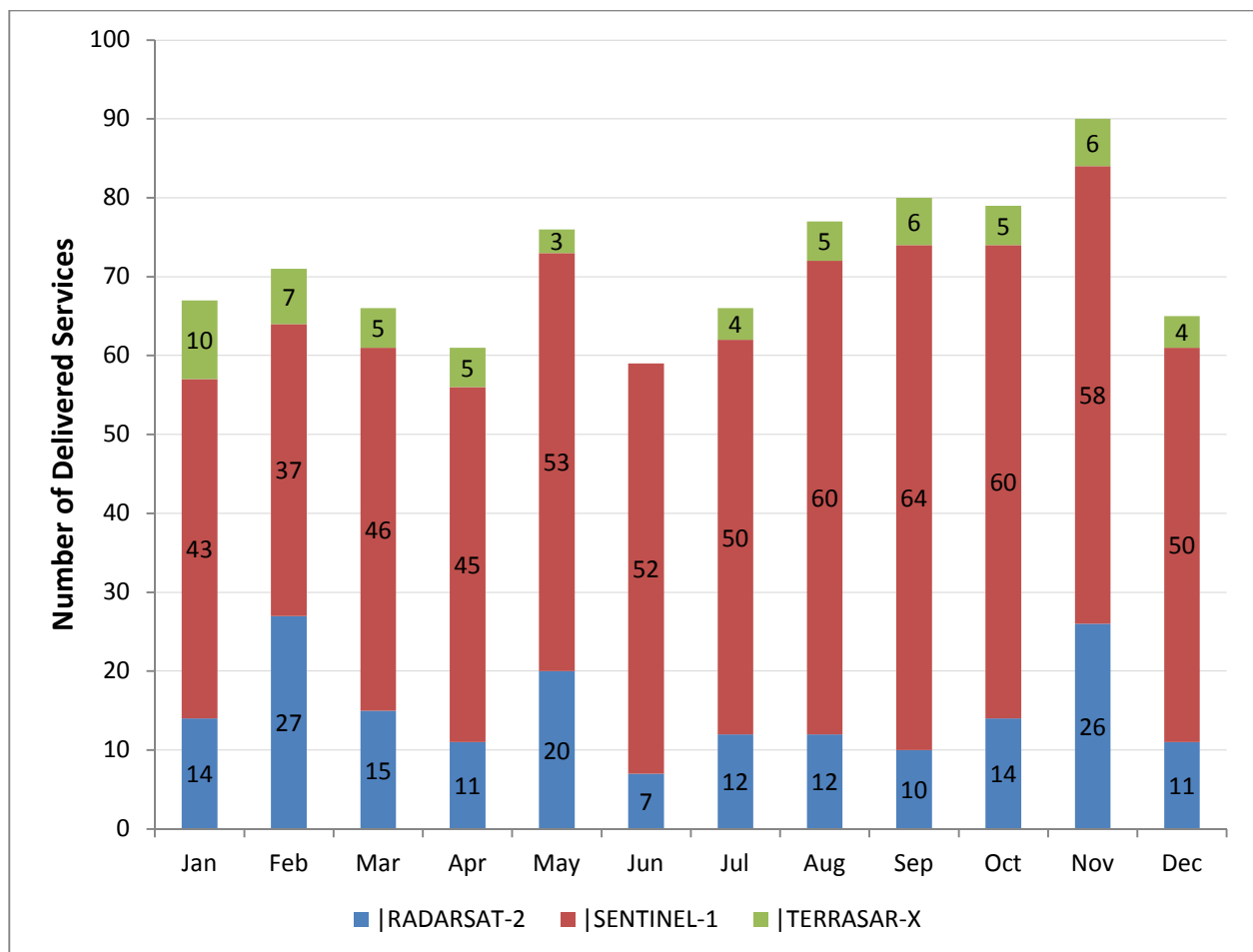


Figure 1 CleanSeaNet delivered services in 2017 for the Bonn Agreement region.

2. CleanSeaNet Detections

In 2017, 1569 detections were reported: 874 Classification A¹, 695 Classification B². Figure 2 shows the monthly distribution of CSN detections classified as A and B.

