BSU

Bundesstelle für Seeunfalluntersuchung
Federal Bureau of Maritime Casualty Investigation

2020 Annual Report

June 2021

Foreword

Dear Reader,

Even though it did not seem possible - when I worked on the foreword for last year's annual report, most of this year's was also produced in a home office environment. And although the coronavirus also left its mark on the Federal Bureau of Maritime Casualty Investigation (BSU), I am well aware that we – as a federal agency – have fared extremely well in comparison with other sectors, this being especially true of the BSU's closely linked shipping sector. It is with the above in mind that I would like to pass on my very best wishes for the period after the pandemic to the beleaguered companies and their staff.

For the BSU, 2020 heralded considerable change in terms of staffing. Spring saw the departure of one of the Bureau's true stalwarts, Reinhard Gralla. The long-standing deputy of various directors (four in total), Jürgen Albers, followed in August also for reasons of age. They have both left for a well-deserved retirement after joining the BSU shortly after its establishment. I would like to take this opportunity to thank Jürgen and Reinhard once more for their internal and external dedication and excellent work over the past 20 or so years.

We also had a number of accidents to deal with again, some of which are summarised on the pages that follow. Other changes can be found in the report. I warmly invite you to set aside a little time for the BSU.

Warmest regards,

Ulf Kaspera

Contents

Marine casualty investigation

The BSU is a federal higher authority subordinated to the Ministry of Transport and Digital Infrastructure (BMVI). Its office is in Hamburg and it currently has 13 staff members employed on a full- and part-time basis. It is one of the smallest federal higher authorities, has a single-stage administrative structure and operates under the supervisory control of Department WS 26 of the BMVI.

Figure 1: The BSU's offices in the BSH[1] building in Hamburg. The piers are visible in the foreground. In the background are the so-called 'Dancing Towers' to the right and the Astraturm to the left.

The cover picture shows an LHM 550 crane being salvaged in the port of Rostock (see accident involving the JUMBO VISION in Section 2.2). Source: Liebherr-MCCtec Rostock GmbH.
[1] Federal Maritime and Hydrographic Agency. Source: Fotolia.

1.1 Fundamentals

Both national and international legislation define the work of a marine safety investigation authority as 'safety investigation'. This clearly demonstrates that a marine casualty investigation is not intended to clarify issues of fault or liability but is solely for the purpose of improving maritime safety. A marine casualty investigation aims to deliver a comprehensive account and analysis of the course of events leading up to and during an accident to prevent future accidents. It should consider any direct and indirect causes, facilitating factors, as well as the overall circumstances including possible rescue operations and safety systems. The law provides that the BSU be guided by a no blame approach within the framework of a safety partnership. The BSU does not make findings on culpability, claims or liability. Investigation reports and the findings therein are not for use in judicial proceedings.

The German Maritime Safety Investigation Law (SUG) constitutes the primary legal framework for the work of the BSU. The SUG transposes international rules and regulations, such as the Casualty Investigation Code (Resolution MSC.255(84)) and the European Directive 2009/18/EC, into the German judicial system. Other provisions that apply under German law include Regulation (EU) No 1286/2011 and the IMO[2] Resolution A.1075(28), which harmonise the methodology and implementation of the investigation of accidents internationally.

The BSU is thus responsible for investigating incidents and marine casualties involving any category of seagoing ship flying any flag

- within German territorial waters;
- during traffic movements on German navigable maritime waterways, as well as to, from, and in ports connected to them;

[2] International Maritime Organization, London, UK.

- outside territorial waters but within the German Exclusive Economic Zone (EEZ) only in the event of very serious casualties, provided that the special rights assigned to Germany there are affected.

Outside the areas referred to above, the BSU only investigates marine casualties on or involving seagoing ships flying the German flag or if the Federal Republic of Germany has a substantial interest in the investigation of a marine casualty abroad (if German nationals are killed or seriously injured, for example).

The SUG also addresses those cases in which the BSU does not take action. The BSU is not responsible for marine casualties involving only

- 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;
- 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;
- fishing vessels with a length of less than 15 m, and
- fixed offshore drilling units.

This has practical relevance in the pleasure boating sector, in particular. The SUG does not cover privately used recreational craft (unlike those used commercially), meaning the BSU's legal mandate does not extend to investigating accidents involving recreational craft. This applies regardless of damage. It is only possible for the BSU to investigate such accidents in (rare) exceptions and then only when they occur in Germany's territorial waters and concern pleasure craft built, suitable and used for maritime navigation. Open rowing or sailing boats and personal watercraft, etc. do not belong to this category.

The SUG distinguishes between four categories of marine casualty: incident, less serious marine casualty (LSMC), serious marine casualty (SMC) and very serious marine casualty (VSMC). Moreover, in the case of the VSMC, it requires that the BSU always conduct an investigation.[3]

1.2 The investigation procedure

After an accident notification is received, the BSU's director (or the deputy director in his absence) decides on the initiation of an investigation and usually assigns the subsequent processing of the accident to a team of two people. The BSU is free from instructions in this decision and in all other aspects of the investigation. The BSU has extensive rights and powers of intervention when investigating the course of events leading up to and during an accident, including in respect of access to the scene of the accident, preservation and analysis of evidence, questioning witnesses and the engagement of experts. These rights are not limited to entities/individuals directly involved in the accident (the ship, her crew and possibly pilots), but can also be exercised in respect of third parties (e.g. shipowners, shipyards or classification societies) or authorities (e.g. the Federal Waterways and Shipping Administration or the Ship Safety Division (BG Verkehr)).

An important cornerstone of the work of the BSU is cooperation with the members of European and non-European investigative bodies. Based on European and international principles, the BSU conducts investigations in international cooperation. These can be limited to merely supporting the other investigative body or may extend to a full joint investigation and joint final report.

1.3 Investigation reports and safety recommendations

The investigation report is the product of a safety investigation and made available to the public. An investigation concludes with the publication of the report. 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

[3] On the subject of marine casualties, see in particular the explanatory notes in Section 6.1.

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 **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 not investigated further after the BSU has conducted a preliminary investigation are usually closed with an internal report. Interim reports relating to ongoing investigations are only produced for SMCs or VSMCs.

Safety recommendations constitute the key element and conclusion of an investigation report. 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 the accident. A safety investigation by the BSU focuses not only on events on board, but also looks at organisation ashore or the safety system where appropriate. In short, any factors that may have facilitated the accident are investigated and evaluated. Consequently, in addition to the crew, addressees of safety recommendations could include pilots, shipowners, shipyards, manufacturers of equipment, the Maritime Administration, the legislator, or others. Safety recommendations can also be directed at several addressees but their wording should be sufficiently specific. Addressees should be able to clearly discern what is being recommended to them. Accordingly, recommendations of a general nature should be avoided.

The BSU may also 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 given as quickly as possible, i.e. before publication of the final report.

