



Bundesstelle für Seeunfalluntersuchung – BSU
Federal Bureau of Maritime Casualty Investigation
Federal Higher Authority subordinated to the Ministry of Transport
and Digital Infrastructure

2016 Annual Report



May 2017

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Foreword

When you read this, I will have already been retired for several weeks. Accordingly, this is the last annual report for which I am responsible. Five exciting years are now behind me and I hope that the Federal Ministry of Transport and Digital Infrastructure, which is responsible for us, will manage to find a successor soon.

I would like to thank everyone who makes the work of the BSU possible, but first and foremost our staff, who engage with the topic with such huge commitment. My thanks also go to the staff of the vessel traffic services and the waterway police stations, without whose work there would be no or hardly any reports sent to the BSU.

Moreover, I have found that the work of the BSU is generally recognised and usually appreciated by the expert audience. This cannot necessarily be assumed but pleases me all the more, especially given that the parties concerned, the seamen and pilots, in particular, are usually extremely co-operative. Even the often-maligned lawyers are normally interested in a meaningful working relationship.

We now move on to the past year. Though it may be misleading, I certainly have the impression that the idea of safety is becoming more and more prevalent in merchant shipping. This is reflected in the

fact that there was only one single fatality in this area last year. Accidents involving fishing vessels do give cause for concern, however. Four dead seamen were recorded in three accidents in this area. This number is extremely worrying in the small German fishing fleet. The BSU will carefully observe this area, in particular.

This annual report is somewhat more detailed than earlier ones. On the 15th anniversary of the BSU, our investigators are making their own contribution so as to explain their work as authentically as possible.

And with that, I bid farewell and move into retirement. All that remains is for me to wish every reader the very best, combined with a request for the continued support of the BSU.

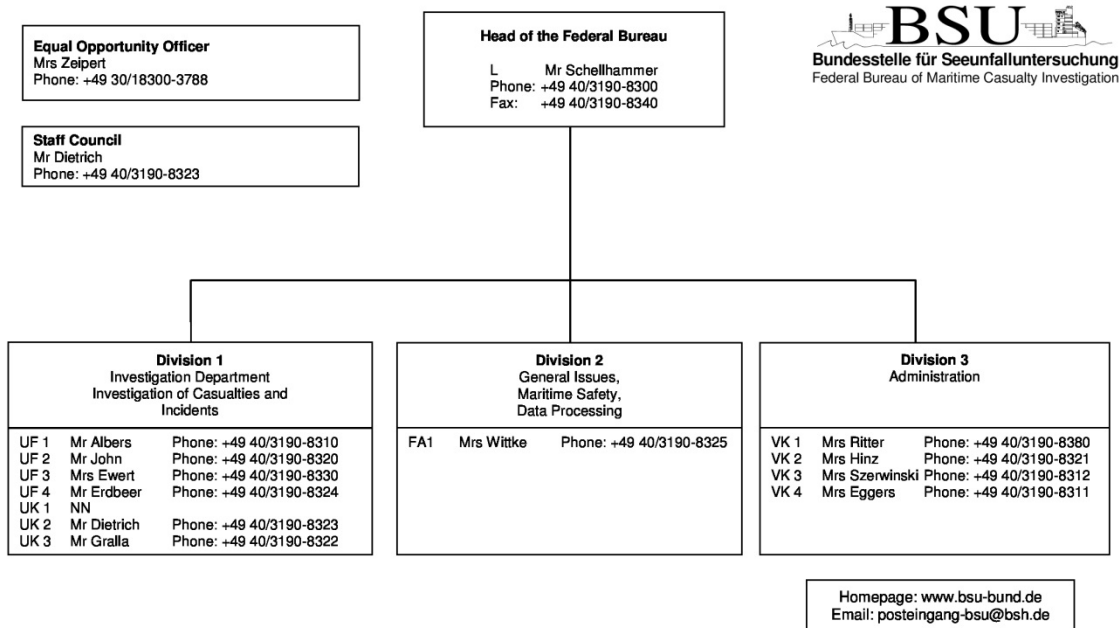
Volker Schellhammer

Structure of the BSU

The BSU is a federal higher authority based in Hamburg and staffed by 11 people. It has a single-level administrative structure and is under the direct supervision of Department WS 22 of the Federal Ministry of Transport and Digital Infrastructure.

Necessary decisions are made quickly and independently by the BSU's director. In particular, he is not subject to instructions vis-à-vis the decision as to whether an investigation is initiated, or not. He represents the BSU outwardly at national, European, and international level. Moreover, he is responsible for strategic planning and control. He is also responsible for press, media, and general PR work.

BSU organisational chart



UF = Lead Investigator
 UK = Investigator

FA = Basic Issues
 VK = Administrator

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Information as of 02/2017

The foundation for our activities

The German Maritime Safety Investigation Law (SUG) forms the foundation for the activities of the BSU. It defines the responsibility of the BSU for investigating marine casualties

- on or involving seagoing ships of all flags
 - within German territory;
 - within the German Exclusive Economic Zone (EEZ);
 - during traffic movements on German navigable maritime waterways, as well as to, from, and in ports connected to them;
- on or involving seagoing ships flying the flag of Germany anywhere in the world, and
- in other countries if the Federal Republic of Germany has substantial interest in the investigation thereof.

Next to the actual investigative work, the BSU plays a role in improving maritime safety with a focus on preventing marine casualties by

- keeping and analysing statistics;
- publishing information on marine casualties;
- forwarding marine casualty data to the European EMCIP (European Marine Casualty Information Platform) database, and
- participating in seminars.

The BSU is not responsible for marine casualties involving only

1. Ships of war, troop ships and other ships owned or operated by Germany's federal or state governments and used only on government non-commercial service.
2. Ships not propelled by mechanical means, wooden ships of primitive build, pleasure yachts and pleasure craft not engaged in trade, unless they have prescribed manning and carry more than 12 passengers.
3. Fishing vessels with a length of less than 15 m.
4. Fixed offshore drilling units.

In practice, this is of particular significance insofar as unlike those used commercially, privately used pleasure yachts are basically not subject to the SUG in any respect. Therefore, the BSU has no legal mandate to investigate accidents involving pleasure yachts. It is only possible for the BSU to investigate accidents involving pleasure yachts in (rare) exceptions and even then, only when an accident occurs in German territorial waters or in Germany's EEZ.

Main investigations

In 2016, 11 investigations were closed with the publication of an investigation report. They consisted of five collisions, five personnel accidents (each with subsequent loss of life) and one grounding after a helm failure. Another nine accidents were closed with an internal report and one by transfer to another State.

One particular spectacle for the expert audience and public at large was the grounding of mega container ship CSCL INDIAN OCEAN on the River Elbe at Lühesand. Thousands of onlookers did not want to miss the opportunity of seeing the giant ship stranded first-hand. Since the problem was a temporary failure of the helm, the cause of the accident was not as spectacular.

Regrettably, it must be noted that interested parties attempted to exploit the BSU for their own purposes in this particular case. With that in mind, it is once again noted that investigations of the BSU are of a technical nature. They seek to determine the circumstances and causes of marine casualties, and to detect weak points in the maritime safety system. On the other hand, the BSU's mission does not include having an opinion on the pros and cons of deepening or widening waterways.

We aim to provide below various facts about the most important cases or those that attracted the most public attention in 2016.

Collision between the EVERT PRAHM and a transporter bridge over the Kiel Canal at Rendsburg



Damaged transporter bridge



Damage to the EVERT PRAHM

Sailing from Liepaja in Latvia to Husum, the German-flagged coaster EVERT PRAHM was transiting the Kiel Canal westbound on 8 January 2016.

At 0635, the EVERT PRAHM approached Rendsburg Bridge in darkness at a speed over ground of about 8.8 kts. The transporter suspended below the railway bridge was on the northern bank of the Kiel Canal at the time. In addition to the operator, there was also a passenger on the transporter bridge. The EVERT PRAHM kept to the middle of the fairway and was just short of Rendsburg Bridge when the transporter set off toward the southern bank. Despite the EVERT PRAHM executing a full astern manoeuvre combined with hard to port, it was not possible to prevent the collision. The transporter bridge struck amidships against the hatch, was briefly snagged, rotated, and then released again. It then struck the starboard wing and scraped over the wheelhouse, dragging the antenna, radar, and stern mast with it. The EVERT PRAHM sailed gently onto the southern embankment at river kilometre 62.5. She freed herself unassisted by means of a stern manoeuvre. She then sailed into the district port of Rendsburg and made fast there at 0715.

As a result of the accident, the Kiel Canal and Rendsburg Bridge were closed to shipping and rail traffic respectively.

The transporter bridge was severely damaged due to the collision and partially torn out of the rail guide. It was caught centrally over the Kiel Canal. The operator was seriously injured due to the collision. The only passenger on the transporter bridge was also injured. With the assistance of the canal ferry MEMEL, both people could be rescued from the transporter and taken to hospital. The emergency services managed to re-engage the transporter bridge and move it to the southern side of the canal at about midday.

Grounding of the CSCL INDIAN OCEAN on the River Elbe at Lühesand



On 3 February 2016, the large container ship CSCL INDIAN OCEAN, flying the flag of Hong Kong, was en route from Felixstowe to Hamburg. An alarm sounded on the bridge at about 2210. This could not be attributed to anything to begin with. Shortly afterwards, it became clear that the helm had stopped responding. Two oncoming vessels were notified, meaning they could take evading action in good time. Despite restarting the steering gear immediately, the CSCL INDIAN OCEAN ran aground south of buoy 116 at 2220.

From 2255 onwards, initially one tug and ultimately up to six tugs attempted to haul the ship back into the fairway. Since this failed, it was decided to wait for the next high tide. Involving seven tugs, the second attempt to haul the vessel at about midday on 4 February also failed.

After extensive preparations, 12 tugs started to haul the CSCL INDIAN OCEAN back into the fairway at 0200 on 9 February. This attempt succeeded, enabling the ship to continue her voyage to the port of Hamburg.

Foundering of the fishing vessel CONDOR east of Fehmarn



On 6 February 2016, the German fishing vessel CONDOR foundered about 3.5 nautical miles east of the Baltic Sea island of Fehmarn. The two fishermen on board drowned in the Baltic Sea.

The Federal Maritime and Hydrographic Agency's (BSH) vessel DENEK, which was tasked with searching for the foundered fishing vessel, located the wreck of the CONDOR on the sandy bottom of the Baltic Sea on 9 February 2016. Since it was not necessary to salvage the fishing vessel for the purposes of the police investigation into the accident, any environmental legislation or from the perspective of the river or shipping police, the BSU decided to salvage the CONDOR in the course of the maritime safety investigation, which was set in motion immediately after the accident was reported.

After extensive preparatory work, the company the BSU had commissioned managed to raise the fishing vessel out of the water on the evening of 7 March 2016. The fishing vessel was put ashore at the site of the Warnemünde/Hohe Düne buoy yard (outlying area of Waterways and Shipping Office (WSA) Stralsund) on 8 March 2016. Thanks to the cautious handling of the fishing vessel by the salvage company when she was raised, transported, and put ashore, she was available to the BSU for the necessary investigative measures in a largely intact condition in the months that ensued.

Fatal accident on the AMICITIA



On 21 August 2016, the Dutch passenger sailing vessel AMICITIA was at sea in the mudflats off Harlingen. The vessel was manned by 12 German passengers, a Dutch skipper and a fellow female sailor as crew member.

At the time of the accident, the vessel sailed on a port tack with jib struck and mainsail fully set swung out to starboard. A mild wind prevailed and there was virtually no swell when the forward mast broke at about 1350 off the entrance to the port of Harlingen. The upper part of the mast (5.90 m in length), the gaff (5.70 m in length) and the shrouds, stays, and set mainsail crashed onto the fore section without warning. Three German passengers who were alone on the fore section had no opportunity to seek protection and were killed by the falling parts.

Grounding of the HANNI off Mühlenberger Loch in Hamburg



CMV HANNI aground off the Airbus site in Hamburg

The German-flagged HANNI, sailing seaward, ran aground at 0628 On 4 December 2016 off the Mühlenberger Loch in Hamburg. There were no casualties and no pollutants escaped.

An overspeed alarm was issued for the main engine at 0620. Shortly afterwards, the main engine stopped as the HANNI ran out of rudder and drifted onto the other side of the fairway soon after passing an oncoming vessel.

Although Vessel Traffic Centre Hamburg ordered two tugs at about the same time as high tide, the immediate attempt to refloat the vessel failed. It was only possible to refloat the HANNI on the next high tide at 1830 with the support of four tugs.

The HANNI sustained damage to her stern tube and bottom, making it necessary for her to call at a shipyard for several weeks.



Sand in the stern tube



Damage to the bottom

Safety recommendations

In line with the IMO Code for the Investigation of Marine Casualties, the work of marine casualty investigation authorities is defined as 'safety investigation' in EU Directive 2009/18 and correspondingly in the SUG. This emphasises the fact that marine casualty investigations are not intended to clarify issues of fault or liability, but are solely for the purpose of improving maritime safety. That is also the reason why safety recommendations are issued. A safety recommendation points to an identified gap in safety and aims to help the addressee avoid or at least reduce the impact of future situations similar to those that led to an accident in the case investigated.

Therefore, a safety investigation by the BSU focuses not only on the events on board, but also looks at organisation ashore where appropriate. Consequently, in addition to the crew, addressees of safety recommendations could include pilots, ship owners, shipyards, manufacturers of equipment, the Maritime Administration, the legislature, or others.

The BSU may issue an early alert in the form of preliminary safety recommendations before the publication of an investigation report. This is to prevent accidents if it has been found that a safety risk exists for which notification must be provided immediately, i.e. before publication of the final report.

One or more safety recommendation(s) are not issued for every investigation report. This can have various reasons, e.g. that no specific deficits were evident. Recommendations that are too general in nature should also be avoided. In 2016, the BSU issued 27 safety recommendations in seven out of 11 final reports. Safety recommendations were dispensed with in four cases.

In addition, a preliminary safety recommendation was issued for the investigation into the passenger sailing vessel AMICITIA, which is still ongoing.