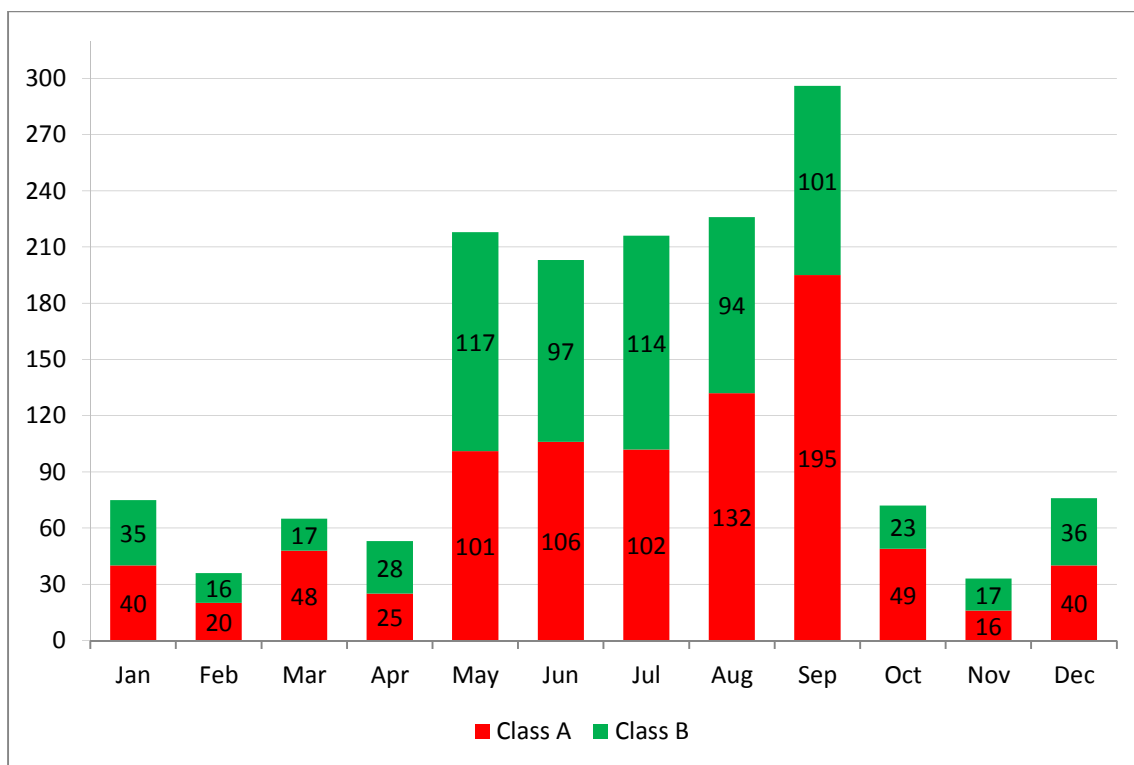


Figure 2 Monthly distribution of CSN detections (Classification A and B).

¹ Classification A - Detected spill is most probably oil (mineral, vegetable/fish oil) or a chemical.

² Classification B - Detected spill is less probably oil (mineral/vegetable/fish oil) or a chemical.