However, safety recommendations are not issued with every investigation report. This can be for a variety of reasons, e.g. that no specific deficiencies were apparent or the speculative addressees had already closed a gap in safety identified by the BSU through their own action while the investigation was ongoing. In such cases, the BSU compiles a **summary (or 'simplified') investigation report**. This is provided for by law when incidents or LSMCs are investigated and safety recommendations are issued. Their purpose is to facilitate the work of investigative bodies and to reduce the time needed for their preparation. Strict procedural rules such as the statutory period of 30 days for parties involved to submit comments do not apply, for example. The summary investigation report is still a fully-fledged investigation report, however.

The BSU published a total of 15 investigation reports in 2020. They included three interim reports, four summary reports and one joint international report. It issued a total of 34 safety recommendations in five reports.

Safety recommendation addressees in 2020 included (number of recommendations in brackets):

- BMVI (9)
- Federal Waterways and Shipping Agency (2)
- Ship Safety Division (BG Verkehr) (3)
- international organisations/classification societies (3)
- shipping companies/owners (6)
- pilots (8)

1.4 Reports from foreign investigation authorities

In addition to carrying out its own investigations, the BSU often cooperates with its foreign counterparts. In particular, this applies to marine casualties on German territory involving only vessels flying a foreign flag. Under international law, the flag State has the first right of access. If it is agreed that the flag State will lead the investigation of the accident, then the BSU will support the foreign investigation authority with expertise and manpower. Such support ranges from the simple establishment of contacts to the independent assumption of entire focal points of an investigation and can demand the same resources as one of the BSU's own investigations. With regard to investigations in which support was especially exhaustive, the BSU subsequently publishes the investigation report of the foreign investigation authority on its homepage, which happened on three occasions this year.

1.5 Lessons learned

Introduced in 2018, the 'Lessons learned' section is directed at a wide range of addressees and draws attention to existing gaps in general safety. Not all investigations lend themselves to this, as the resulting findings have to be translated into general lessons. For example, only one lesson learned was published in 2020.

Main investigations

This section deals with accidents that occurred in 2020 and are currently the subject of a main investigation. In principle, investigations should be completed after one year. Unfortunately, this is not possible in many cases. The reasons for this are as varied as the actual accidents. However, the rule is that the length of the investigation rises with the degree of complexity of the events surrounding the accident and number of parties involved. The BSU obviously makes every effort to analyse accidents quickly and publish the final report within one year. Some of the investigations that are currently ongoing are presented below. The list is by no means exhaustive, however.

2.1 Person overboard on the HELEN MARY

A tragic accident occurred at the beginning of the year. The German-flagged fishing vessel HELEN MARY (length and breadth 120 m and 17 m, respectively) was in international waters north-north-west of the Isle of Lewis (Hebrides) on the night of 29-30 January.

Figure 2: The German-flagged fishing vessel HELEN MARY[4]

[4] Source: BSU.

The crew had just deployed the trawl and started to fish when sensors on the bridge indicated a large shoal in front of the net. To prevent the destruction of the fishing gear, the net was immediately hoisted from the bridge. The aim was to catch a manageable portion of the shoal and it was for this reason that the crew was called back to the deck by means of an audible signal. Since the six fishermen working on the deck assumed they would be performing a different task because the period between deployment of the fishing gear and the signal being sounded was unusually short, they did not put on inflatable work vests.

Figures 3 and 4: View of the workstation from amidships (above) and from above (left)[5]

During the works related to hauling in the fishing gear, one of the fishermen climbed halfway on to the bulwark so as to lean out and reach for an auxiliary line from there in a kneeling position. He lost his balance and fell into the water in the process. The other fishermen quickly lost sight of him. One of the fishermen threw out two lifebuoys equipped with a signal light.

[5] Source: Shipping company.

The bridge was informed immediately after the fall and the necessary measures were taken there. Lookouts were posted and the workboat was launched. Seven fishing vessels that had arrived in the meantime and an HM Coastguard helicopter assisted with the initial search.

Figure 5: Fisherman's location at the stern when he fell[6]

The search was unsuccessful to begin with. Since the casualty had not put on his inflatable work vest, no signal was transmitted by the emergency position indicating radio beacon (EPIRB) attached to it. The casualty was not recovered until three hours later. An emergency doctor who was flown to the ship could only confirm the time of death.

Figure 6: Inflatable work vest with EPIRB[7]

The HELEN MARY returned to IJmuiden in the Netherlands, which is where the BSU began its investigation of the accident. The investigation is now closed and the report was published in January 2021.[8]

2.2 Cranes overboard on the JUMBO VISION

On 31 January, two cranes went overboard and fell into the inner harbour in Rostock as they were being loaded onto the heavy-lift vessel JUMBO VISION. The case

[6] Source: BSU.
[7] Source: BSU.
[8] Available on www.bsu-bund.de/ (Ref.: 20/20).

attracted considerable media attention and quickly became a case for the BSU due to the unusual overall circumstances and considerable amount of damage.

Figures 7 and 8: Liebherr LHM 550 crane[9] and the JUMBO VISION[10]

The loading operation began with a safety briefing at 0645 on 30 January. During the course of the morning, the hatch covers were prepared for the stowage of the two virtually identical heavy-duty cranes, which were being transported on the deck to Apapa in Lagos, Nigeria. The cranes each weighed more than 400 tonnes, had a height of more than 35 metres and their booms a length of more than 55 metres. Steel plates were put down for this purpose, on which the end carriages were to be placed later. The first crane was loaded into the part of the deck facing the bow in the afternoon and evening.

On the following day it was only possible to work from midday onwards due to the weather. The deck was wet due to almost continuous drizzle. The second crane was then lifted on board the JUMBO VISION and put down on the aft deck area. As with the first loading operation, this was carried out in tandem operation (so-called tandem lift) using ship-board equipment.

[9] Source: Liebherr MCCtec Rostock GmbH.
[10] Source: Hasenpusch Photo-Productions.

Figure 9: Crane 2 being tandem lifted[11]

In each case, the two cranes were to be shifted very slightly to their final stowage position on board. After that, they were to be made seaworthy and then lashed. Prior to that, the two pontoons attached to the JUMBO VISION's side facing the water to improve stability were hoisted back on board.

At about 2100, the operation for the second crane started on board. For reasons that are still unclear, they lost control of this crane and it moved toward the side facing the water unchecked and then fell to a depth of 11 m in the inner harbour. The ensuing movements on board caused the first crane to slide and it fell into the inner harbour shortly after. In addition to considerable material damage worth several million euros, leaking lubricants polluted the inner harbour. The cranes were later dismantled under water and lifted after the remaining oil had been pumped out. Fortunately, nobody was injured.

[11] Source: Shipping company.

Figure 10: The cranes are submerged. Escaping oil and damage to the vessel are visible.[12]

The BSU arrived at the scene of the accident in the port of Rostock on the following morning and immediately began the investigation, the final result of which remains to be seen.

2.3 HOCHDONN and SCHELDEBANK

Of course, an accident requiring investigation in the Kiel Canal during the preceding year is also a given. This one concerns a collision between the Dutch SCHELDEBANK and canal ferry HOCHDONN.

[12] Source: BSU.