The recommendations issued in 2016 (previous year's figures in brackets) were addressed to

- owners and ship management 6 (13)
- administrative bodies 9 (7)
- ship's commands 4 (4)
- pilots 5 (0)
- miscellaneous 3 (2)

As the name implies, a safety recommendation is not a binding statement but merely a recommendation to those bodies able to put appropriate measures into practice (Article 29(1) SUG). Nonetheless, Article 15 of EU Directive 2009/18 states that Member States shall ensure that safety recommendations are duly taken into account by the addressees and given an adequate follow-up. Article 29(5) SUG has transposed this requirement in that recipients of a safety recommendation notify the BSU of the appropriate action taken or planned within a reasonable period. Penalties are not provided if this does not happen, however.

Therefore, the addressees have an obligation to notify the BSU of action taken. However, there is no legal obligation to take any action at all.

Of the 27 safety recommendations issued, the recipients accepted 13 in full, one was not accepted, and in 13 cases a response is (still) outstanding. The cases in which there was no response (including after subsequent requests) basically concern owners and suppliers, etc. from other countries.

Publications

All the reports and safety recommendations published by the BSU are available to read sorted by year of publication on the BSU's website (www.bsu-bund.de) under 'Publications'.

The BSU's investigation reports follow a certain pattern, which is provided by Directive 2009/18/EC. In addition to the required indication of the purpose of the safety investigation, notably, the prevention of future accidents and malfunctions, but not the determination of blame, liability, or claims, each report contains

- a summary of the accident;
- factual information, including but not limited to ship and voyage particulars;
- a detailed account of the course of the accident and investigation;
- an analysis of the investigation;
- ensuing conclusions, and
- usually safety recommendations.

The publication of so-called interim investigation reports is also required if it is not possible to prepare a final report within one year of the date of an accident. Cases discontinued after a preliminary investigation are usually closed with an internal report.

International

The need for international co-operation in the field of marine casualty investigation is emphasised more and more – not least by the IMO Code and EU Directive 2009/18. During any investigation, the staff of the BSU work together with other European and international marine casualty investigation authorities if the interests of different countries are affected. Here, the BSU maintains close contact with foreign marine casualty investigation authorities. In this regard, it works at international level with the Marine Accident Investigators' International Forum (MAIIF), as well as with its regional forum the European Marine Accident Investigators' International Forum (EMAIF), and at European level with the European Maritime Safety Agency (EMSA), which has its headquarters in Lisbon.

Since Directive 2009/18/EC came into force, co-operation in the conduct of safety investigations has been mandatory within the European Union if the interests of several Member States are affected. Furthermore, a framework for permanent co-operation (Permanent Co-operation Framework – PCF) has been created, within which the investigative bodies of the Member States are required to liaise on the modalities for co-operation. Apart from the actual investigative work, one of the tasks in relation to co-operation is to ensure that data are entered and maintained in EMCIP, the European database for marine casualties. Information about distressed ships is recorded and stored in this, thus enabling EMSA to provide the European Commission with fundamentals for making decisions concerning the maintenance and improvement of traffic safety in maritime navigation. To facilitate the accomplishment of this objective, the master data on the ships involved and course of the accident are recorded in EMCIP for each marine casualty reported. For marine casualties processed in a preliminary or main investigation, additional data must be entered by the investigators responsible. Since the structure of the EMCIP database is very complex, this represents significant additional effort. It is unfortunate that the benefits that should result from this effort are not always visible.

Globally, marine casualty data are also recorded in an IMO database (Global Integrated Shipping Information System – GISIS). It is no longer necessary for EU Member States to attend to this database separately, but rather the data are forwarded automatically by EMCIP.

The 25th annual MAIIF meeting was held from 29 August until 2 September 2016. Germany hosted this anniversary event and the meeting took place in Hamburg. Under the tried and tested chairmanship of Captain Steve Clinch (UK), 59 delegates from 34 countries attended. Represented were the regular MAIIF members from Antigua & Barbuda, Australia, Bahamas, Canada, Chile, China, Cyprus, Egypt, Estonia, France, Gibraltar (UK), Hong Kong, Iceland, Indonesia, Italy, Japan, Korea, Latvia, Liberia, Marshall Islands, Netherlands, New Zealand, Norway, Panama (including the Panama Canal Authority), Poland, Singapore, Sweden, Switzerland, UK, USA (the NTSB and Coast Guard), Vanuatu, as well as Germany, of course. Representatives of Bulgaria and Greece were also present as observers.

The main topics were

- fire on passenger ships;
- safety on passenger ships (including a BSU presentation);
- accidents involving mega container ships (session chaired by the BSU and two German presentations);
- new developments in accident investigation;
- man/machine interface;
- revision of the MAIIF Charter and strategic plan, and
- communication problems (bridge team, pilots, VTSs) as a factor facilitating an accident.

Various examples of routine international work were also presented. Finally, Marc-André Poisson from Canada and Alan Blume from the Marshall Islands were elected the new chairman and deputy chairman respectively.

The meeting of the European section (EMAIIF 12) was held on 13-14 April 2016 in the Italian Santa Margherita Ligure. The main topic there was the role ECDIS systems and voyage data recorders (VDRs) play in investigations. Other focal points included safety on passenger ships, especially so-called ROPAX ferries, and improving co-operation between Member States.

Inside the BSU

The BSU has at its disposal a core workforce of 12 staff members (five civil servants and seven salaried employees) to complete the tasks associated with marine casualty investigation. In spite of this low staffing level, the occupational fields in the BSU are varied. For example, job profiles include that of the navigator, naval architect, lawyer, mechanical engineer, as well as commercial and typical administrative disciplines. In addition to being highly qualified, work at the BSU requires great enthusiasm, flexibility, and professionalism.

As can be seen from the organisational chart (page 5), the BSU is separated into three divisions.

Division 1 (investigation teams)

The actual principal activity of the BSU, notably the investigation of marine casualties, is performed in Division 1. At full strength, six investigators are engaged in processing accidents and preparing accident reports.

In each case, an investigator is available 24 hours a day, seven days a week as part of the BSU's on-call service on the phone number below.

EMERGENCY PHONE NUMBER: +49 170 58 65 675

The staff of Division 1 are the people who initiate or co-ordinate the necessary first measures as quickly as possible and who arrive at the scene of an accident should the need arise. Since certain accident investigations may require specific skills, external experts are also consulted on a case-by-case basis.

Division 2 (technology and IT)

With only one staff member, Division 2 is the smallest of the three divisions in the BSU and provides the necessary support for the work of Division 1 in technical matters, such as securing and analysing technical recordings made on board ships and ashore.

The activities of Division 2 include participation in special interest groups (Marine Casualty Database EMCIP and Performance Standards for Voyage Data Recorder), creation of technical papers or concepts (procurement of new software and IT solutions), data backups, and analysis of accident data.

By far the largest part of its work is to secure, present, and analyse marine casualty data in the course of the maritime safety work. Marine casualty data can include video, photographic, and audio recordings, automatic identification system (AIS) data, as well as data from a VDR. Most of the data on marine casualties are delivered by the VDR (also known as the black box). A VDR is a shipboard recorder that collects data from every sensor on a ship, so that video, audio and engine data are available for the analysis of a marine casualty.

Division 3 (administration)

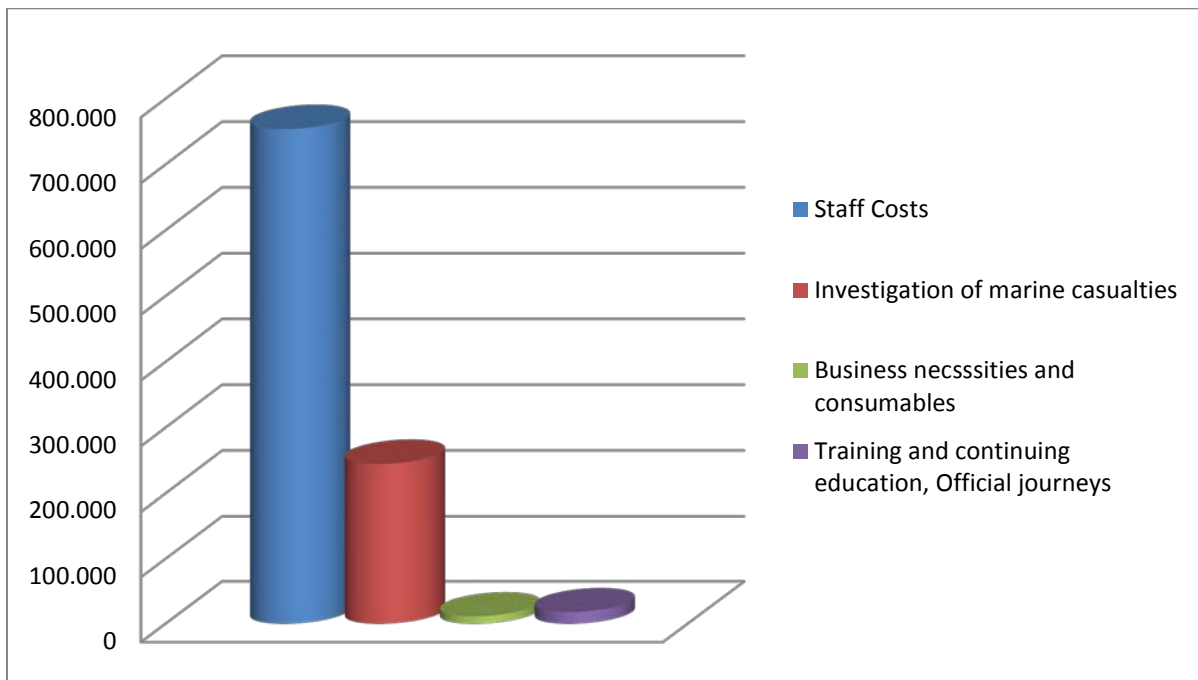
The year 2016 yielded no administrative changes. We regret to report that an extremely longstanding staff member left the BSU in October. Thanks to refilling the position successfully on a part-time basis, the division was manned by three staff members again, however. The second half of the part-time position was refilled in February 2017.

One major challenge was redesigning our homepage, which went online at the end of June 2016. Before it was ready, many considerations, co-ordination meetings and quality checks were necessary, which we were able to bring to a positive conclusion both internally and with the support of an external service provider. The BSU has been presented in its 'new look' since the middle of the year and has already recorded numerous visitors. There has since been a total of 414,376 page views up until 31 December 2016. Based on that, it can be estimated that about 56,600 interested parties visited the website in the period July-December 2016. Visit http://www.bsu-bund.de/DE/Aktuelles/Newsletter/Newsletter_node.html to subscribe to our new newsletter. The newsletter enables you to keep up-to-date with new publications. We had already recorded about 500 newsletter subscribers prior to 31 December 2016, and rising.

2016 was marked by considerable expenditure. EUR 1,057,000 was initially allocated for the 2016 financial year.

Non-budgeted expenditure was necessary due to the very serious marine casualty involving the fishing vessel CONDOR in February 2016. It was necessary to have the fishing vessel raised to determine the cause of the accident conclusively. Since the wreck neither constituted an obstacle to vessel traffic nor a risk to the environment, it was incumbent upon the BSU to organise the salvage of the fishing vessel and thus also to bear the expenses incurred. Consequently, some EUR 125,000 was needed in addition to the scheduled funds of EUR 120,000 allocated to the budget for marine casualty investigation.

The expenses for the personnel budget, which were unchanged at about EUR 754,000, constituted another main area of spending. A total of EUR 11,500 was spent on business necessities and consumables. EUR 18,000 was spent on training, continuing education and official journeys.



Events

Since the business of marine casualty investigation is international by its very nature, ideas and experience are exchanged vigorously at international level.

Regular international events attended by staff members of the BSU include

- the annual MAIIF conference, which is held at various locations around the world (Hamburg in 2016);
- the annual EMAIIF conference, which is held at various locations around Europe (Santa Margherita Ligure, Italy, in 2016);
- the annual PCF conference at EMSA in Lisbon, Portugal;
- the EMCIP User Group's annual conference at EMSA in Lisbon, Portugal, and
- the annual session of the Third Subcommittee of the IMO in London, UK.

In addition to these regular events, staff members of the BSU attended various other external events in 2016, too. In most cases, BSU staff members did not just attend these events, they also gave various presentations. A total of 14 presentations were given in 2016, seven at international level.

Most of the national presentations were addressed to the key contacts of the BSU, namely the waterway police of the various German States, the German Federal Police, and the Federal Waterways and Shipping Administration. Presentations were also given at events of various associations and institutions.

The expertise of the BSU's staff is called on at most of the events referred to. On the other hand, there is also our continuing education requirements in a wide variety of areas. Staff of the BSU attended a total of 15 continuing education seminars in 2016, including at EMSA in Lisbon but predominantly in the local area. Moreover, 19 working groups, workshops, and conferences were attended, mainly in the area of ship safety and administrative matters, where there is often an increased need for consultation.

Unfortunately, hardly any continuing education is offered in the area of marine casualty investigation. With that in mind, the BSU takes advantage of the courses offered by EMSA, such as the basic training course for accident investigation staff or training in the use of VDR data, eagerly.

However, any courses that are more advanced in nature have only been held in the United Kingdom thus far and far exceed the local budget for continuing education due to the at times exorbitant cost. Consequently, the investigators are forced to rely largely on trade publications and experience gained in the course of investigations.

Public relations

Both Article 14 of Directive 2009/18/EC and Article 28 SUG stipulate that investigation reports and safety recommendations be published. This is achieved through publication on the BSU's website and regular press releases. There is also a wider circle of interested parties to whom reports are sent regularly or on request. The effort associated with this is quite considerable. However, reports on marine casualties are of little value when they are not made known to an interested audience. After all, the benefits of an investigation arise not only from revealing gaps or deficiencies in safety to those directly concerned, but rather to every individual who deals with ship safety. Apart from reviewing the case in question, an investigation report is also and actually chiefly about preventing similar accidents and the related shortcomings in the future – in emergency management, for example. It is quite obvious that this cannot be achieved without publications. Therefore, we do not view co-operation with the press as a necessary evil, but use it as a means of getting our message across.

Press interest in the reports of the BSU is usually rather subdued. Related articles appear regularly in the THB (Täglicher Hafenbericht), a journal that is widely read in the shipping industry and thus reaches an audience potentially interested in marine casualty reports. In addition, accident report summaries are publicised in German and English in the notices to mariners.

Even if there is no or only material damage but the marine environment was polluted or at least at risk of being polluted, for example, media interest (albeit normally local) increases when an accident happens on the doorstep, as it were.