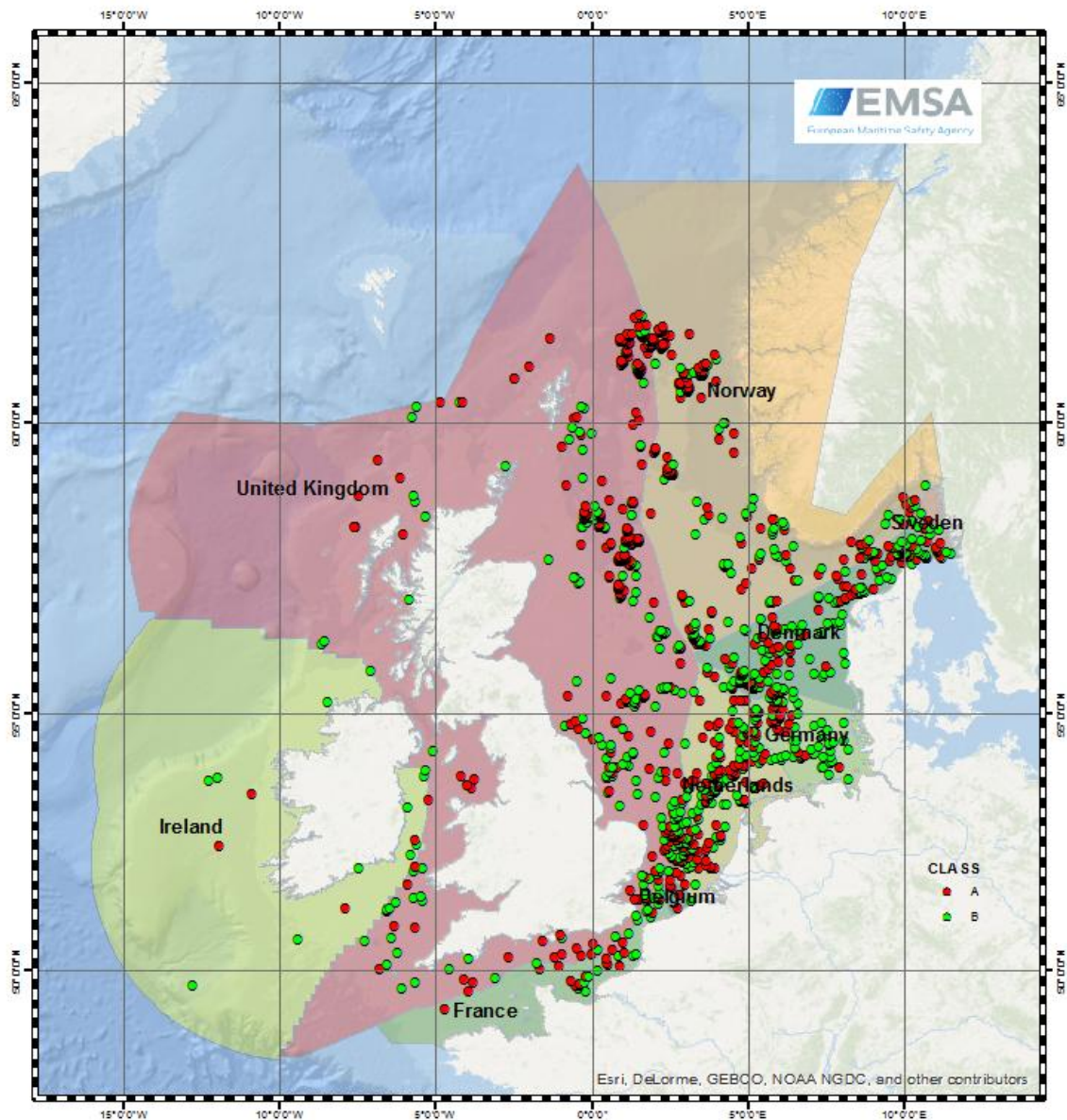


Figure 3 Spatial distribution of CSN in the Bonn Agreement region in 2017.

There are a number of possible reasons why the number of detections has increased (992 detections in 2016; 1569 detections in 2017):

Volume of services has increased (779 services in 2016; 857 services in 2017)

Increased use of Sentinel 1A/1B images: Sentinel-1 allows the detection of smaller spills that were previously undetected. This is potentially the main reason for the significant increase in number of detections.

A high number of CleanSeaNet detections in the Bonn Agreement region would appear to come from offshore installations. Many of the detections were confirmed as mineral oil nevertheless this does not mean these spills exceeded legal limits (e.g. Produced water discharged limits).

3. Verification activities

During the reporting period, out of the 1569 detections, 844 were checked by the Coastal States: 209 (25%) were confirmed as being “Mineral oil confirmed”, 76 (9%) were reported as “other substance”, 20 (2%) were reported as “unknown feature” and 22 (3%) were reported as “natural phenomena” and 517 (61%) were reported as “nothing observed”

Figure 4 below shows the monthly distribution of CSN checked detections and verification results, while the

Table 1 presents the annual distribution of checked detections and verification results per country.