Figure 11: the SCHELDEBANK[13]

At about 0730 on 8 May, the nearly 90 metres long coaster SCHELDEBANK was transiting the Kiel Canal under pilotage in the direction of the Kiel-Holtenau lock. Visibility was poor and limited to about 50 m due to dense fog.

Despite a lookout being posted, the instruments were mainly used for navigation because the bow of the vessel was almost invisible from the bridge.

Despite sailing at a reduced speed of 11 kts, the canal ferry suddenly appeared directly in front of the bow at the Hochdonn ferry crossing. A collision occurred despite the immediate engine shutdown. The seriously damaged ferry scraped along the starboard side of the SCHELDEBANK before she was able to return to her berth unassisted. Fortunately, nobody was injured and no fuel or lubricants escaped.

Figures 12 and 13: Damage to the HOCHDONN[14]

Following a preliminary investigation, the BSU decided to conduct a main investigation with a view to clarifying how the accident could have occurred given that the

[13] Source: Dieter Kroeplin (vesselfinder.com).
[14] Source: WSP Brunsbüttel.

instruments were functioning and although the weather conditions were poor, they were not extreme.

2.4 Foundering of the SHARKY

The WSP[15] boat BÜRGERMEISTER BRAUER had just started to patrol the Outer Elbe late in the evening of 11 August when a distress call was received. It was from the Polish sailing yacht SHARKY, which had struck a buoy a few nautical miles from Cuxhaven and was now in distress. The vessel was reportedly at risk of foundering and seven people were reportedly on board. The police boat immediately headed for the scene of the accident. Other vessels also took part in the rescue operation. The SHARKY had already foundered when the WSP arrived at the scene only 20 minutes later and the seven crew members were on board a liferaft drifting on the port side of a vessel that had been assisting with the rescue operation. The rescue cruiser ANNELIESE KRAMER and her tender MATHIAS were also heading for the scene at that point. The seven people were rescued unharmed shortly afterwards.


Figures 14 and 15: Salvage of the SHARKY with penetrated hull[16]

The SHARKY was raised again only one day later. Following an assessment, it emerged that the SHARKY, which was proceeding under sail, had foundered within minutes due to the collision with the buoy. This was because the yacht, which was of wooden construction, had suffered severe damage on her starboard side due to the force of the impact with the buoy, exacerbated by the River Elbe's current.

[15] Waterway police.
[16] Source: WSP Cuxhaven.

Figure 16: The SHARKY at full speed[17]

Incidentally, the SHARKY is historically renowned. The 15 m yacht from Szczecin won the Admiral's Cup in 1973. At that time she was called the RUBIN and flew the German flag. Plans are already made to have her repaired.

The BSU was promptly notified and in turn informed its Polish colleagues. As the flag State, Poland immediately launched an investigation and asked the BSU for assistance. The investigation is still ongoing.

2.5 Electric shocks on the MONTREAL EXPRESS

Figure 17: The MONTREAL EXPRESS[19]

To be precise, the MONTREAL EXPRESS investigation concerns two accidents that have been combined into one investigation. This approach is not new and has been practised by the BSU on many occasions, most recently in the investigation report on the cargo fires on the KATRINA and the LUDWIGSHAFEN EXPRESS in 2018.[18]

[17] Source: Yacht Klub Polski Szczecin.
[18] Cases 455/15 and 58/16.
[19] Source: Peter Faas (Vesselfinder).

The investigation launched here deals with two almost identical incidents that occurred in the port of Hamburg on board the Bermuda-flagged MONTREAL EXPRESS. On 4 July and 29 August, dock workers[20] intended to connect refrigerated containers in Bay 38 to the internal power supply and each suffered severe electric shocks, after which medical attention was necessary.

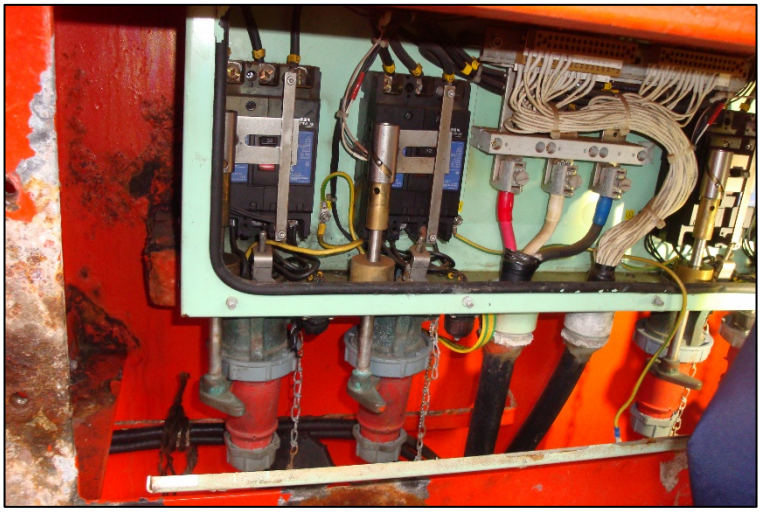


Figure 18: Slots with open distribution box[21]

Fortunately, neither incident had further medical consequences. After the first accident, the power connection in question was supposed to have been sufficiently repaired. An immediate inspection of the vessel by the WSP and later by the BSU followed the second incident. The location (the affected power connections and distribution boxes, in particular) was subjected to a detailed inspection with the involvement of an expert, during which various deficiencies in the condition of the system and discussed repair were discovered. Since the investigation is still ongoing, further information is reserved for the corresponding report.

2.6 Deflagration on the DANMARK

Another accident investigated by the BSU, the deflagration of pure ethanol, occurred on 30 June on board the Danish sail training vessel DANMARK. It was the first voyage to take place after Denmark's lockdown measures in the spring of 2020 due to the COVID-19 pandemic. The voyage with 56 officer cadets had already been cancelled once before in February and was repeated in June under strict hygiene conditions. A hygiene plan was drawn up for this purpose, which included large-scale disinfection by spraying ethanol.

[20] A different person in each incident.
[21] Source: BSU.

Figure 19: The DANMARK with all sails set[22]

At the time of the accident, the DANMARK was nearing the end of her voyage and had anchored south of Fehmarn to weather a storm. During the one-hour cleaning duties every morning, two cadets were disinfecting the heavily used surfaces of the lounge/classroom with the help of a cloth sprayed with ethanol. One of the cadets noticed a lighter lying on the floor next to the room's bin and tested it to see if it should be disposed of.

[22] Source: Finn Føns.

Figure 20: Simulated scene of the accident[23]

A second cadet was standing next to him when this happened, having just sprayed ethanol on his cloth. The cloud of spray in the air directly in front of his face caught fire immediately in a short but violent deflagration that spread to the second cadet's clothing. The flames on the person and on the room's floor were quickly extinguished with the help of two other cadets who also happened to be in the room at the time.