As a rule, unusual fatal accidents involving merchant shipping also receive special attention, while purely occupational accidents tend not to be of relevance to the press.

Finally, provided they are actually investigated, dramatic accidents involving pleasure yachts are addressed and commented on in trade publications, in particular.

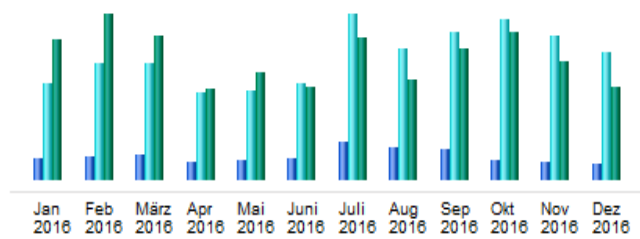
Once passenger ferries or even cruise ships are involved, media interest rises significantly.

Press interest remained relatively constrained in 2016. Only the foundering of the fishing vessel CONDOR off Fehmarn and the collision between the EVERT PRAHM and a transporter bridge over the Kiel Canal at Rendsburg aroused significant media interest, albeit predominantly local. The same applied to the collision between the EMSMOON and the Friesenbrücke Bridge at Weener, which happened at the end of 2015. In the case of the FV CONDOR, a journalist monitored the work of the BSU over a number of weeks, resulting in several reports on the NDR television channel.

Finally, the spectacular stranding of one of the biggest ships in the world – the CSCL INDIAN OCEAN – virtually on the doorstep of Hamburg also attracted the attention of the media.

Amongst other things, the BSU's website offers visitors the opportunity to obtain information on the activities and structure of the BSU, the historical development of marine casualty investigation, as well as the legal foundation. Of even greater interest will certainly be that every accident report and safety recommendation published since the BSU was founded can be viewed on the website. This information is usually fully or for the most part accessible to people with disabilities.

As mentioned above, public interest in the accident reports of the BSU varies. This is clearly visible from the webpages opened and corresponding downloads. The below graph shows the number of pages and hits, as well as the volume of bytes downloaded.



Monat	Seiten	Zugriffe	Bytes
Jan 2016	57.659	263.941	50.83 GB
Feb 2016	65.286	317.279	59.91 GB
März 2016	67.272	317.638	52.06 GB
Apr 2016	50.358	238.061	32.71 GB
Mai 2016	51.386	244.096	38.85 GB
Juni 2016	56.207	265.165	33.85 GB
Juli 2016	101.363	453.241	51.87 GB
Aug 2016	88.419	359.213	38.36 GB
Sep 2016	81.944	407.189	47.74 GB
Okt 2016	50.958	438.610	53.73 GB
Nov 2016	49.352	394.826	42.78 GB
Dez 2016	42.340	349.001	33.45 GB
Total	762.544	4.048.260	534.14 GB

Seiten = Pages: Number of webpages opened.

Zugriffe = Hits: Number of elements opened. If a page contains ten graphics, then it has ten hits.

Bytes: The amount of data transferred.

After clearly declining year-on-year figures were recorded in 2015, there was a moderate rise again last year.

A list of the accident reports most sought after in 2016 follows.

Top 10	File reference	Accident	Downloads	Published on	Published in
1	180/15	Master of the CMV HANJIN MIAMI missing in the Indian Ocean on 16 May 2015	6,210	26/01/2016	German
2	255/12	Fire and explosion on board the MSC FLAMINIA on 14 July 2012 in the Atlantic and the ensuing events	5,681	28/02/2014	English
3	402/15	Fatal accident on board the charter yacht DESDEMONA on 21 September 2015 in the area of the approach to Rostock-Warnemünde between fairway buoys 9 and 11	5,559	21/09/2016	German <i>Interim Report</i>
4	255/12	Fire and explosion on board the MSC FLAMINIA on 14 July 2012 in the Atlantic and the ensuing events	5,524	28/02/2014	German
5	265/13	Foundering of the sailing yacht FALADO VON RHODOS on 9 August 2013 off Iceland	5,328	21/01/2015	German
6	34/16	Grounding of the CSCL INDIAN OCEAN in the River Elbe on 3 February 2016	5,034	14/10/2016	German
7	55/15	Foundering of the fishing vessel KRISTINA on 18 February 2015 in the North Sea	4,802	17/02/2016	German <i>Interim Report</i>
8	34/15	Fatal accident on board the MV HANJIN DALLAS on 1 February 2015 off the east coast of the United States	4,655	29/01/2016	German
9	42/15	Fatal accident on the MV ASKOE on 6 February 2015 in the Baltic Sea	4,312	05/02/2016	German <i>Interim Report</i>
10	16/15	Collision between the MV RED7 ALLIANCE and a lock gate at Brunsbüttel on 17 January 2015	4,003	15/01/2016	German

The investigation report on the MSC FLAMINIA published (in German and English) in 2014 is apparently still of significant interest to the public. This has had by far the most downloads. Otherwise, it was mainly reports published in 2016 that were requested.

Investigative work

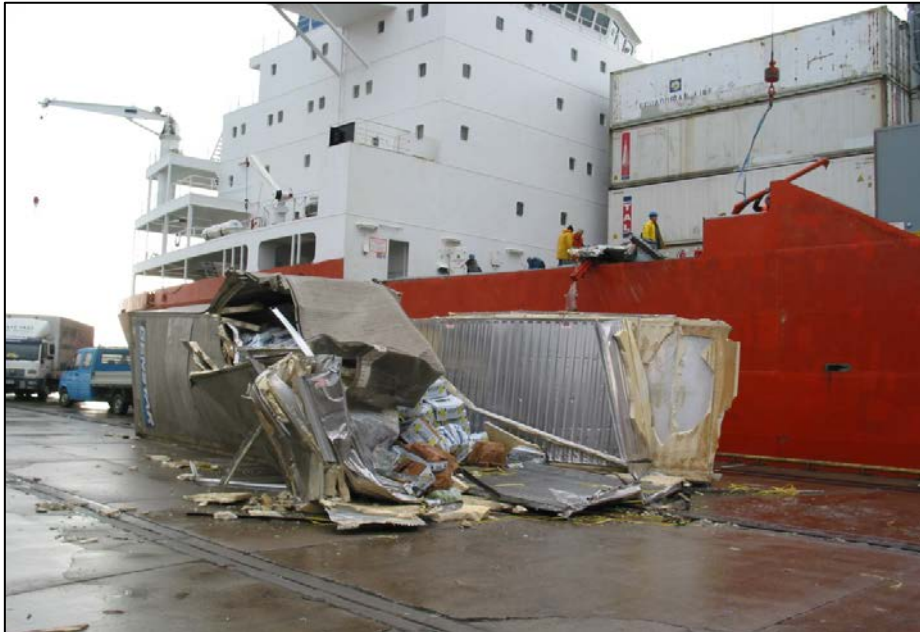
To mark the 15th anniversary of the BSU, investigators are making a contribution below and reporting directly from their routine work. Perhaps these reports will give a better understanding of the work than all the statistics.

Loss of containers

Around the world, more than 130 million containers are transported across the oceans each year. There are no mandatory studies into how many of these metal boxes go overboard each year. Without being able to produce sound evidence, critical voices speak of 2,000-10,000 units per year. A study by the lobby group World Shipping Council (WSC) conducted between 2008 and 2011, which involved a survey of 70% of the WSC's members, revealed that 350 containers are lost in 'normal' ship operation each year on average. If we include containers lost during disasters (e.g. grounding of the RENA or foundering of the MOL COMFORT), then we arrive at an annual loss rate of about 675 containers.

This study arrived at significantly higher figures when it was updated in 2014, notably at 'normal' losses of 546 containers per year on average and 1,679 containers when disaster cases are included.

If a container ship loses containers in our waters or under German flag anywhere in the world during a storm or other difficult conditions and the hull is not damaged considerably, then the BSU would usually rate such a case as an 'incident' or 'less serious marine casualty' and not investigate it further. The BSU must currently record certain cases of lost containers. At the end of 2016 and in January 2017, three container ships lost 39 containers in total during a storm in the North Sea. Fortunately, the containers were holding only a few environmentally hazardous substances. The most serious case concerns a German container ship, which lost 295 containers southwest of the Azores within two minutes. Since it did not happen in particularly bad weather, this incident is currently being investigated.



Support for the activities of the BSU by other administrative bodies using the investigation into the very serious marine casualty involving the fishing vessel CONDOR as an example

During the investigation into the very serious marine casualty involving the fishing vessel CONDOR, which foundered on 6 February 2016 east of the island of Fehmarn for reasons that were initially entirely unclear and claimed the lives of the two crew members on board, the BSU was able to draw on varied and valuable forms of assistance from administrative bodies of the Federal Government, the State of Schleswig-Holstein, and the Free and Hanseatic City of Hamburg. At the same time, it has been found that the BSU does not operate in a vacuum, in spite of its extremely far-reaching investigative competence and the legally enshrined independence in respect of the substance and scope of investigations. It was thus not the case that investigation personnel could take the necessary investigative steps based on expediency alone, but rather obstacles were found in places where they were not necessarily expected. We aim to give an account of such obstacles, which the BSU needed to overcome, but especially the valuable assistance the BSU received from various public bodies in the course of its investigative work.

After receiving notification of the accident, the BSU's first challenge was to establish the specific position at which the CONDOR had foundered. The crew did not transmit this information before the accident. Since it was not possible to pick up a signal from the automated emergency position indicating radio beacon or the fishing vessel's AIS and since the accident was not observed by other vessels, the only means of determining an approximate accident position to begin with was the analysis of the radar image recording of VTS Travemünde (which is subordinated to WSA Lübeck). This actually made it possible to isolate the scene of the accident very quickly.

As the investigation progressed, the BSU was also able to refer to the recordings of the Federal Office for Agriculture and Food with regard to answering the question as to at what time and position the fishing vessel foundered. Data from the satellite-based fisheries surveillance system of this federal administrative body and especially the assistance of the service company operating on behalf of the Federal Office for Agriculture and Food made it possible to refine the radar-based track information.

Based on the radar information from VTS Travemünde, the BSH's survey, wreck search and research vessel DENEK located the fishing vessel a few days after the accident at a water depth of about 20 m in the vicinity of the presumed scene of the accident. The fishing vessel was immediately inspected visually by the DENEK's dive team at the request of the BSU. The high-resolution video recordings made in the process were provided to the BSU promptly. A dive team from WSP Schleswig-Holstein also sent the BSU video recordings of its dives.

An initial analysis of these recordings and the reports prepared by the divers allowed no conclusions as to the specific cause of the foundering of the fishing vessel, which lay on the seabed on her starboard side and was largely intact. Consequently, it was essential that the fishing vessel be salvaged as carefully as possible to reliably clarify the cause of the accident. With regard to the inquiry into the fatalities opened by the Kiel Public Prosecutor's Office ex officio after the accident, it advised the BSU that it did not intend to salvage the fishing vessel. WSA Lübeck also decided very quickly that the specific position of the wreck of the CONDOR did not necessitate or warrant a salvage or imposing a corresponding condition on her owner. For the purposes of traffic control, it was reportedly sufficient to mark the position of the wreck in the official navigational charts.

Accordingly, the BSU was the only body for which the salvage of the fishing vessel was essential based on its legal mandate to investigate. After the BSU had selected and commissioned a suitable salvage company, the important question of where the fishing vessel should or could be taken for further investigative steps still needed to be answered. Initially appearing uncomplicated, the option of transporting the fishing vessel to the buoy yard operated by WSA Stralsund in Warnemünde/Hohe Düne and putting her ashore on the pier there after she was salvaged quickly emerged. A

corresponding request for assistance of the BSU was promptly answered by the WSA positively. However, after the higher-level Directorate-General for Waterways and Shipping (GDWS) initially expressed concerns, it was ultimately possible to convince the GDWS that there was no reasonable alternative to the specific assistance requested on the part of WSA Stralsund.

After the above complications in establishing a place for storing the fishing vessel were cleared up and the BSU finally intended to give permission to go ahead with the salvage operation, a state administrative body from Schleswig-Holstein unexpectedly raised concerns. The State Agency for Coastal Protection, National Park and Marine Conservation of Schleswig-Holstein, which has competence for such issues in the vicinity of the accident position, asked the BSU if a proper environmental strategy existed for the forthcoming salvage operation. In respect of the pollutants (fuel, in particular) still presumed to be on board the fishing vessel, the salvage company commissioned by the BSU had drawn up such a strategy in the course of planning the salvage operation, of course. The State Agency went a step further, however. In particular, it surprisingly asked for information on the approximate number of dead fish expected on the fishing vessel and how their proper disposal was to be dealt with. In particular, the State Agency's unexpected interest in environmental problems took the BSU by surprise because this administrative body only started to consider such problems when the fishing vessel's salvage operation was imminent. Curiously, the State Agency apparently did not rate the fishing vessel (including her 'cargo') as a risk to the environment insofar and as long as she was resting on the sea floor. In several phone conversations with the staff responsible at the State Agency, it was possible to convince the administrative body that for this particular project the potential need to dispose of dead fish was unlikely to have any particular relevance under environmental law. Consequently, it was possible to allay the concerns expressed by the State Agency in this regard and finally commence with salvaging the fishing vessel.

To prevent unauthorised parties from approaching the scene of the accident and make safe the salvage operation, WSA Lübeck issued a navigation ban within a radius of 1,000 m around the position of the wreck. WSP Schleswig-Holstein used its boats to monitor compliance with the navigation ban at the request of the BSU. In addition, two of the BSU's investigators were able to observe the entire salvage operation first-hand from a WSP boat. Deployment on the WSP boat was also important for the BSU because it enabled close communication with the salvage company. After the wreck of the fishing vessel had been raised, a WSP boat escorted the convoy of the salvage company to the buoy yard in Warnemünde.

The BSU's investigations of the wreck of the fishing vessel at the site of the buoy yard in the weeks and months that ensued and subsequent findings made validated the BSU's decision to raise the CONDOR.

The staff at the buoy yard supported the BSU's investigation both through the provision of tools and space, as well as by assisting with dismantling and forwarding components of the fishing vessel relevant to the investigation.