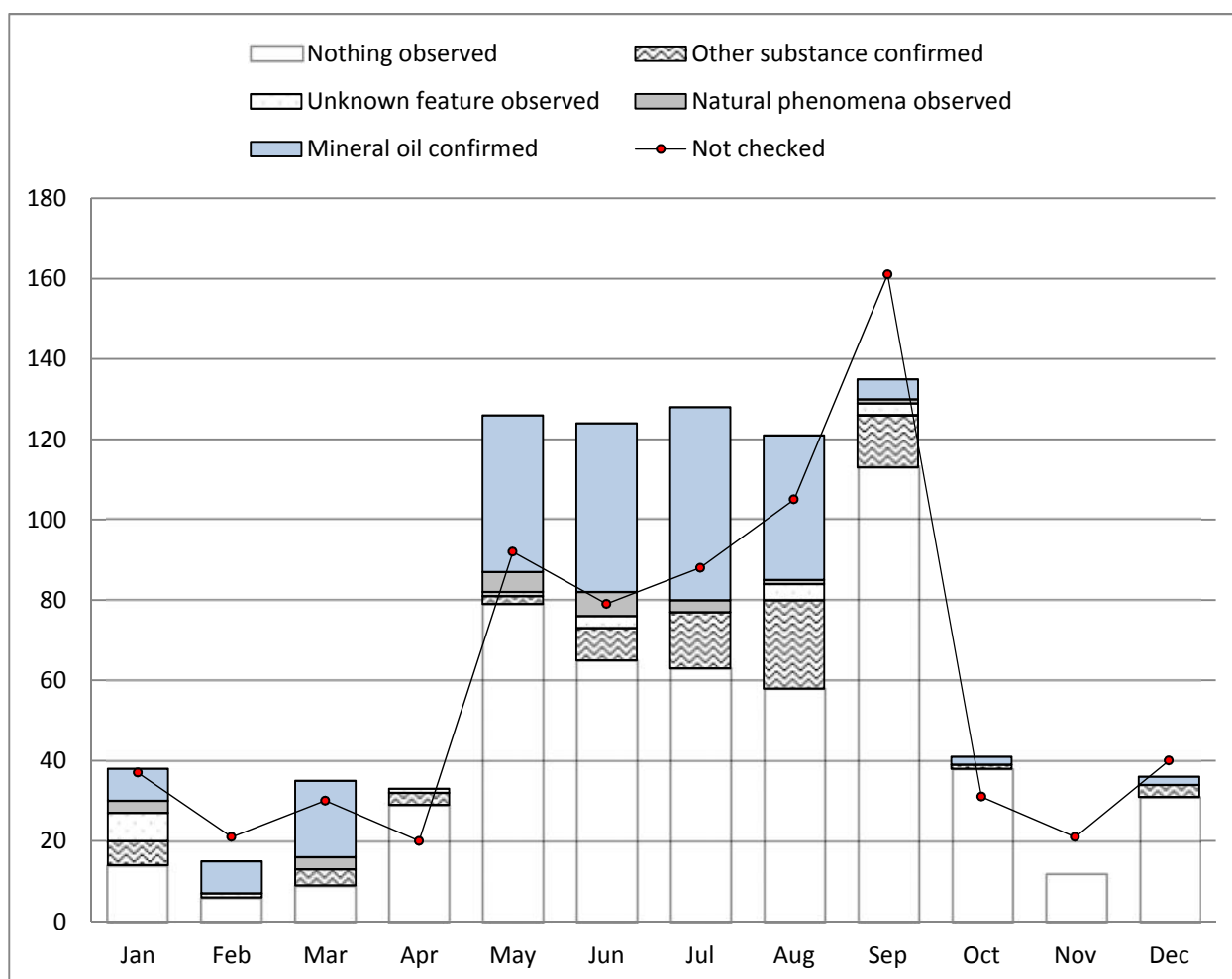


Figure 4 Monthly distribution of checked detections and verification results (2017).

(Source: Feedback provided by Member States and stored in the CleanSeaNet database)

Table 1 CSN checked detections and verification results per country (2017).

Country	Satellite detections	Satellite detections checked by coastal States					Not checked or no feedback
		Mineral oil confirmed	Other substance confirmed	Unknown feature observed	Natural phenomena observed	Nothing observed	
Belgium	7						7
Denmark	270	13	9	8	2	84	154
France	27				2	10	15
Germany	101	2	9	2	6	29	53
Ireland	15		1	1	2	7	4
the Netherlands	147	3	13	3		7	121
Norway	333	10	17	1	4	71	230
Sweden	19				3	7	9
the United Kingdom of Great Britain	650	181	27	5	3	302	132
Total	1569	209	76	20	22	517	725

It should be noted that, in this table, CleanSeaNet detections are distributed between countries using national areas communicated to EMSA by the Bonn Agreement secretariat. The centre position of the spill is used to decide in which country's area CleanSeaNet detections shall fall.

It should also be noted that alert areas defined by each country are very often different of national areas used in this report. This could for example be due to the operational need to be alerted before a spill could affect national waters. In addition, an alert is generated each time a spill contour polygon intersects an alert area. Therefore the number of detections per country in this report and the number of CleanSeaNet oil spill notifications alerts for the same country are different.