The injured cadet suffered burns to his face, hands, torso and legs. Following an examination by the ship's doctor in consultation with the Rigshospitalet hospital in Copenhagen, he was flown from a German rescue cruiser to the nearest coastal town (Großenbrode) and from there by rescue helicopter to the University Hospital in Schleswig-Holstein in Lübeck. Two skin grafts were performed over the following 14 days, after which he was able to continue his convalescence at home. The DANMARK left her anchorage on the day of the accident and completed the training voyage two days later in Frederikshavn, Denmark.

The accident was investigated by the BSU. Since extensive measures have already been taken on board and the hygiene plan has been amended to ensure that flammable liquids are no longer needed, safety recommendations were dispensed with. Accordingly, the BSU prepared a summary report and published it in December.[24]

[23] Source: Shipping company.
[24] Available on www.bsu-bund.de/ (Ref.: 182/20).

2.7 Non-marine casualties

Many people ask why a particular accident is not investigated by the BSU. After all, it would have been of general interest or people were reportedly even harmed. One good example is the collapse of the HLC295000 super crane on board the ORION 1 in the international port of Rostock in May with a total of 12 casualties. It would be quite reasonable to assume that this was a typical marine casualty. However, this is where legislation steps in. As with every authority, the BSU must first confirm it is responsible because for it to be able to act at all, a marine casualty must have occurred. And this is only the case if it has happened during or in connection with the operation of a ship. However, the ORION 1 was not in operation at the time of the accident. On the contrary, regular operation of the vessel had even been suspended – the vessel was still being converted in a shipyard. The newly installed super crane had to be tested for the first time before the ship could be put back into operation. From the perspective of the BSU, this means no vessel operation equals no marine casualty. This also applies to other accidents that occur during a call at a shipyard.

What administrative changes did we see?

3.1 Staffing

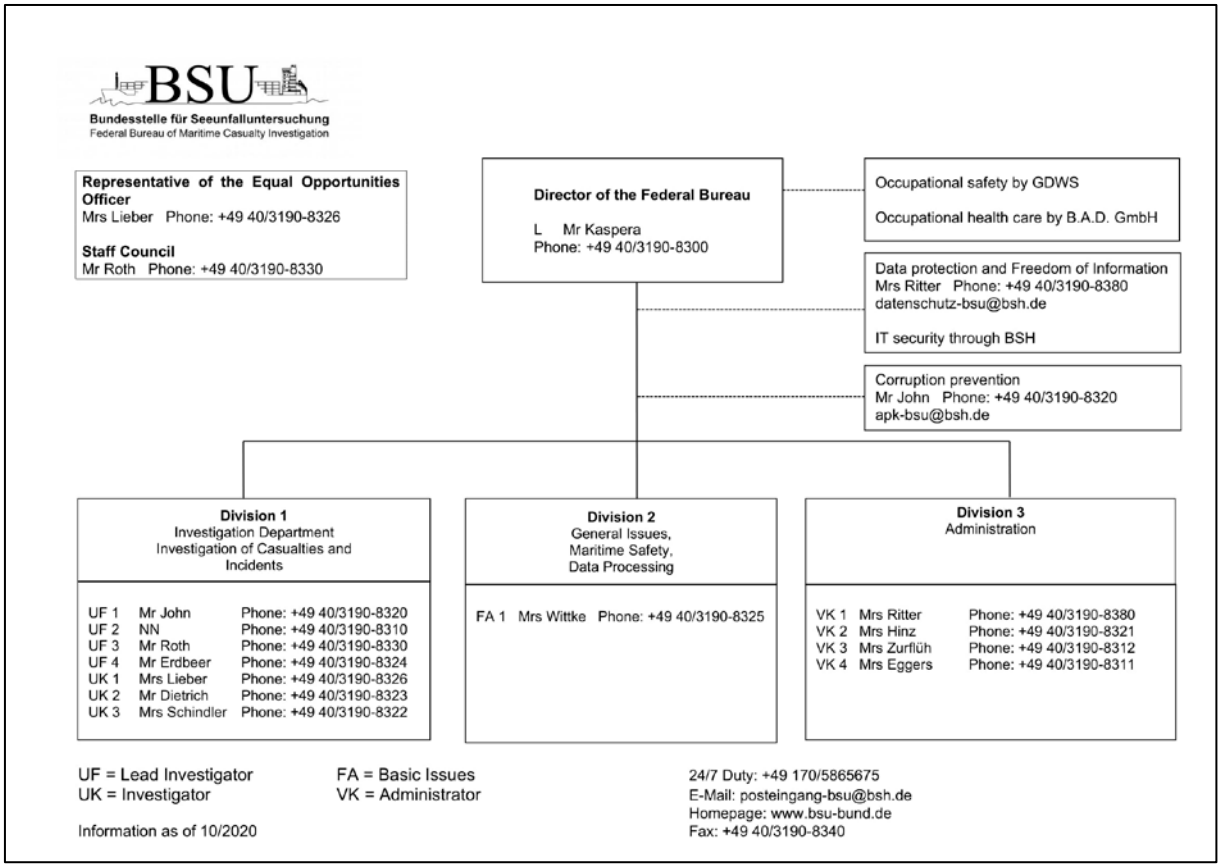
The coronavirus pandemic made 2020 a unique year with unique challenges for the BSU, too. While the first few weeks were still quite normal and our offices were characterised by the hustle and bustle of everyday working life, from March onwards it became very quiet in the corridors and a rather unnatural silence took hold in the office rooms. That everyone at the BSU was already able to work on a mobile basis, i.e. from home or at another location, even before the coronavirus pandemic was enormously beneficial. This was possible because service agreements for working on a mobile basis and teleworking have been in place for a long time and therefore the technical conditions for working from home were already met. This was the case for each division and each individual workplace.

The summer then brought a little calm and personal cooperation was once more possible to a certain degree. However, care was taken to ensure that not everyone was in the building at all times every day. Everyone enhanced their knowledge of tele- and video-conferencing. Accordingly, maintaining day-to-day operations at the BSU was quite easy.

As mentioned in the foreword, two long-serving staff members left the BSU during the year for reasons of age. However, since work must go on, every effort was made to fill the ensuing gaps quickly. As can be seen from our organisational chart below, this was achieved quite successfully.

We were able to recruit a new investigator, Margaret Schindler, in May and she now reinforces Division 1. The coronavirus pandemic made it necessary to improvise from time to time during the induction phase – but in the end it passed successfully.

A new deputy director was also found. Ferenc John, who has been a lead investigator at the BSU for many years, took up his new post at the beginning of October.