The BSU also received extremely valuable assistance from the State Office of Criminal Investigation in Hamburg. Its experts in crime scene reconstruction used their special equipment to carry out a 3D laser measurement of the fishing vessel on behalf of the BSU. The data gained in the process subsequently formed a key basis for calculations of the fishing vessel's stability.

The extensive investigations of the fishing vessel were to be rounded off with an inclining test. To this end, the BSU intended to move the fishing vessel from its position on the quay wall back into the water by means of a crane. The plan was to then place calibrated weights on the floating fishing vessel and move them under the direction of an external expert. Determining the heeling angle that developed in the process would have made it possible to establish the stability behaviour of the fishing vessel precisely.

However, WSA Stralsund objected to this particular test, stating there were concerns that the fishing vessel may break up when she was moved into the water to carry out the test or out of the water afterwards. In turn, this may not only entail environmental problems, but could even affect the operational readiness of the German Navy. When proceeding to and from the base at Hohe Düne, its vessels needed to pass the area of the quay wall at relatively close proximity. The risk that such a passage may be rendered impossible due to wreckage from the CONDOR was reportedly too great. WSA Stralsund also drew attention to static obstacles. The load capacity of the site at the buoy yard was not sufficient to safely place a mobile crane combined with the weight of the fishing vessel there, as planned by the BSU. Although the BSU did not fully understand the reasons WSA Stralsund put forward for objecting to the performance of a heeling test in the vicinity of the buoy yard's quay wall up until the very last, it was decided to accept them. Inevitably, the expert engaged by the BSU was restricted to the result of his calculations and theoretical considerations when assessing the stability behaviour of the fishing vessel.

To sum up, it can be concluded that the BSU received varied and valuable support from administrative bodies of the federal government and the states of Schleswig-Holstein and Hamburg in the course of its investigation into the very serious marine casualty involving the FV CONDOR. As regards a few aspects of the specific course of the investigation, concerns were expressed by certain administrative bodies or their representatives, which the BSU could not allay in every respect. Nonetheless, this does not alter the conclusion that the BSU's legal mandate to investigate is largely met with broad acceptance by the public bodies involved. Based on friendly co-operation and considerable helpfulness, the direct contacts with the staff of all the administrative bodies mentioned above contributed significantly to the successful conclusion of the underlying investigation.

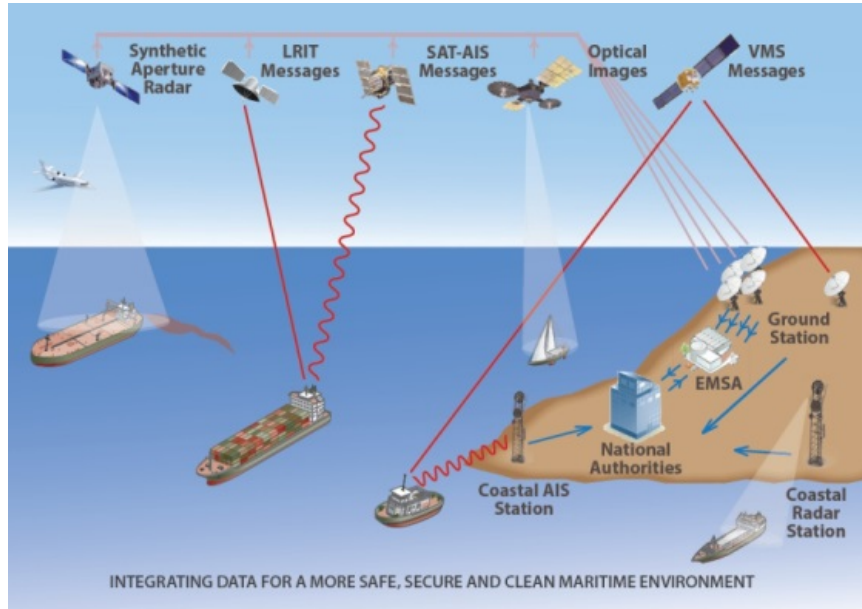
A look behind the scenes: What databases does the BSU use for research?

The work of the BSU investigator has changed dramatically in recent years. Previously reconstructed retrospectively using data from the VTSs, the course of the voyage of a ship is now tracked online in real time. Rather than having to wait for weeks to receive the outcome of foreign partner authority investigations in printed form, they are now available immediately. At the same time, it is possible to search specifically for similar accidents in European and international databases. This makes it easier to identify trends and process accidents more efficiently.

Research begins with the general ship database query, i.e. in databases of the flag State, the classification society of the particular ship, and information services available to the public at large, such as equasis.org (Electronic Quality Shipping Information System).

In addition to general ship information (IMO number, flag, owner and operator, dimensions, details of the ship's machinery, etc.), this query also makes it possible to obtain information on the validity of the ship's certification and outcome of previous port State controls carried out anywhere in the world. Depending on the case, more detailed information on port State controls can be provided for an investigation from the EMSA's THETIS database via the Ship Safety Division (BG Verkehr). The THETIS database has replaced the earlier SIRENaC system.

Additional databases that can contribute important information for an investigation are available at European level specifically for administrative bodies. EMSA's IMDatE (Integrated Maritime Data Environment) provides the now standard AIS and LRIT position and course display for ships, amongst other things. The information is shown on electronic navigational charts. Of particular use to an investigation here is the fact that ship data accessible through the IMDatE is already verified through a comparison of several databases.

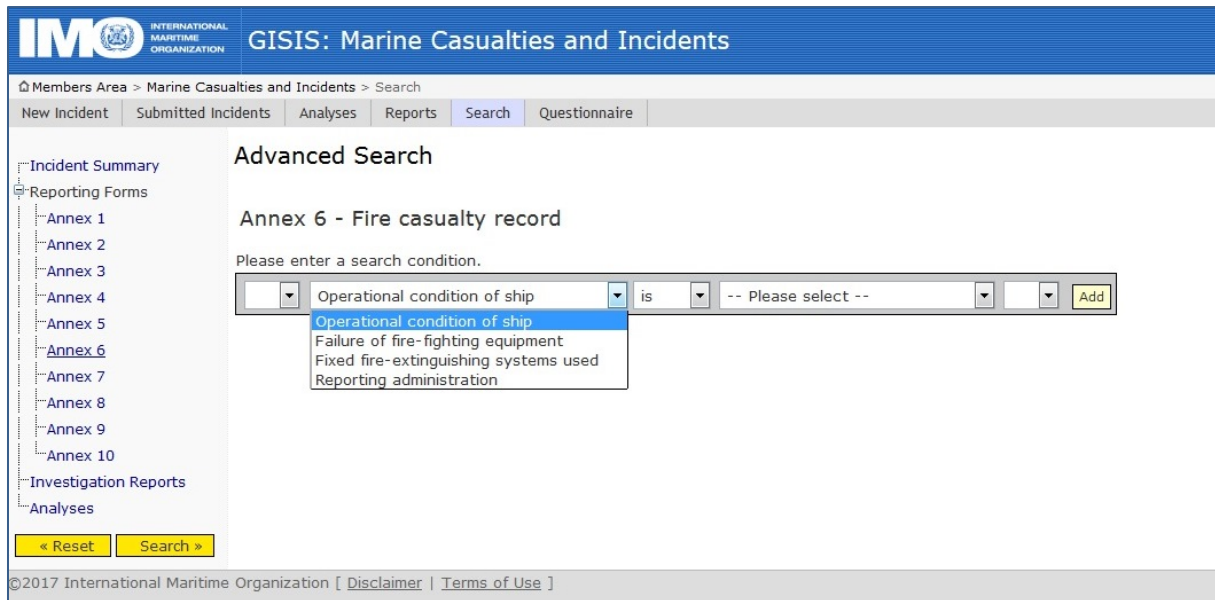


To establish whether other investigating authorities are dealing or have in the past dealt with similar accidents, the BSU's investigators refer to Europe's EMCIP and the IMO's GISIS databases. Thanks to its regularly updated homepage, EMCIP provides a good overview of current cases and recently published investigation reports of the EU Member States. This means that the BSU's investigators can see at a glance whether and by which partner authority similar accidents are being dealt with. Accordingly, contacts are known immediately, which promotes and simplifies cross-border co-operation.

Occur.	Date	Ship type	Severity	Casualty event
10442017	01-Mar-2017	Cargo ship	Less Serious	Collision
9182017	27-Feb-2017	Cargo ship	Marine incident	Loss of control
9192017	27-Feb-2017	Passenger ship	Marine incident	Loss of control

Occur.	Name of ship	Date	Ship type	Reported by *
16022016	CHRISTINA MARKEN	23-Apr-2016	Fishing vessel	Denmark - DMAMB
13962016	CSCIL Indian Ocean	03-Feb-2016	Cargo ship	Germany - BSU

The GISIS database goes a step further in that it enables staff responsible for an investigation to search the entire marine casualty database specifically based on criteria of interest to their own investigation. For example, it is possible to search based on the use or failure of fire-extinguishing appliances, so as to find out which cases relating to a specific area of focus have already been registered somewhere in the world.



IMO INTERNATIONAL MARITIME ORGANIZATION

GISIS: Marine Casualties and Incidents

Members Area > Marine Casualties and Incidents > Search

New Incident Submitted Incidents Analyses Reports Search Questionnaire

Incident Summary
Reporting Forms
Annex 1
Annex 2
Annex 3
Annex 4
Annex 5
Annex 6
Annex 7
Annex 8
Annex 9
Annex 10
Investigation Reports
Analyses

Advanced Search

Annex 6 - Fire casualty record

Please enter a search condition.

Operational condition of ship is -- Please select -- Add

Operational condition of ship
Failure of fire-fighting equipment
Fixed fire-extinguishing systems used
Reporting administration

Reset Search

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Both EMCIP and GISIS are in a continuous state of development. They already indicate that the global integration of investigating authorities and thus technical exchange while investigations are ongoing will increase in the future and enhance national investigations.

Investigation of the fire on the NORMAN ATLANTIC

The BSU became aware of the fire on board the ROPAX ferry NORMAN ATLANTIC on 28 December 2014 from media reports. Since there was already speculation about possible German casualties at this point, we started attempts at obtaining information about the passengers on 29 December 2014 through the point of contact at the Federal Foreign Office. This proved difficult because the Foreign Office staff only wanted to issue reliable information, which could only be obtained slowly because the passengers were taken ashore by helicopters and ships at different places. An initial list of the passengers and crew members was then available on the internet on 5 January 2015, which apparently originated from the ferry's owner. However, it was not very reliable because there was no distinction made between German nationals and people residing in Germany. The Foreign Office provided comprehensive information on the following day, which reliably indicated that a German citizen was among the deceased. Following that, the BSU notified Italy's Marine Casualty Investigation Body that Germany was a substantially interested State. This step gives rise to virtually equal participation in the investigation, which in this case was and is being led by Italy. The Greek investigating authority previously stated that it also had a substantial interest.

The ship had been towed to the Italian port of Brindisi in the meantime, where the Italian authorities were able to carry out an initial survey on 3-5 January 2015 and secure the emergency data backup of the VDR installed on the top deck of the ferry. This was immediately seized by the Italian public prosecutor's office, however.



The NORMAN ATLANTIC in Brindisi

On 9 January 2015, the Italian Marine Casualty Investigation Body stated that the next survey date on board the ferry was set for 14 January 2015. Therefore, two BSU investigators travelled to Italy, where they met with two Greek investigators, their Greek fire experts, and two Italian colleagues. It was made clear to us during the preliminary meeting that the powers of the Italian investigators were not comparable with those enjoyed by the other marine casualty investigators in their home countries. It thus became clear that the access rights and dates on the ferry were managed by the public prosecutor's office. As regards the survey, the investigators were prohibited from taking their own photographs, separating from the group, closely investigating technical conditions or checking tank levels, for example. The extent of these constraints first became clear to us on board, where members of the Italian Coast Guard practically monitored every step and documented our 'survey' by means of video and photograph. The reason for this behaviour was the approach taken by bodies operating within Italian jurisdiction, where no modifications may be made to the ship or her parts until a survey date is offered and set for all parties involved, so as to guarantee all involved an 'unaltered' condition. It also aims to prevent photographs of the item under investigation from reaching the public before this particular date. This rendered investigative work in the manner typical in Germany and many other countries impossible.



The NORMAN ATLANTIC's top cargo deck

During our survey of the superstructure, which was only accessible to a limited degree because of the fire damage, of the top vehicle deck, and of parts of the engine room, we were part of a group consisting of some 20 people over the next three days, as Italian fire experts, firefighters for our safety, and the 'observers' of the Coast Guard also attended the survey.

Access to the ship, to the cargo decks in particular, was also still restricted because fire still persisted in one of the cargo decks. The fire service from Brindisi was working there for the entire period. To access the ship, we therefore had to use a transport cage attached to a turntable ladder belonging to the fire service, which lowered us onto the boat deck.

Our next opportunity to survey the ship was on 28-29 July 2015 in Bari, where the ferry had been towed in the meantime. The public prosecutor's office had completed its investigation by then, which gave us hope of being able to start our investigation. However, we were advised at the scene that the ensuing investigation would be decided upon by a technical investigation commission, which was directed by a former admiral of the Italian Coast Guard and appointed by the competent court. This commission also restricted access and prohibited an investigation in the usual manner by the marine casualty investigators. On the first day of the survey, we were part of a group consisting of 40 people. Since members of the Coast Guard kept the group together here, too, free and independent access to all parts of the ship or the sections of relevance to us was not possible.



Participants of the survey of the ferry in Bari

During the preliminary meeting, the marine casualty investigators liaised on the points of primary importance to them. These included the emergency diesel generator, which had given rise to many unanswered questions during the first survey. Amongst other things, the associated tank level was important because the power supply on board the ferry had broken down at a very early stage. The investigation of the emergency diesel generator planned for the second day was then called off, however. For unknown reasons, the commission cancelled the second day. The remonstrations of the Italian marine casualty investigators failed to change the commission's position.



View into one of the ferry's cargo decks

The Italian public prosecutor's office had commissioned an Italian laboratory with preparing the data from the VDR. A DVD containing these data was delivered to the BSU in October 2015. It transpired that the prepared data only contained four minutes of audio recordings and were therefore useless. A more detailed investigation by an expert from the British Marine Accident Investigation Branch indicated that errors had been made while preparing the data. It was not possible to obtain complete data from the VDR before the end of the BSU's participation in the investigation.