Finally, Figure 5 shows the spatial distribution of CSN detections and verification activities carried out by the Coastal States in the Bonn Agreement region in 2017.

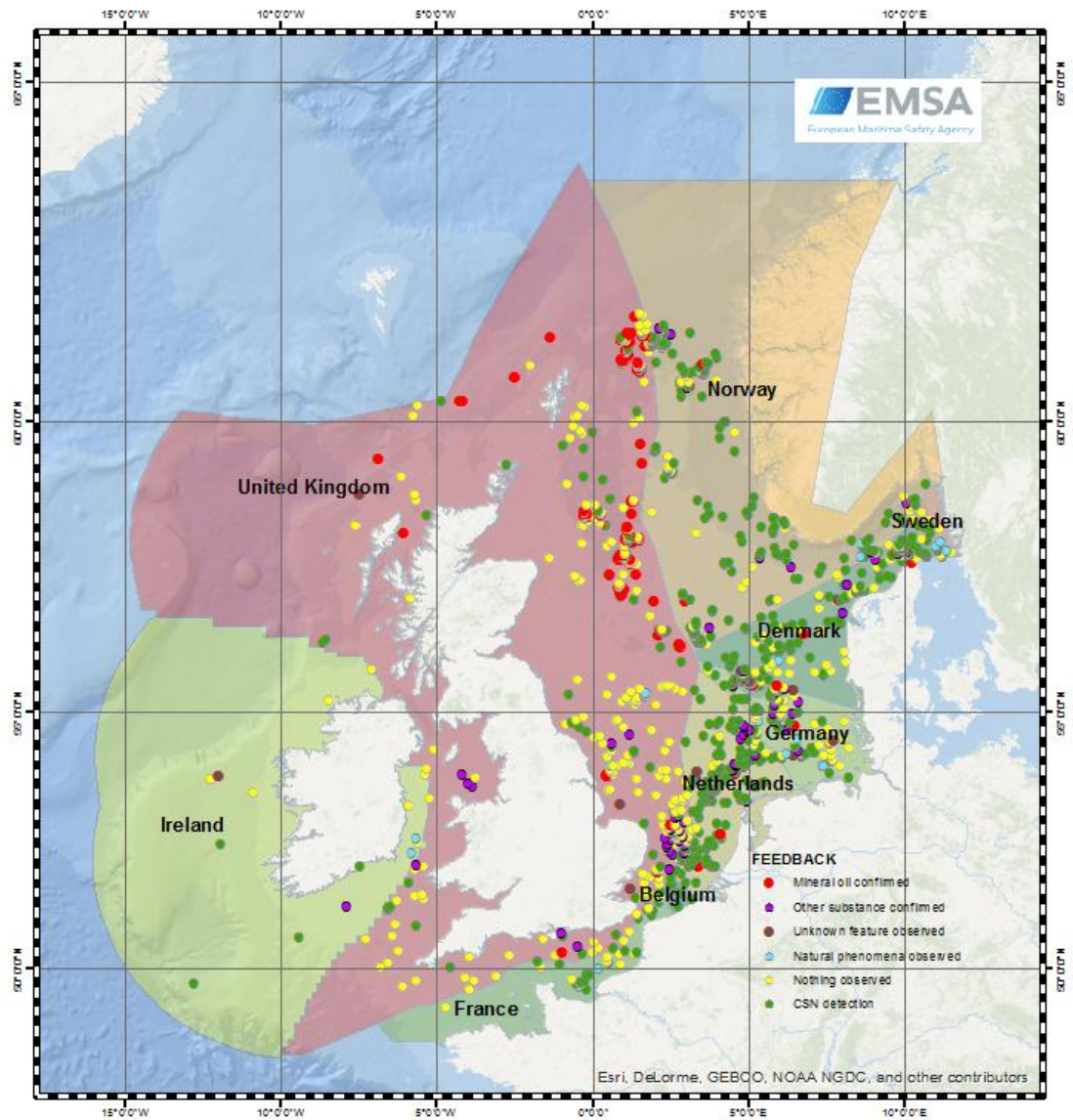


Figure 5 Spatial distribution of CSN detections and the verification activities carried out by the Coastal States in the Bonn Agreement region in 2017.

European Maritime Safety Agency

Praça Europa 4
1249-206 Lisbon, Portugal
Tel +351 21 1209 200
Fax +351 21 1209 210
emsa.europa.eu