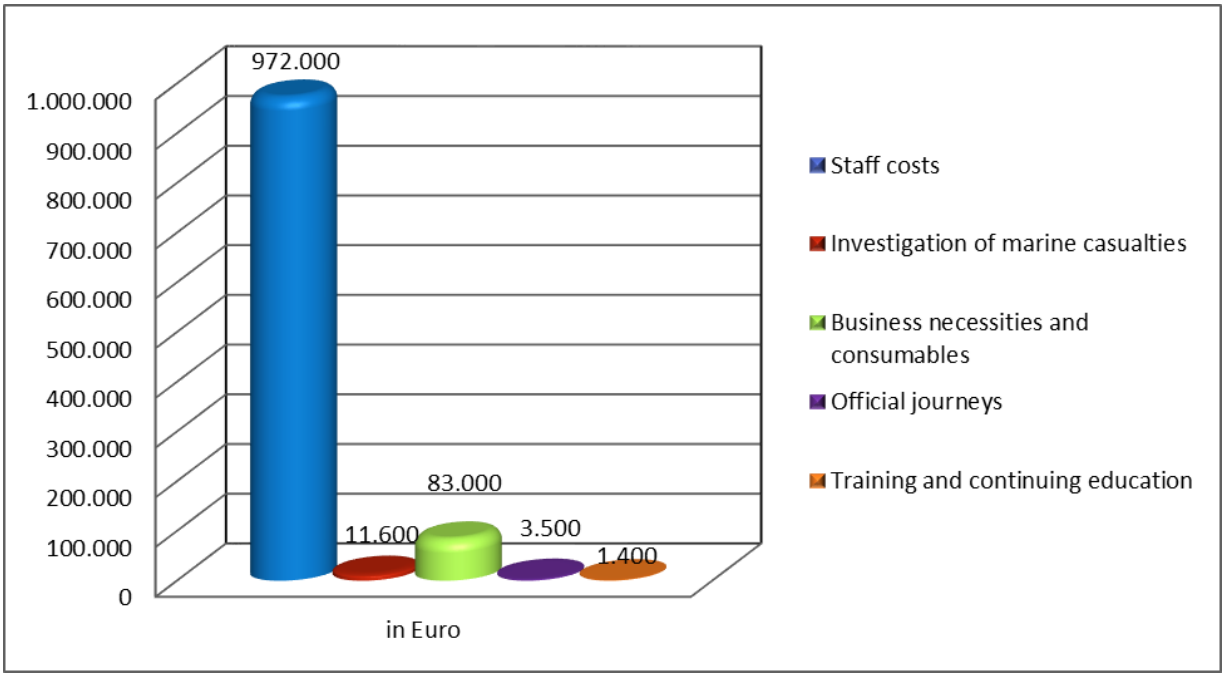


Organisational chart of the BSU as of October 2020 (but still applicable at the end of the year)

3.2 Budget

The BSU was allocated EUR 1,241,000 for the 2020 fiscal year, which was not fully utilised, however. In particular, travel expenses were 'spared' this year because official journeys were virtually impossible. At around EUR 972,000, spending centred largely on staff costs, which were followed by expenses of around EUR 83,000 incurred in the course of investigating marine casualties. Business necessities and expenses for personal protective equipment amounted to about EUR 11,600, while expenses for travel of only EUR 3,500, as well as for training and continuing education of about EUR 1,400, were not a focus of expenditure this year, as already mentioned.

For statistics aficionados:



3.3 Lectures, training, miscellaneous

Numerous events that staff of the BSU normally attend and contribute to a lively exchange of information at with lectures and their specialist knowledge were cancelled and thus another victim of COVID-19 restrictions this year. Fortunately, not every event was affected by this. January's German Council on Jurisdiction in Traffic was still held in Goslar as usual and the Maritime Safety Committee was held online in November. The implementation of strict hygiene rules made classroom-based training possible at the Waterway Police Academy but other events had to be cancelled or – a new trend – were held online. For example, EMSA[25] has even developed new online formats for its training courses, which range from one morning to several weeks.

[25] EMSA: European Maritime Safety Agency based in Lisbon, Portugal.

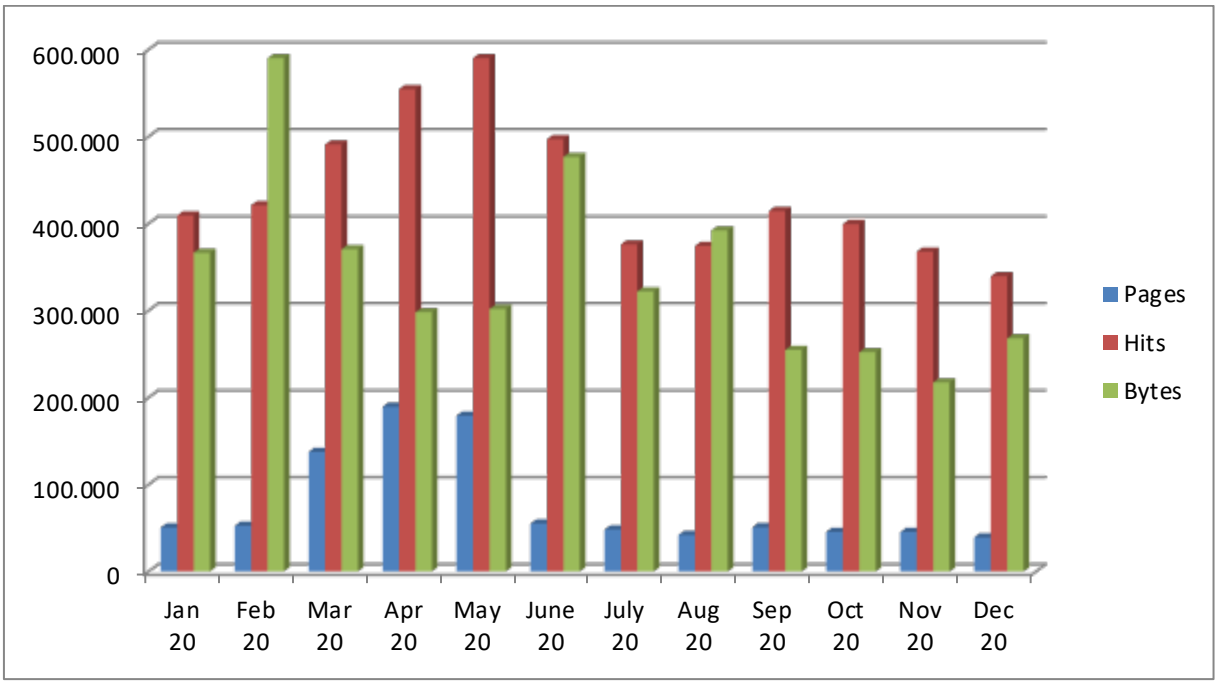
Public relations

A total of 15 investigation reports and interim investigation reports were published in 2020.

4.1 The BSU's website

Inter alia, the website provides information on the activities and structure of the BSU, the historical development of marine casualty investigation, as well as the legal framework. The BSU makes every effort to keep its website up to date and as accessible as possible. In 2020, key items of information about the BSU were provided in sign language, for example. You are warmly invited to take a brief foray into the world of marine casualty investigation.

The graph below shows the web statistics for the preceding year.



Most of the downloads are in February and June due to the publication of the reports on the YANTIAN EXPRESS and MSC ZOE, as well as the interim report on the ASTROSPRINTER and № 5 ELBE. The increased number of hits in the months of April and May can be explained by the fact that people kept checking whether reports on the MSC ZOE or the № 5 ELBE had already been published.