Due to the difficult investigation conditions on board the ferry, our team focused on interviewing the passengers domiciled in Germany, Austria and Switzerland. They were contacted and asked about their experiences. The BSU also contacted the owners of the 13 ships that altered course to rush to the NORMAN ATLANTIC to provide assistance. Their crews were asked to submit reports on their observations and experiences. We received responses and photographs/videos from many passengers and crews. This information was prepared and made available to the other investigators.

The actions taken by the Italian authorities to limit the distribution of photographs and videos and to secure the ship had little effect. Videos from on board the ship, which documented the scale of destruction in the various decks, were already on the internet only a few days after the ferry arrived at the port of Brindisi, for example. Furthermore, it was found during the survey of the ship in Bari that cars which had survived the fire unscathed on the top cargo deck had been broken into and plundered. As a result, it was clear that we could not be certain that an unaltered condition would be found on board the ship in the future. This and the continued obstruction of the efforts of other countries to investigate, which persisted even after complaints from Greece and Germany, prompted the BSU director's decision to discontinue participation in this marine casualty investigation by the German investigators.

A week on call

The on-call service handover takes place every Wednesday. The investigator then carries a mobile phone, via which accident reports can be notified around the clock. Many serious reports are not normally received, which is why the week of 3-10 February 2016 constituted a notable exception.

The night of Wednesday to Thursday remained calm. However, WSP Hamburg sent an initial notification early in the morning at about 0541 by fax, which was received in the office by the investigator on call at **0800 on Thursday 4 February 2016**. The large container ship CSCL INDIAN OCEAN had run aground in the Elbe on the evening before and was unable to refloat under her own steam. After extensive consultations, the BSU decided to go on board only after the ship was made fast at the pier in the port of Hamburg. Boarding immediately was mainly opposed by the fact that enough time had passed to cover any tracks if the crew had an interest in so doing. If not, the BSU would obtain the necessary information later on. According to the WSP, the most important item of evidence, the VDR, had already been secured. Experience gained over the past years has shown that crews are more willing to speak with the BSU after any initial stress has passed, i.e. when the police and other stakeholders have already left the ship.

Of course, contact with the WSP and the Central Command for Maritime Emergencies was maintained in the days that followed. Furthermore, the owner and the flag State were contacted in writing.

A few other accident reports were also received, which were rated as not worthy of investigation. It did not remain calm for long, however.

At 0531 on Saturday 6 February 2016, the on-call phone number rang again and **WSP Bremerhaven advised about a personnel accident on the MAERSK KURE**. While the ship was berthing at about 0245 in the morning, a spring line parted and injured the seaman standing next to it so severely that he succumbed to his injuries on the way to hospital.

The BSU's investigator on call notified its director, who agreed to the proposal to proceed to Bremerhaven immediately, so as to take down the details of the accident. Following that, the investigator left his home at about 0900 and used public transport to travel to the office at the piers, where he equipped the service vehicle with devices for the investigation and set off. He began his investigation on board at 1300, which involved securing data on the VDR, visually inspecting the scene of the accident, and speaking with witnesses. He commenced his return journey to the office at about 1600. During this journey, WSP Hamburg informed him that they were reportedly already on board the CSCL INDIAN OCEAN with an expert and had made initial findings relating to the course of the accident.

The investigator on call arrived back at his home again at about 1900. However, only a short time later, at 2121 on Saturday 6 February 2016, **WSP Lübeck called and reported that the fishing vessel CONDOR had foundered in the afternoon near Fehmarn.** The two fishermen were both recovered dead. The investigator called and informed the BSU's director in accordance with requirements for such very serious marine casualties. Since there was no acute need for action, the actual investigation began on Monday. To begin with, the foundered fishing vessel had to be located. Following that, divers needed to obtain an initial impression of the ship.

The BSU received a call from the Ship Safety Division (BG Verkehr) **in the morning of Tuesday 9 February 2016.** A Spanish fishing vessel (FV PESORSA DOS) sailing under German flag had lost a seaman on the day before. He had been washed overboard while fishing west of Ireland and drowned.

The investigator received several more accident reports not worthy of investigation before the end of his period on call on Wednesday. In retrospect, it was found that as opposed to normal circumstances, this investigator could not handle all the new marine casualties he had received, not least because existing cases were already present. Consequently, the two marine casualties involving the fishing vessels were transferred to fellow employees.

Such a week on call – with four deceased seamen – is not typical for the BSU but can certainly happen from time to time.

Statistics

This statistics section requires a number of explanatory notes.

Article 1a SUG defines the term 'marine casualty' as

1. Any event that has at least one of the following consequences:
 - the death or serious injury of a person caused by or in connection with the operation of a ship;
 - the disappearance of a person on board a ship caused by or in connection with the operation of a ship;
 - the loss, presumed loss or abandonment of a ship;
 - material damage to a ship;
 - the grounding or constructive total loss of a ship or the involvement of a ship in a collision;
 - material damage caused by or in connection with the operation of a ship;
 - environmental pollution resulting from damage to one or more ships caused by or in connection with the operation of one or more ships.
2. Any event caused by or in connection with the operation of a ship that poses a risk to a ship or a person or the consequences of which could cause serious damage to a ship, an offshore structure or the environment.

Depending on the consequences, the generic term 'marine casualty' is divided further into

Very serious marine casualty (VSMC):

Fatality, constructive total loss of a ship or an accident with substantial environmental pollution.

Serious marine casualty (SMC):

Marine casualty not classified as a VSMC, which includes but is not limited to

- the failure of the main engine;
- substantial damage to the accommodation spaces;
- serious damage to the ship's structure;
- a leak in the underwater shell plating with which the ship becomes unseaworthy;
- pollution, regardless of the volume of pollutants released, and/or
- an accident that necessitates towing or shore-based assistance.

Less serious marine casualty (LSMC):

Any marine casualty not classified as a VSMC or SMC.

In this respect, there is broad consensus between the international rules of the IMO Code, the provisions of European legislation in Directive 2009/18/EC, and the national SUG that this does not apply to the term 'incident'. The SUG provides the following definition:

"Any event caused by or in connection with the operation of a ship that poses a risk to a ship or a person or the consequences of which could cause serious damage to a ship, an offshore structure or the environment."

The definition of 'incident' in the international rules is similar, but the wording is not identical. However, it is problematic in that an 'incident' is not the same as a marine casualty according to international rules, while the SUG deems it a subcategory of a marine casualty.

In particular, the aforementioned definitions are of significance because they apply throughout Europe and form the basis for the entries in the European marine casualty database, EMCIP, and for the IMO database, GISIS. Therefore, the international systems are applied for the statistics presented here.

Accidents or incidents involving only pleasure yachts or small fishing vessels are not recorded in Europe. Since there is still a requirement to report such accidents, the BSU keeps an internal database for this purpose.

Moreover, the law does not apply to inland waterway vessels, ships of war, troop ships and other ships owned or operated by Germany's federal or state governments and used only on government non-commercial service.

As a consequence of that, the BSU not only feeds the EMCIP and GISIS databases in accordance with international legislation, but also/additionally its own (simplified) internal database. Occasionally, this leads to friction and sometimes even inconsistencies in the statistics.

Global reporting and marine casualties reported in 2016

The following table provides a summary and comparison of the events reported to the BSU in the years 2014 to 2016.

	2014	2015	2016
VSMC	6	8	5
SMC	20	16	7
LSMC	214	244	209
Incidents (I)	67	100	83
Other (marine) casualties (OC)	67	84	75
- of which pleasure yachts	49	60	53
Non-marine casualty (NC)	52	58	90
Total number of reports	426	510	469

After the introduction to the statistics, this table also requires an explanation. All incoming reports are recorded here.

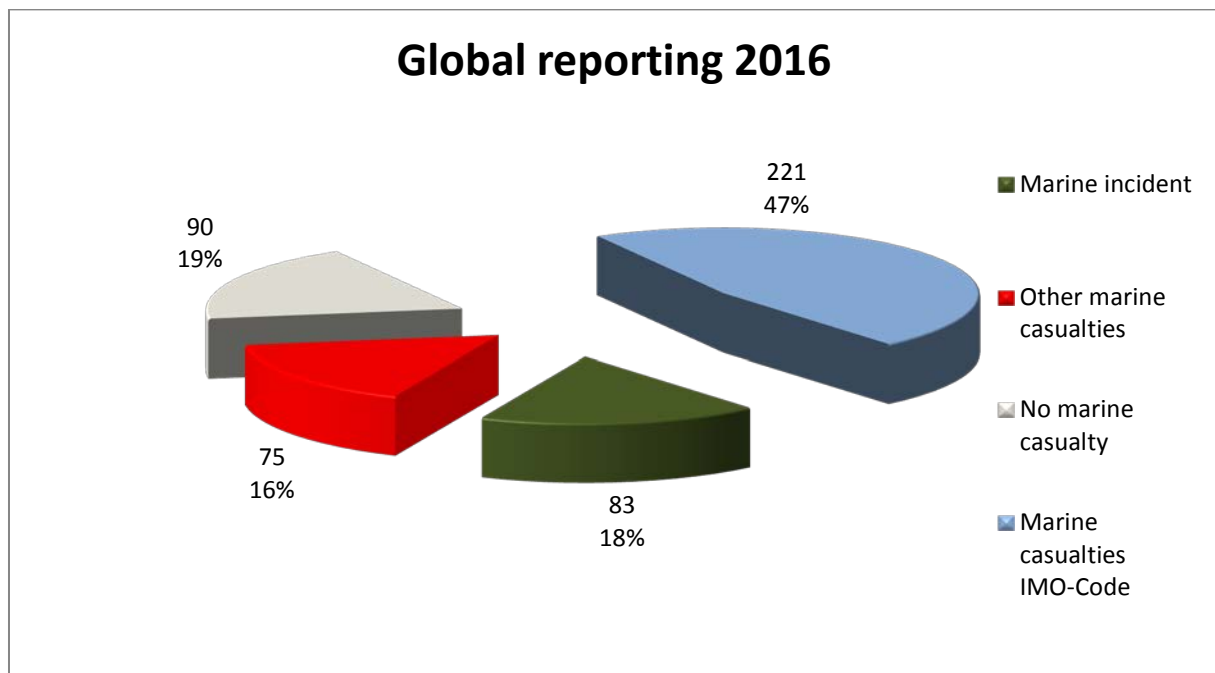
This table only shows those VSMCs, SMCs, LSMCs, and Is according to international rules.

Incidents were reported separately for the first time in 2013. The problem with regard to categorising incidents is that ultimately nothing has happened. In turn, this means that the tendency to report such incidents will be rather low, which will probably lead to a relatively high number of unreported cases. A typical incident would be a blackout; for example, an engine failure and emergency anchoring manoeuvre that does not lead to damage to a ship, environmental pollution or bodily harm.

Although OCs are marine casualties, they do not fall under the scope of the international or national rules. These primarily concern accidents that only involve pleasure yachts used for non-commercial reasons, as well as navy or other government ships.

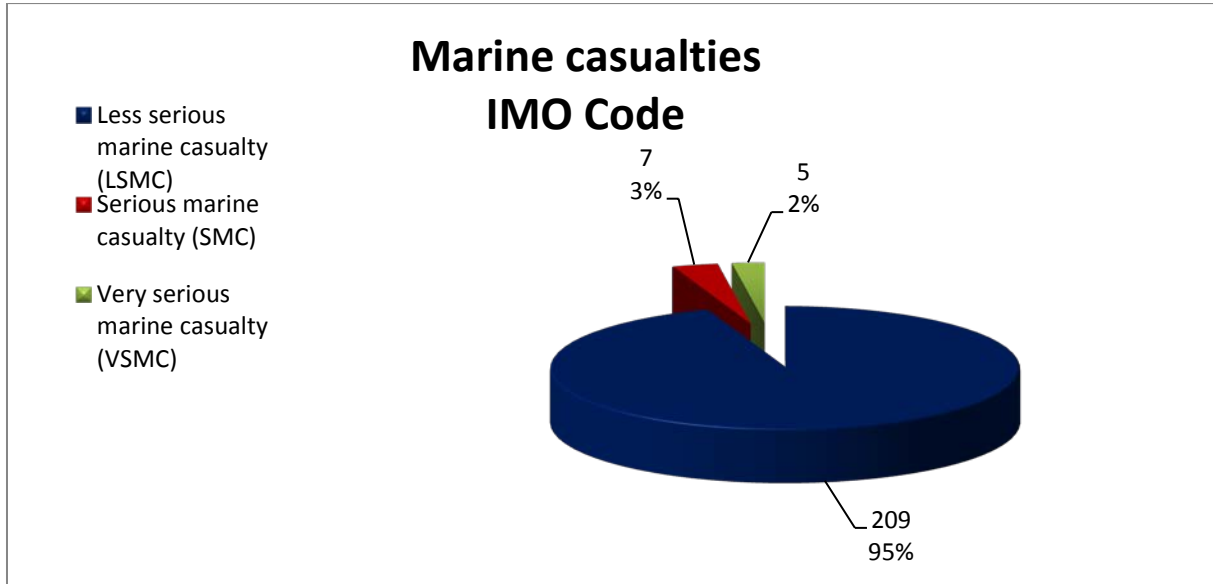
The NC category encompasses any other report that does not concern a marine casualty, e.g. accidents involving vessels for inland navigation on inland waterways, or passengers on ferries or cruise ships and crew members in general falling ill.

The total number of reports has dropped again as compared to previous years, especially for the categories SC and LSMC. In the best case, this could be an indication that the work of all those concerned with ship safety is bearing fruit.