The 'bare' figures for 2020 reveal the following picture:

month	pages	hits	bytes
Jan 20	50.521	409.398	69,22
Feb 20	52.676	421.065	111,52
Mar 20	137.491	490.923	69,99
Apr 20	189.515	554.571	56,33
May 20	179.168	590.301	57,01
June 20	55.209	497.098	90,04
July 20	48.223	376.142	60,84
Aug 20	42.100	374.266	74,1
Sep 20	50.826	414.450	48,14
Oct 20	45.585	399.454	47,65
Nov 20	45.385	367.763	41,07
Dec 20	39.219	339.482	50,65
total	**935.918**	**5.234.913**	**776,56**

The figures demonstrate that interest in the work of the BSU has increased considerably compared to the previous year. If we take the previous year's data as a basis, we can see a 10–20% increase in the relevant data (views and bytes downloaded), in particular. The hits on the website provide information on where public interest in the BSU's accident reports was predominant, as this varies greatly. The following table shows the ten most frequently downloaded investigation reports.

Top	Ref.	Accident	Down-loads	Published on	Published in
1	211/19	Collision between traditional vessel № 5 ELBE and container vessel ASTROSPRINTER on the River Elbe on 8 June 2019	10,439	05/06/2020	German
2	12/16	Collision between the Rendsburg transporter bridge and freighter EVERT PRAHM with subsequent	7,346	25/03/2020	German

		grounding of the EVERT PRAHM on 8 January 2016			
3	255/12	Fire and explosion on board the MSC FLAMINIA on 14 July 2012 in the Atlantic and the ensuing events	7,319	28/02/2014	English
4	3/19	Containers on the MSC ZOE lost overboard on 1 and 2 January 2019	6,460	25/06/2020	German
5	15/19	Fire in the area of the deck cargo on board the container ship YANTIAN EXPRESS in the Atlantic Ocean on 3 January 2019	5,845	30/01/2020	German
6	15/19	Fire in the area of the deck cargo on board the container ship YANTIAN EXPRESS in the Atlantic Ocean on 3 January 2019	5,133	30/01/2020	English
7	65/19	Danish investigation report on the collision between the WORLD BORA and RABA east of Rügen on 19 February 2019	3,960	04/03/2020	English
8	421/18	Occupational accident on board the MV SVENJA at the pier in the port of	3,914	08/04/2020	German

		Rostock on 31 October 2018			
9	32/19	MV BORE BANK runs aground after steering gear failure level with buoy 18 in the Rostock sea channel on 17 January 2019	3,828	16/01/2020	German
10	143/11	Death of a crew member of the sailing yacht SPECIAL ONE on 30 April 2011 off Fehmarn	3,453	30/04/2012	German

The list contains the expected information, but also a number of – pleasant – surprises. One is the interest in current reports, of course[26]. Almost all the front runners are reports from the preceding year. Among the top ten are three reports in English, which include one on the collision between the WORLD BORA and RABA that was compiled by the Danish DMAIB in cooperation with the BSU.[27] If the downloads in both languages are added together, then the report on the YANTIAN EXPRESS fire even takes first place. I believe the enormous interest in reports drawn up in English demonstrates two things. Firstly, that the BSU also has an international voice. And secondly, that interested parties (or companies) are equally pleased to refer to the English version when processing the findings. Even though it is already six years old, the MSC FLAMINIA report remains much in demand, with interest still continuing unabated.

[26] The BSU's investigation reports are available for download by year of publication in the 'Investigation reports' section.
[27] This and other investigation reports of foreign authorities can be downloaded in the 'Reports issued by other investigation authorities' section.

Somewhat surprisingly, the report on the MSC ZOE is not at the top spot. This is related to the fact that it is an international report and interested parties from abroad have probably downloaded the report in English from our Dutch colleagues at the DSB. That the SPECIAL ONE accident report from 2012 is in 10th place is only surprising at first glance. This accident is still the subject of discussion at maritime schools, as a typical accident scenario from the recreational craft sector is dealt with here.

4.2 The MSC ZOE press conference

A press conference that attracted great public attention – but was on a small scale – was held this year, too. Under strict hygiene conditions, a small group of journalists assembled in the large hall of our office building on the occasion of the publication of the report on the MSC ZOE accident at the end of June. Due to pandemic-induced access restrictions, only a limited number of reporters could be admitted and unfortunately not all included; the seats were quickly reserved.

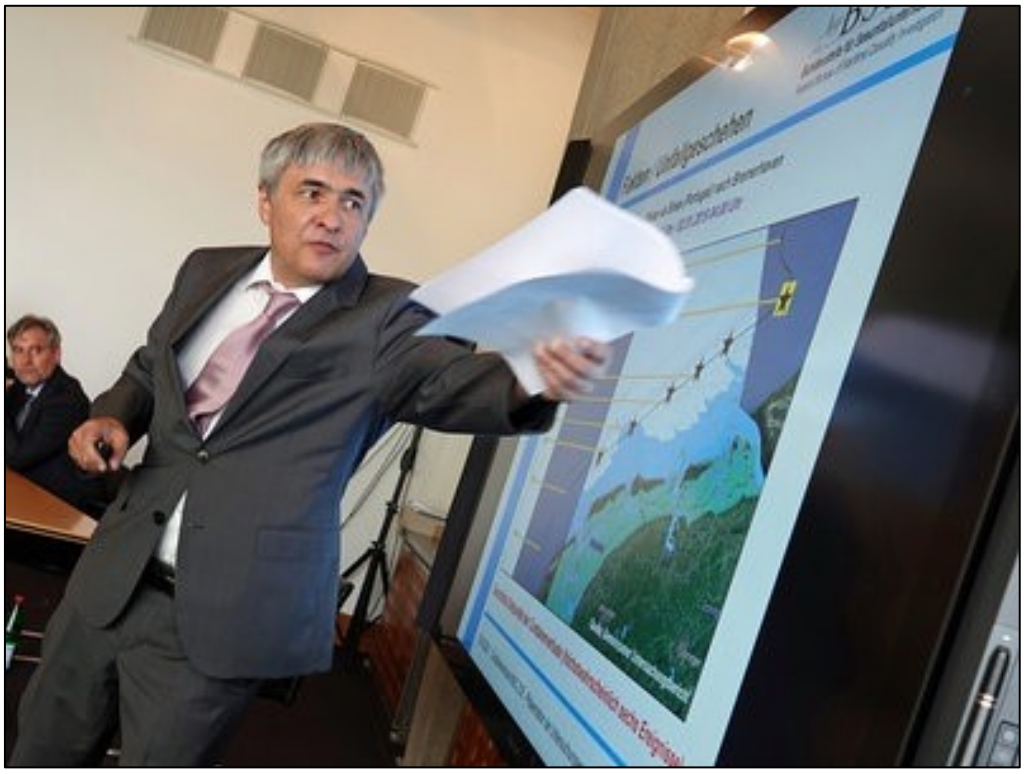


Figure 21: The BSU's lead investigator responsible, Ferenc John, explains the events leading up to and during the accident[28]

[28] Source: NDR.de | Nachrichten-Niedersachsen – Studio Oldenburg.

The BSU was actively supported at the event by the Hamburg University of Technology (TUHH), which had already performed valuable technical work for the investigation. The press conference was held at the same time as the findings of the investigation were published in the Netherlands. The BSU's sister authority there, the DSB[29], had also invited the media to The Hague, making it possible for the joint investigation to come to a joint conclusion, as it were.

Figure 22: The BSU and TUHH team presents the report[30]

The enormous public interest became apparent on the same day. There were also national reports on television and in the press, and prominent policy-makers and coastal protection officials were asked to comment. The accident, its consequences and measures to prevent it were widely discussed. Accordingly, the BSU had achieved its goal.

Afterword: Even though the BSU has no influence on further events after the completion of the investigation, much had already happened at the political and administrative level by the end of the year. By way of example, some of the measures taken are set out below:

- in certain weather conditions, large container vessels are warned about using the near-coastal route (Terschelling-German Bight TSS). There is already a marked decline in the use of the near-coastal route;

[29] Dutch Safety Board [in Dutch: Onderzoeksraad voor Veiligheid (OVV)].
[30] From left: Ulf Kaspera (BSU), Professor Stefan Krüger (TUHH), Ferenc John (BSU), Larissa Jannsen (TUHH), Reinhard Gralla (BSU). Source: NDR.de | Nachrichten-Niedersachsen – Studio Oldenburg.

- on the issue of using the Terschelling TSS, a ministerial working group was set up at the federal level;
- Germany and the Netherlands are jointly stepping up their efforts at the IMO with regard to the electronic inclinometer outfitting requirements;
- the Top Tier Joint Industry Project to improve container transport was launched.

Even though such initiatives were partly launched before the accident and, as experience shows, also take some time to bear fruit, I hope that the joint investigation report can contribute to their success somewhat.

International

5.1 EMAIIF and MAIIF[31]

In previous annual reports, this section contained short accounts of the international meetings of the investigation authorities, EMAIIF and MAIIF. Unfortunately, I have to disappoint you this year. EMAIIF was originally scheduled for April in Denmark (Copenhagen) but had to be cancelled due to the coronavirus pandemic. The situation with MAIIF was similar. Instead of the usual five-day meeting (this year London would have been the venue), there was a half-day video conference, in which a short exchange about current cases was nevertheless possible.

5.2 Permanent Cooperation Framework (PCF)

The annual meeting of directors of the various investigation authorities at EMSA for harmonising investigation procedures, PCF, also took place in a completely digital format this year but in contrast to the two meetings mentioned above, it was not shortened. The main focus of this year's meeting was the revision of Directive 2009/18/EC, which provides the legal framework for marine casualty investigation in Europe. After ten years, it urgently needs 'a new layer'. After all, the international law of the IMO, in particular, but also that of the EU[32] itself, has moved on and must now be reflected. According to the competent EU Commission, this task will take at least until 2022. PCF and thus the national investigation authorities are called upon to support the process with their expertise and to work toward necessary adjustments. The BSU is also represented in the working group set up for this purpose.

[31] (European) Maritime Accident Investigators International Forum.
[32] The new GDPR, for example.

Statistics

6.1 General information and explanatory notes

As always, and for first-time readers of a BSU annual report in particular, the statistics section requires a few words of explanation to begin with.

Article 1a SUG defines the term 'marine casualty' as being 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;
- substantial material damage to a ship;
- the grounding or constructive total loss of a ship or the involvement of a ship in a collision;
- substantial 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,

and 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 (incident, Article 1b SUG).

Depending on the consequences, German law states that the generic term 'marine casualty' must be divided further into:

VSMC:

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

SMC:

Marine casualty according to the above criteria, which cannot be classified as a VSMC but which additionally involves

- 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.

LSMC:

Any marine casualty according to the above definition not classified as a VSMC, SMC or incident.

Incident (as defined above). This also includes minor accidents which have not caused significant damage and therefore cannot be classified as a LSMC, but which did endanger a ship, her crew or the surrounding area (environment/traffic). An incident is not a marine casualty as defined by the IMO. Accordingly, incidents are shown separately in the statistics section.

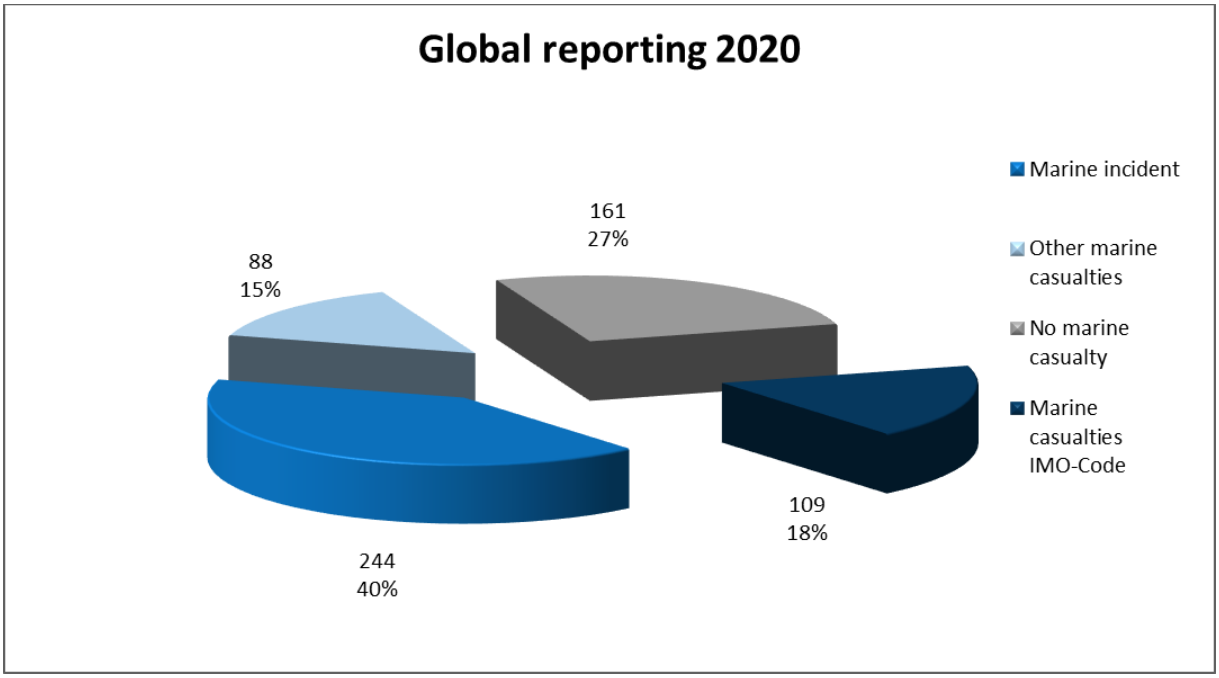
Although **other casualties (OCs)** are marine casualties, they do not fall within the scope of mandatory international or national regulations, specifically Article 1(3) SUG cases. They primarily concern accidents that only involve non-commercial recreational craft, small fishing boats, as well as naval or other state-owned vessels. OCs are thus essentially marine casualties that fall outside of the BSU's sphere of responsibility and can only be investigated in exceptional cases.