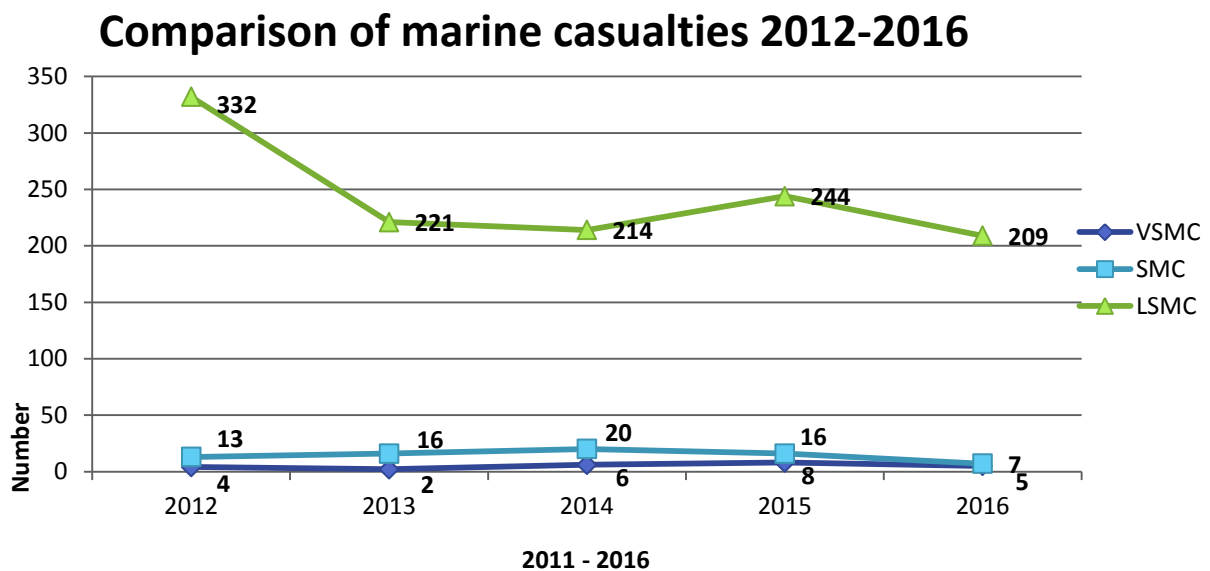


Marine casualties in total

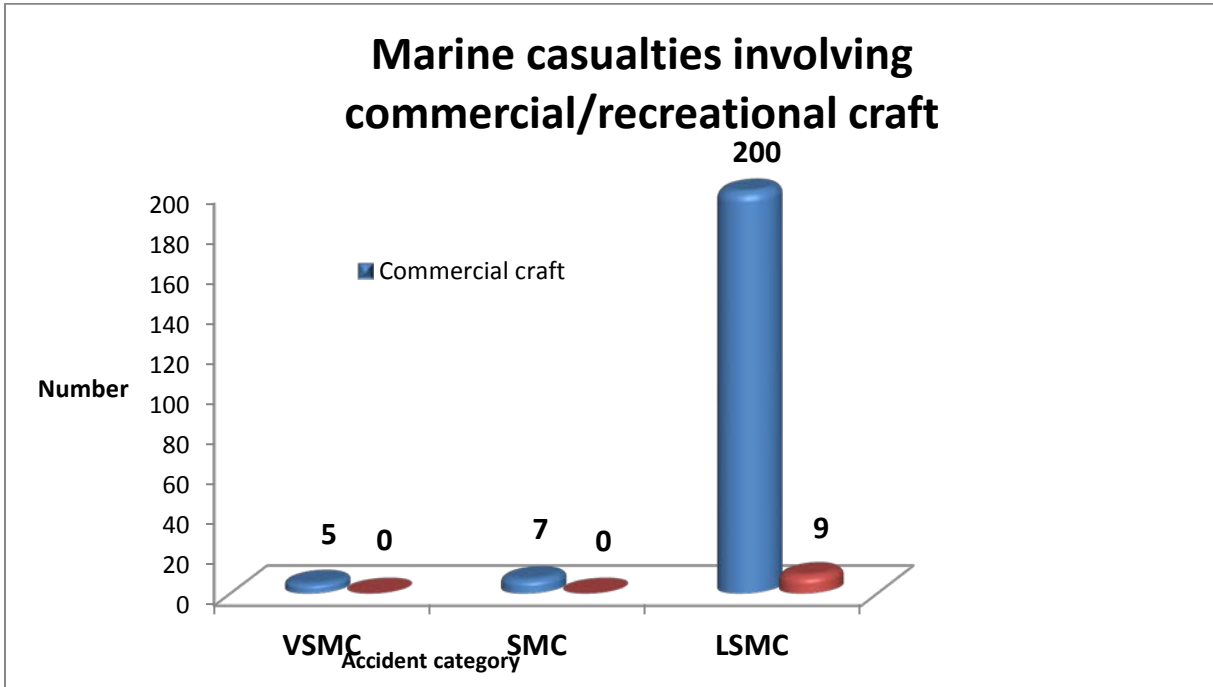
Of the 469 cases reported, 221 are classified as marine casualty and include five VSMCs and seven SMCs.



The following table summarises the trend over the past five years.

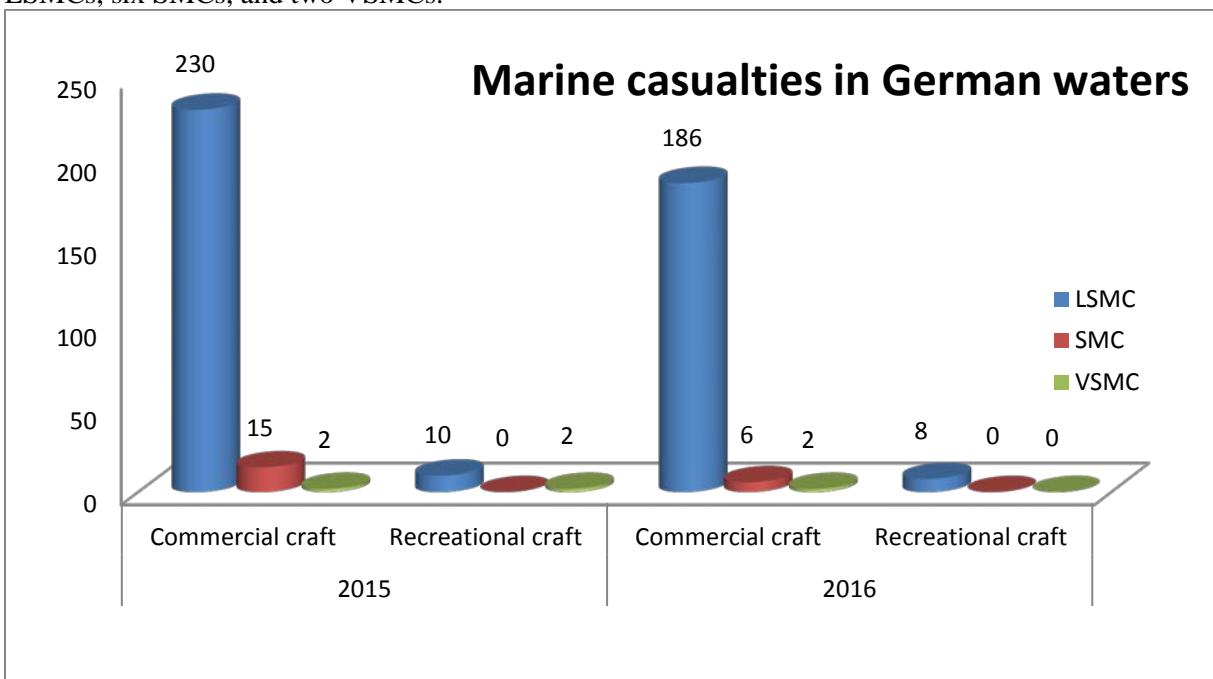


A comparison of marine casualties in merchant shipping on one hand and sport and recreational boating on the other is in itself futile. The following chart aims merely to illustrate the ratio of merchant shipping to 'commercial' pleasure craft in 'real' marine casualties, i.e. those that fall under international regulations. Accidents involving private pleasure yachts are not shown here. Fishing vessels belong to merchant shipping.



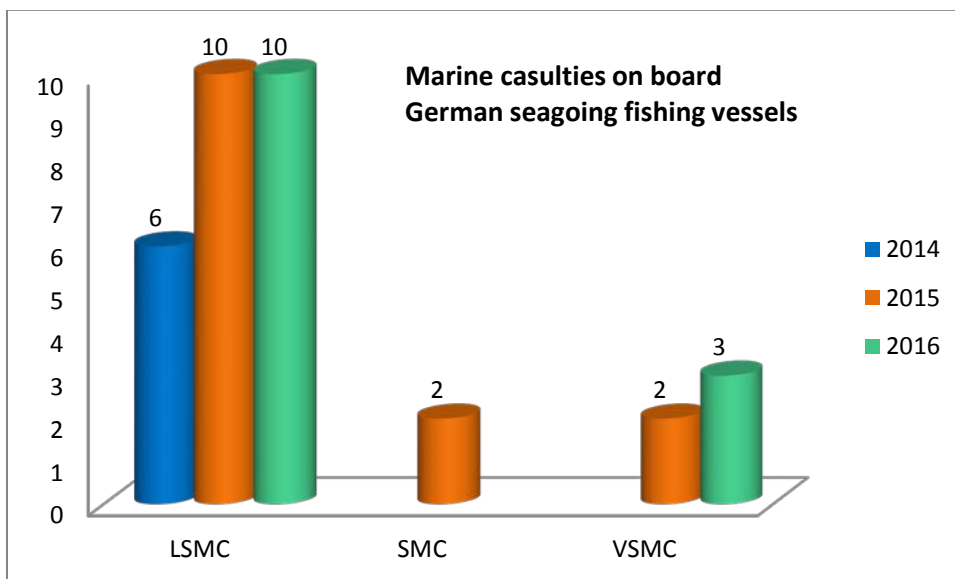
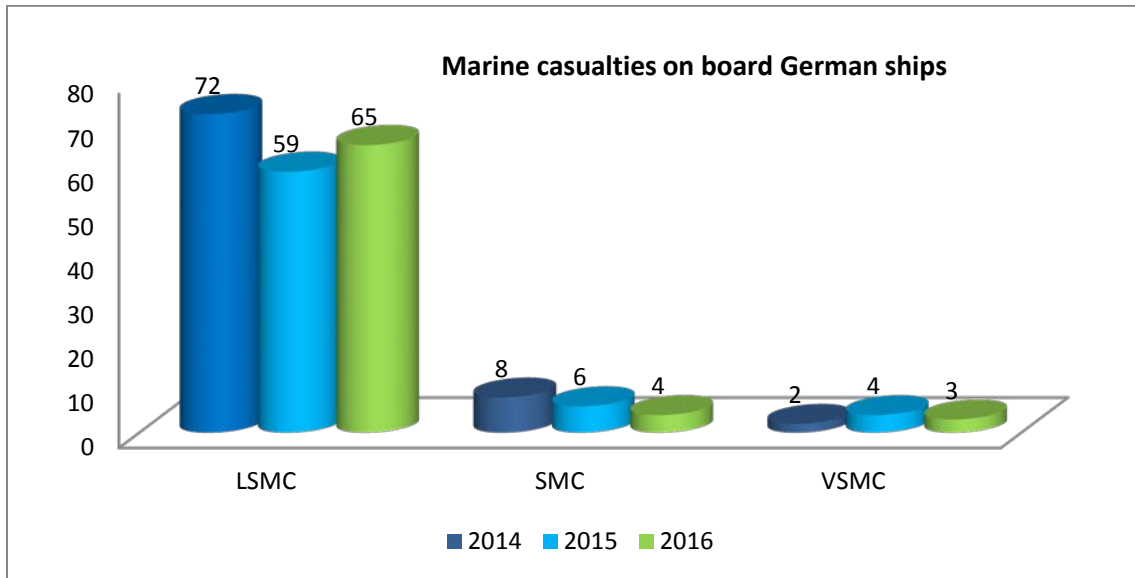
Marine casualties in German waters

In 2016, 202 of the 221 marine casualties reported occurred in German waters. They consisted of 194 LSMCs, six SMCs, and two VSMCs.



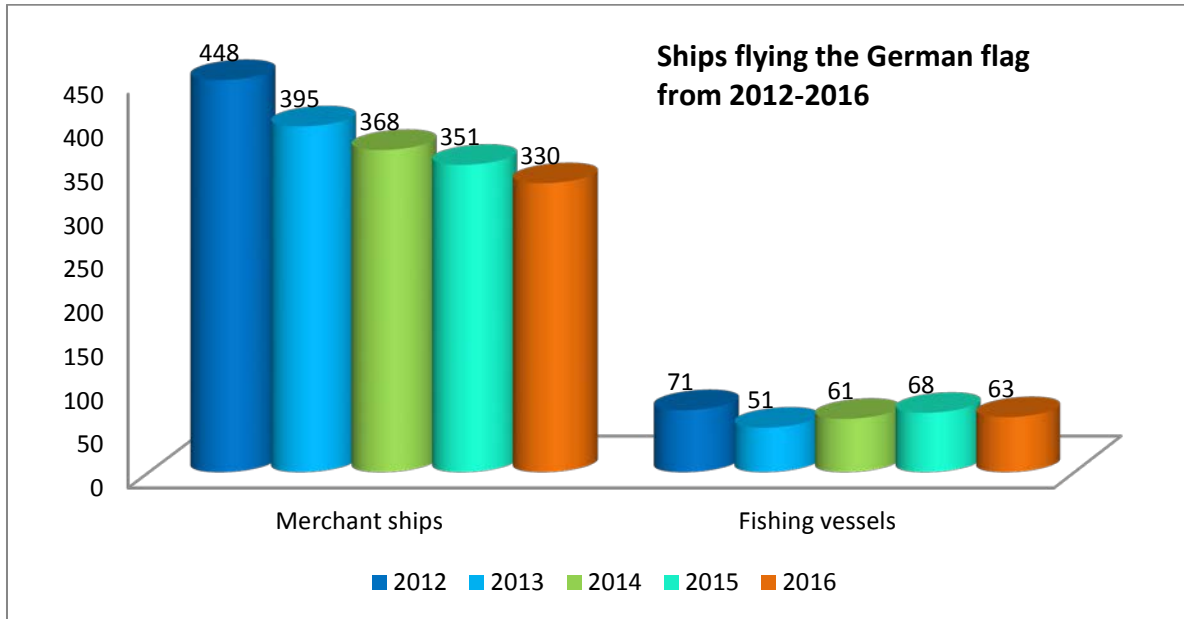
Marine casualties on German ships

72 marine casualties occurred on board seagoing ships flying the German flag. They consisted of 65 LSMCs, four SMCs, three VSMCs, and another 13 marine casualties on board fishing vessels (including three VSMCs).



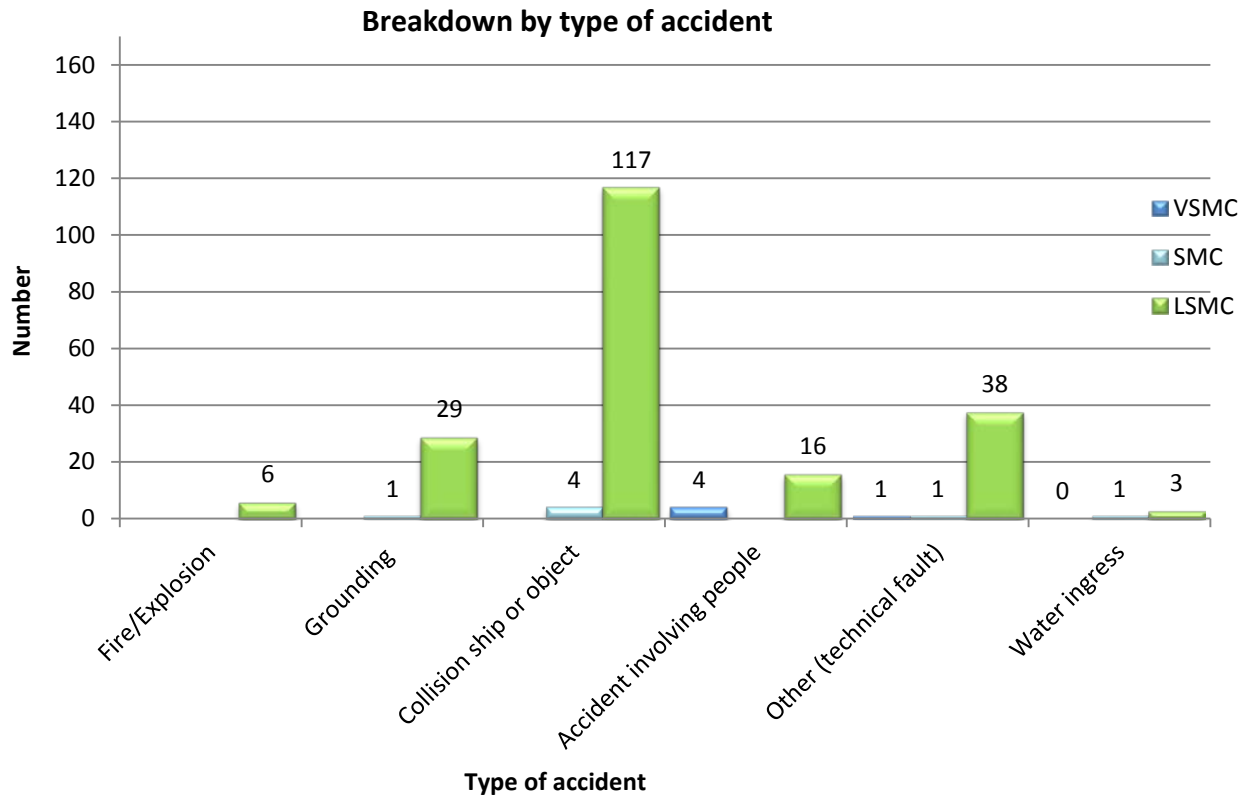
Ships flying the German flag

On 31 December 2016, there were 330 merchant ships and 63 seagoing fishing vessels registered under German flag¹. Merchant ships saw another drop year-on-year (21 ships). Since 2012, the merchant fleet has contracted by almost 26%. The number of fishing vessels has also decreased somewhat.



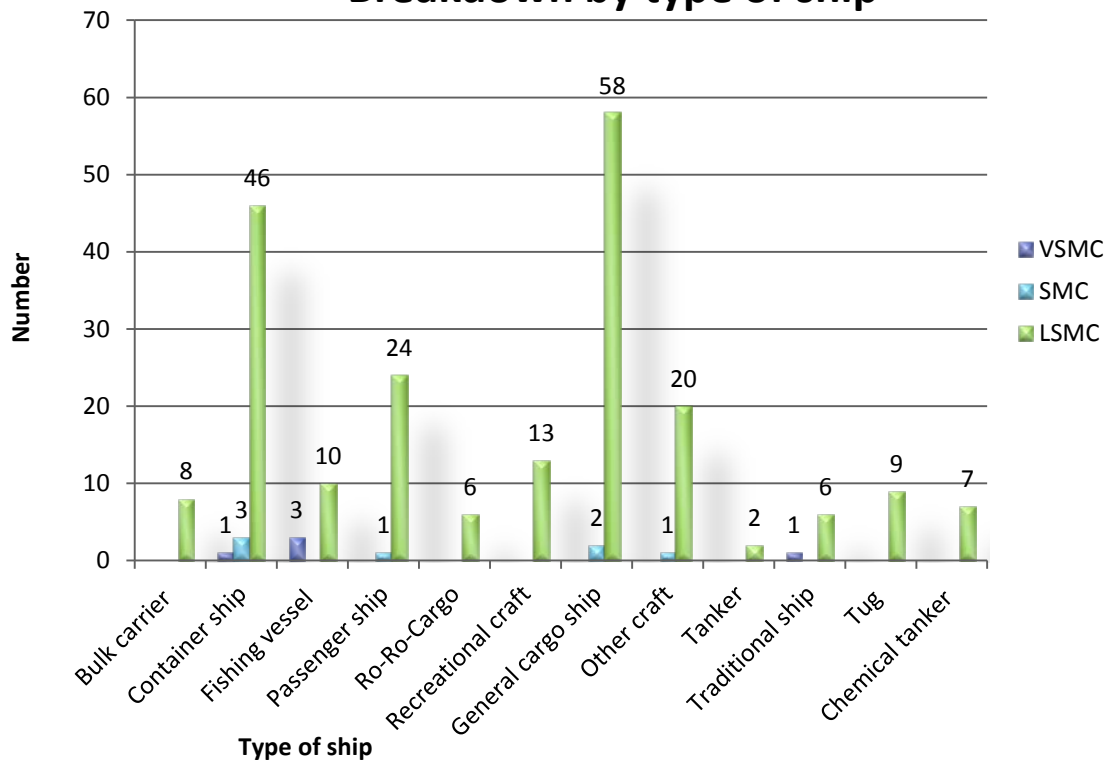
¹ Source: Federal Maritime and Hydrographic Agency

Breakdown of marine casualties by kind of accident and type of ship in 2016



Kind of accident	VSMC	SMC	LSMC	Total
Fire/Explosion			6	6
Grounding		1	29	30
Collision ship or object		4	117	121
Accident involving people	4		16	20
Other (technical fault)	1	1	38	40
Water ingress	0	1	3	4
Overall result	5	7	209	221

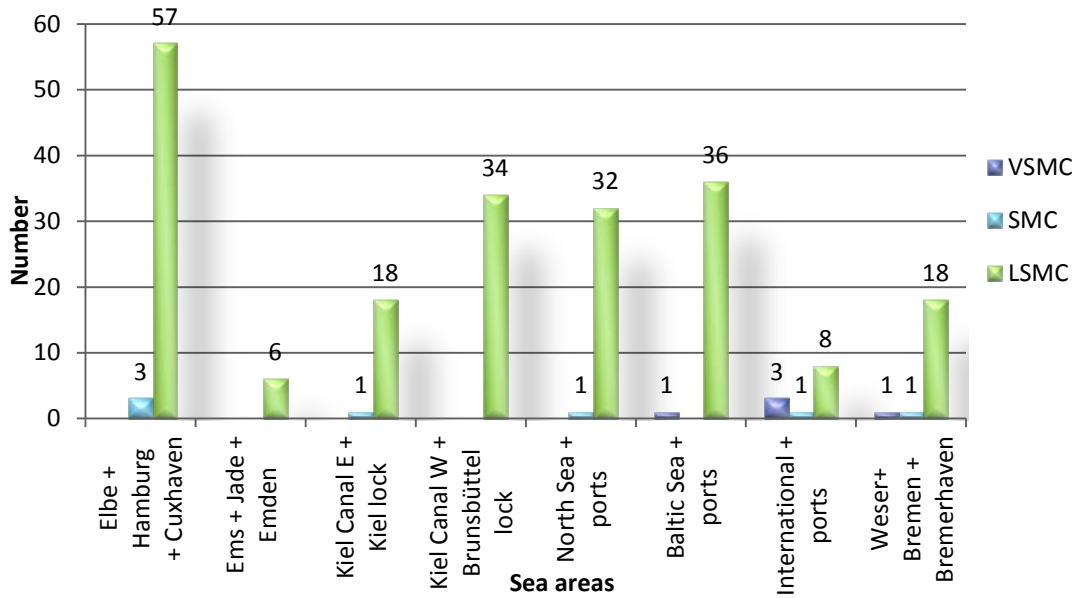
Breakdown by type of ship



Number type	VSMC	SMC	LSMC	Total
Bulk carrier			8	8
Container ship	1	3	46	50
Fishing vessel	3		10	13
Passenger ship		1	24	25
Ro-Ro-Cargo			6	6
Recreational craft			13	13
General cargo ship		2	58	60
Other craft		1	20	21
Tanker			2	2
Traditional ship	1		6	7
Tug			9	9
Chemical tanker			7	7
Overall result	5	7	209	221

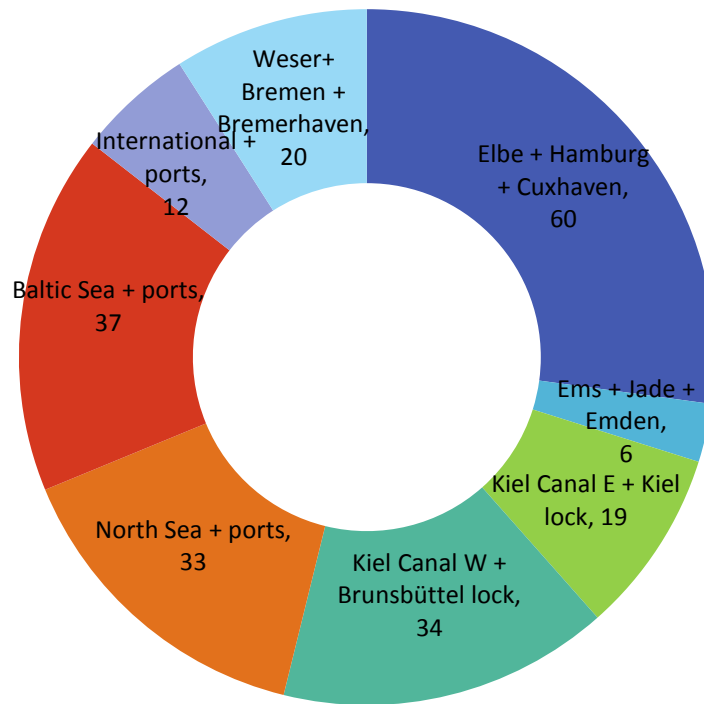
Breakdown of marine casualties by sea area

Breakdown by sea area



Area of operation	VSMC	SMC	LSMC	Total
Elbe + Hamburg + Cuxhaven		3	57	60
Ems + Jade + Emden			6	6
Kiel Canal E + Kiel lock		1	18	19
Kiel Canal W + Brunsbüttel lock			34	34
North Sea + ports		1	32	33
Baltic Sea + ports	1		36	37
International + ports	3	1	8	12
Weser+ Bremen + Bremerhaven	1	1	18	20
Overall result	5	7	209	221

Marine casualties by sea area in 2016



Four VSMCs with five fatalities were recorded in merchant shipping in 2016. They included three accidents with four fatalities on or involving fishing vessels.

There were six fatalities in recreational boating. They included three German nationals on the Dutch traditional ship AMICITIA. The investigation into this case is being led by our Dutch colleagues.

Altogether, 60 people in 43 reports were injured as a result of work or leisure.

Merchant shipping: 55 people injured in 38 reports

Recreational boating: Five people injured in five reports

Summary of investigations closed and ongoing

In 2016, 11 investigations were closed with the publication of an investigation report. They consisted of one from 2013, four from 2014, five from 2015, and one from 2016. Another nine investigations were closed with an internal report. They consisted of one from 2014, seven from 2015, and one from 2016. Finally, one case was handed over to another interested State.

11 interim reports were also published.

Accordingly, 28 cases were being processed at the end of 2016. Details are given in the following tables.

Investigated marine casualties that were closed with an investigation report in 2016

	Published	Report no	Date of accident	Name of ship	Type of ship	Nationality	Scene of accident	Kind of accident
1	15/01/2016	16/15	17/01/2015	Red7 Alliance	Supply ship	Bahamas	Brunsbüttel	Collision with a lock gate
2	26/01/2016	180/15	16/05/2015	Hanjin Miami	Container ship	Germany	West of Sri Lanka	Disappearance of a person
3	29/01/2016	34/15	01/02/2015	Hanjin Dallas	Container ship	Germany	East coast of the United States	Fatal accident
4	15/03/2016	330/13	28/10/2013	Syderfly/ Coral Ivory	Cargo ship/ Chemical tanker	Saint Vincent & the Grenadines/ Netherlands	Kiel Canal	Collision
5	21/03/2016	94/15	20/03/2015	Saint George	Cargo ship	Cyprus	Brunsbüttel	Collision with a lock gate
6	20/05/2016	203/15	28/05/2015	Ortegal Tres	Fishing vessel	Germany	Irish Sea	Fatal accident
7	26/05/2016	36/14	16/01/2014	Stenberg/ Wes Janine	Chemical tanker/ Container ship	Gibraltar/ Antigua & Barbuda	Elbe	Collision
8	01/07/2016	370/14	24/11/2014	Zander	Other craft (grab dredger)	None	North of Norderney	Personnel accident
9	13/07/2016	337/14	20/09/2014	Silver Pegasus	Timber carrier	Panama	Brake	Personnel accident
10	08/09/2016	58/14	05/03/2014	Wilson Fedje/ Jade	Container ship/ Inland waterway vessel	Barbados/ Germany	Port of Hamburg	Collision
11	14/10/2016	44/16	06/02/2016	CSCL Indian Ocean	Container ship	Hong Kong	Elbe	Grounding

Interim investigation reports in 2016

	Published	Report no	Date of accident	Name of ship	Type of ship	Nationality	Scene of accident	Kind of accident
1	05/02/2016	42/15	06/02/2015	Askoe	Cargo ship	Antigua & Barbuda	Kadet Trench	Fatal accident
2	18/02/2016	55/15	19/02/2015	Kristina	Fishing vessel	Germany	West of Borkum	Foundered
3	25/05/2016	198/15	25/05/2015	Purple Beach	Cargo ship	Marshall Islands	German Bight	Fire
4	06/06/2016	225/15	16/06/2015	Frisia V	Ferry	Germany	Norddeich	Collision with a pier
5	13/07/2016	268/15	15/07/2015	Dublin Express	Container ship	Germany	Dominican Republic	Fatal accident
6	21/09/2016	402/15	21/09/2015	Desdemona	Charter sailing yacht	Germany	Off Warnemünde	Fatal accident
7	19/10/2016	431/15	26/10/2015	Thetis D	Container ship	Liberia	Off Kiel	Explosion
8	24/11/2016	459/15	26/11/2015	Transcapricorn/ Eendracht	Cargo ship/ Cargo ship	Gibraltar, UK/ Netherlands	Lower Elbe	Collision
9	25/11/2016	455/15	20/11/2015	MSC Katrina	Container ship	Panama	Outer Elbe	Cargo fire
10	15/12/2016	496/15	18/12/2015	Ventura	Cargo ship	Antigua & Barbuda	Holtenuau roadstead	Fire
11	15/12/2016	499/15	17/12/2015	BBC Maple Lea	Cargo ship	Germany	Near Montreal, Canada	Ground contact with oil spillage

Investigated marine casualties that were closed with an internal investigation report in 2016

	Date	Ref. no	Date of accident	Name of ship	Type of ship	Nationality	Scene of accident	Kind of accident
1	07/01/2016	423/15	12/10/2015	Raya	Pleasure yacht	Germany	Finkenwerder marina	Fatal accident
2	12/01/2016	294/14	29/09/2014	Colombo Express/ Maersk Tanjung	Container ship/ Container ship	Germany/ Singapore	Suez Canal	Collision
3	27/01/2016	389/15	25/09/2015	Hanjin Mundra/ G Lucky	Container ship/ Bulk carrier	Germany/ Togo	Off Xiamen (China)	Collision
4	15/03/2016	92/15	19/03/2015	Choapa Trader	Container ship	Liberia	Hamburg	Grounding
5	01/06/2016	170/16	19/05/2016	Mytilus/ Sagittarius	Traditional ship/ Pleasure yacht	Germany/ Germany	Flensburg Firth	Collision
6	04/07/2016	443/15	02/11/2015	Sylt	Container ship	Antigua & Barbuda	Port of Hamburg	Ground contact with oil spillage
7	12/07/2016	472/15	06/12/2015	E.R. Pusan	Container ship	Luxembourg	Port of Hamburg	Personnel accident
8	18/08/2016	475/15	07/12/2015	Cembalo	Cement carrier	Bahamas	Port of Rostock	Fire
9	21/09/2016	457/15	23/11/2015	Angelika	Fishing vessel	Germany	Off Borkum	Foundered

Marine casualties handed over to another interested State in 2016

	Ref. no	Date of accident	Name of ship	Type of ship	Nationality	Scene of accident	Kind of accident
1	323/16	01/09/2016	CCNI Arauco	Container ship	Liberia	Port of Hamburg	Fire

Investigations ongoing at 31 December 2016

	Ref. no	Date of accident	Name of ship	Type of ship	Nationality	Scene of accident	Kind of accident
1	189/14	30/05/2014	Nobile/ Werker	Racing craft/ Worksite craft	Germany/ Germany	Flensburg Firth	Collision
2	262/14	16/08/2014	Andrea	Fishing vessel	Germany	Hohwacht Bay	Foundered
3	42/15	06/02/2015	Askoe	Cargo ship	Antigua & Barbuda	Kadet Trench	Fatal accident
4	55/15	19/02/2015	Kristina	Fishing vessel	Germany	West of Borkum	Foundered
5	198/15	25/05/2015	Purple Beach	Cargo ship	Marshall Islands	German Bight	Fire
6	225/15	16/06/2015	Frisia V	Ferry	Germany	Norddeich	Collision with a pier
7	268/15	15/07/2015	Dublin Express	Container ship	Germany	Dominican Republic	Fatal accident
8	402/15	21/09/2015	Desdemona	Charter sailing yacht	Germany	Off Warnemünde	Fatal accident
9	431/15	26/10/2015	Thetis D	Container ship	Liberia	Off Kiel	Explosion
10	455/15	20/11/2015	MSC Katrina	Container ship	Panama	Outer Elbe	Cargo fire
11	459/15	26/11/2015	Transcapricorn/ Eendracht	Cargo ship/ Cargo ship	Gibraltar, UK/ Netherlands	Lower Elbe	Collision
12	470/15	03/12/2015	Emsmoon	Cargo ship	Antigua & Barbuda	River Ems at Weener	Collision with a bridge
13	496/15	18/12/2015	Ventura	Cargo ship	Antigua & Barbuda	Holtenua roadstead	Fire
14	499/15	17/12/2015	BBC Maple Lea	Cargo ship	Germany	Near Montreal, Canada	Ground contact with oil spillage
15	5/16	05/01/2016	Bro Nordby/ Selene Prahm	Tanker/ Cargo ship	Denmark/ Germany	Elbe off Brunsbüttel	Near-collision
16	12/16	08/01/2016	Evert Prahm	Cargo ship	Germany	Kiel Canal	Collision with transporter bridge
17	43/16	06/02/2016	Maersk Kure	Container ship	Greece	Bremerhaven	Fatal line accident
18	44/16	06/02/2016	Condor	Fishing vessel	Germany	Off Fehmarn	Foundering with two fatalities
19	46/16	08/02/2016	Pesorsa Dos	Fishing vessel	Germany	Irish Sea	Fatal accident
20	58/16	21/02/2016	Ludwigshafen Express	Container ship	Germany	Red Sea	Fire
21	168/16	17/05/2016	Pesorsa Cuatro	Fishing vessel	Germany	Off Ireland	Fatal accident
22	279/16	28/07/2016	Palucca/ Potsdam	Tug/ Fishing vessel	Germany	Adlergrund	Foundering of FV
23	283/16		Berlin	ROPAX ferry	Germany		
24	310/16	18/08/2016	Weichselstern	Products tanker	Portugal	German Bight	Boiler explosion
25	315/16	21/08/2016	Amicitia	Traditional ship	The Netherlands	Port of Harlingen	Mast break with three German fatalities
26	423/16	20/11/2016	Meridian	Bulker	Germany	Bremerhaven	Collision with the Stromkaje
27	439/16	04/12/2016	Hanni	Container feeder	Germany	Elbe	Grounding
28	470/16	19/12/2016	Bremen Express	Container ship	Germany	Atlantic	Loss of 295 containers

Investigations ongoing at 31 December 2016, published between January and the end of April 2017

		Report no	Date of accident	Name of ship	Type of ship	Nationality	Scene of accident	Kind of accident
1	02/02/2017	46/16	08/02/2016	Pesorsa Dos	Fishing vessel	Germany	Irish Sea	Fatal accident
2	03/02/2017	43/16	06/02/2016	Maersk Kure	Container ship	Greece	Bremerhaven	Fatal line accident
3	23/02/2017	470/15	03/12/2015	Emsmoon	Cargo ship	Antigua & Barbuda	River Ems at Weener	Collision with a bridge
4	24/02/2017	189/14	30/05/2014	Nobile/Werker	Racing craft/Worksite craft	Germany/Germany	Flensburg Firth	Collision
5	01/03/2017	268/15	15/07/2015	Dublin Express	Container ship	Germany	Dominican Republic	Fatal accident
6	07/03/2017	225/15	16/06/2015	Frisia V	Ferry	Germany	Norddeich	Collision with a pier
7	14/03/2017	499/15	17/12/2015	BBC Maple Lea	Cargo ship	Germany	Near Montreal, Canada	Ground contact with oil spillage

Investigations ongoing at 31 December 2016, interim reports published between January and the end of May 2017

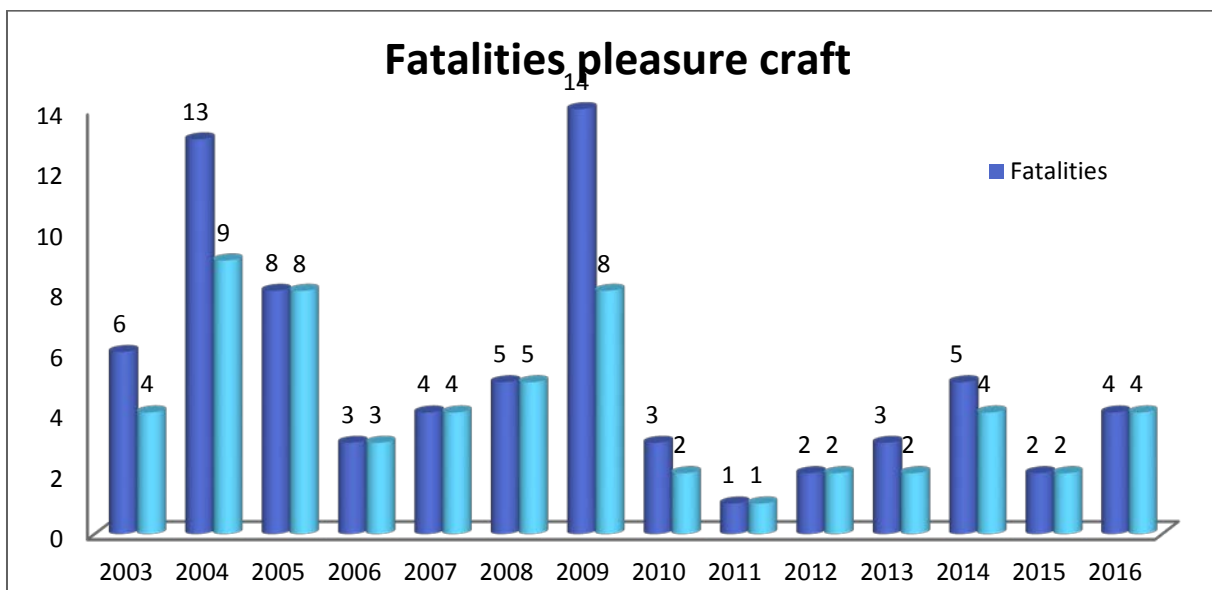
	Published	Report no	Date of accident	Name of ship	Type of ship	Nationality	Scene of accident	Kind of accident
1	06/01/2017	12/16	08/01/2016	Evert Prahm	Cargo ship	Germany	Kiel Canal	Collision with transporter bridge
2	06/02/2017	44/16	06/02/2016	Condor	Fishing vessel	Germany	Off Fehmarn	Foundering with two fatalities

Investigation of marine casualties involving pleasure yachts by the BSU

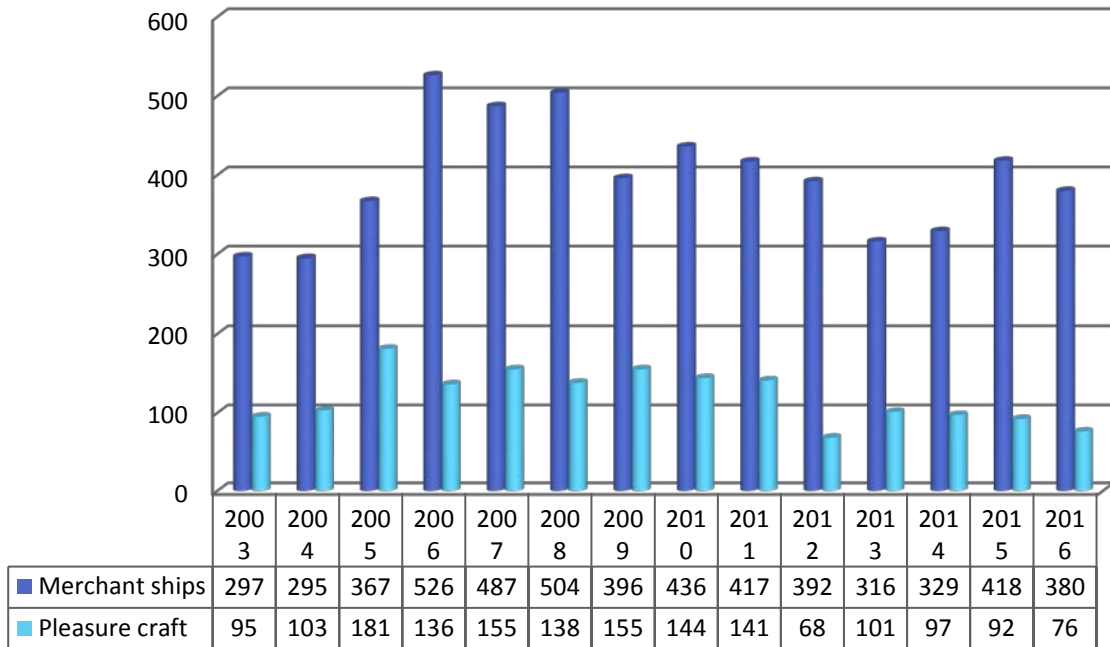
Since Germany's SUG entered into force in June 2002 and the BSU was established in Hamburg, accidents involving pleasure yachts have been investigated on the basis of the IMO Code. Since the reform of the SUG in 2011, accidents involving pleasure yachts not used commercially and outside German territorial waters or fishing vessels of less than 15 m are no longer investigated by German authorities.

The legislature established a saving clause (Article 1(4) SUG) for marine casualties that involve only pleasure yachts in German waters and Germany's EEZ or fishing vessels of less than 15 m in length. The BSU may continue to investigate such cases if it is expected that the findings will increase maritime safety, in particular, by improving applicable regulations or equipment for maritime navigation.

Regardless of the foregoing, there is still an obligation to report such accidents to the BSU under Article 1 of the Ordinance on the Safety of Shipping (SeeFSichV 1993), meaning statistics for such cases are at least kept. Inasmuch, this statistical part should continue to deal with accidents involving pleasure yachts.



Reports to the BSU from 01.01.2003 - 31.12.2016



This graph shows the trend for all the reports received by the BSU. There was a declining trend in merchant shipping in 2016. Moreover, pleasure yacht reports have also declined again this year and are now at the lowest level since recordings began (if the somewhat atypical 2012 is not considered).