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

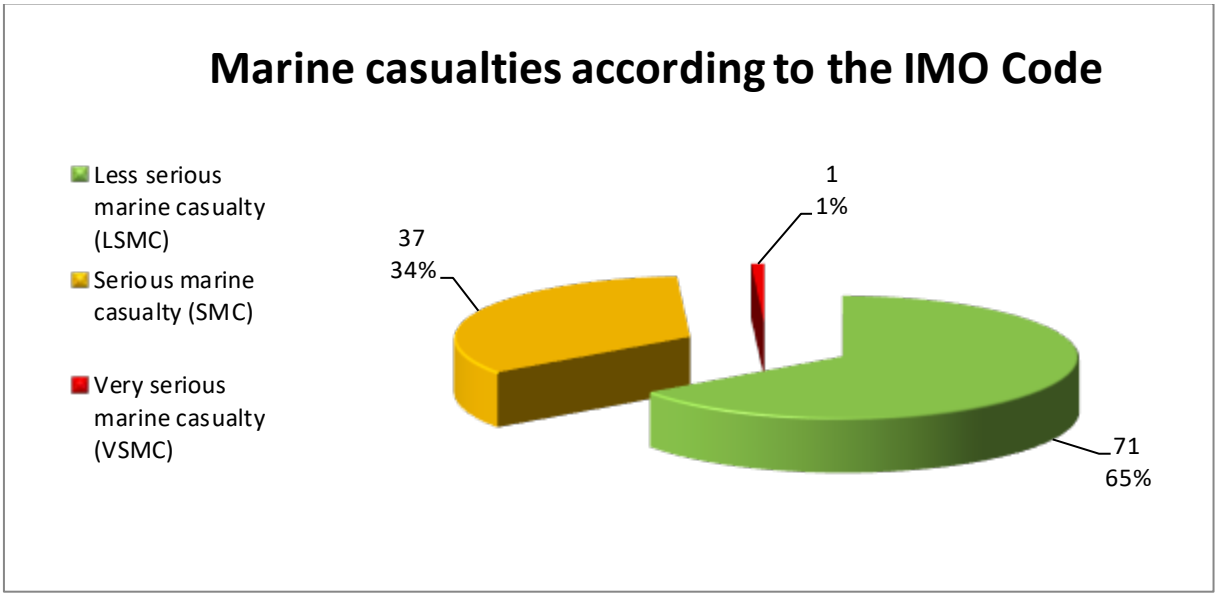
For the first time, the BSU will no longer publish statistics on **accidents involving privately used recreational craft** here. The responsibility of the BSU for such accidents is severely restricted, which unfortunately also applies to the reporting behaviour. This means that the figures available to the BSU cannot be verified. In addition, the statistics have often given the impression that the BSU continues to regard recreational craft accidents as one of the focal points of its activities. However, this is determined differently by the legislator and is now reflected here.

6.2 Notifications received

The total number of notifications is slightly higher than in the preceding year – 581 in 2019 compared to 602 in 2020 (or an increase of about 3%). However, there were hardly any changes in the various categories.

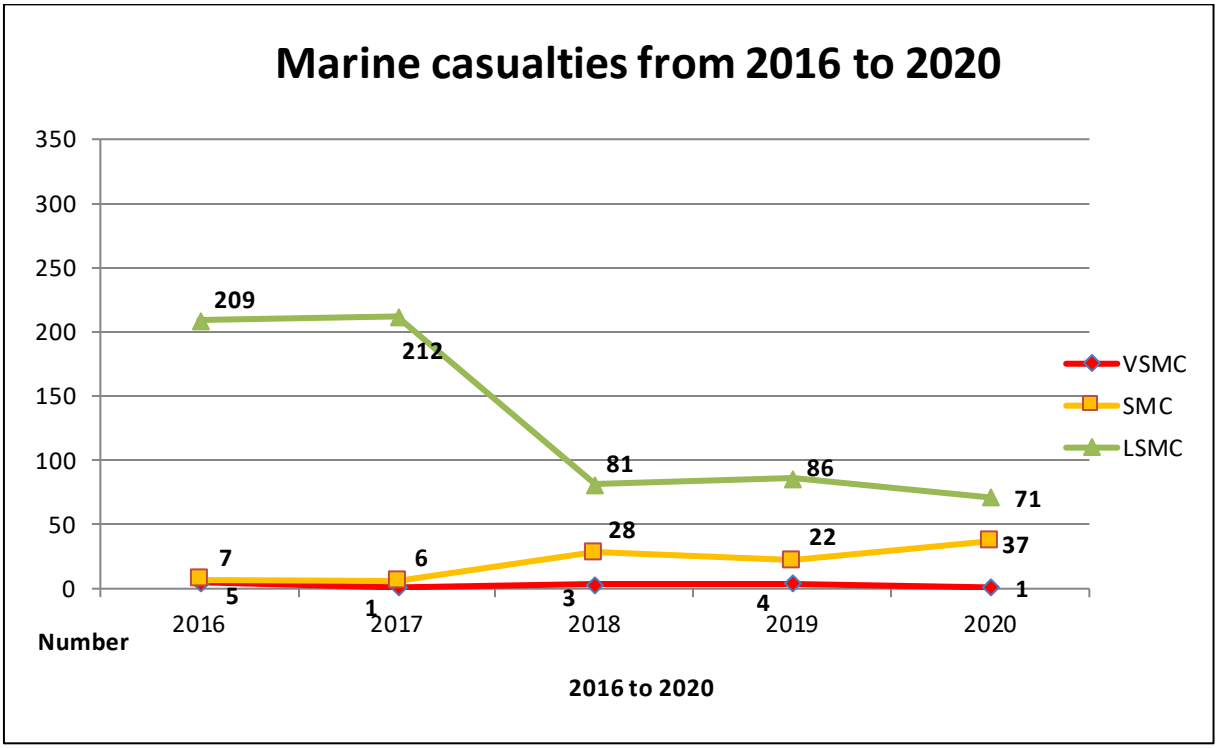


As in the preceding year, the number of notifications outside the BSU's statutory sphere of responsibility has increased slightly from 38% in 2019 to 42% in 2020. It was for precisely this reason that there was a slight increase in global reporting, as the figures for marine casualties according to the IMO Code remained almost the same (109 to 112, respectively).



If we differentiate within the marine casualty category, there were quite significant changes compared to the previous year. Fortunately, there was only one VSMC in 2020 (compared to four in the preceding year), while there was a marked increase in SMCs (37 compared to 22) and a reduction in the number of LSMCs (71 compared to 86). However, this is not because marine casualties have more severe consequences but rather due to the adjustment of the BSU assessment to make it consistent with the internationally agreed criteria of the EU's EMCIP database.

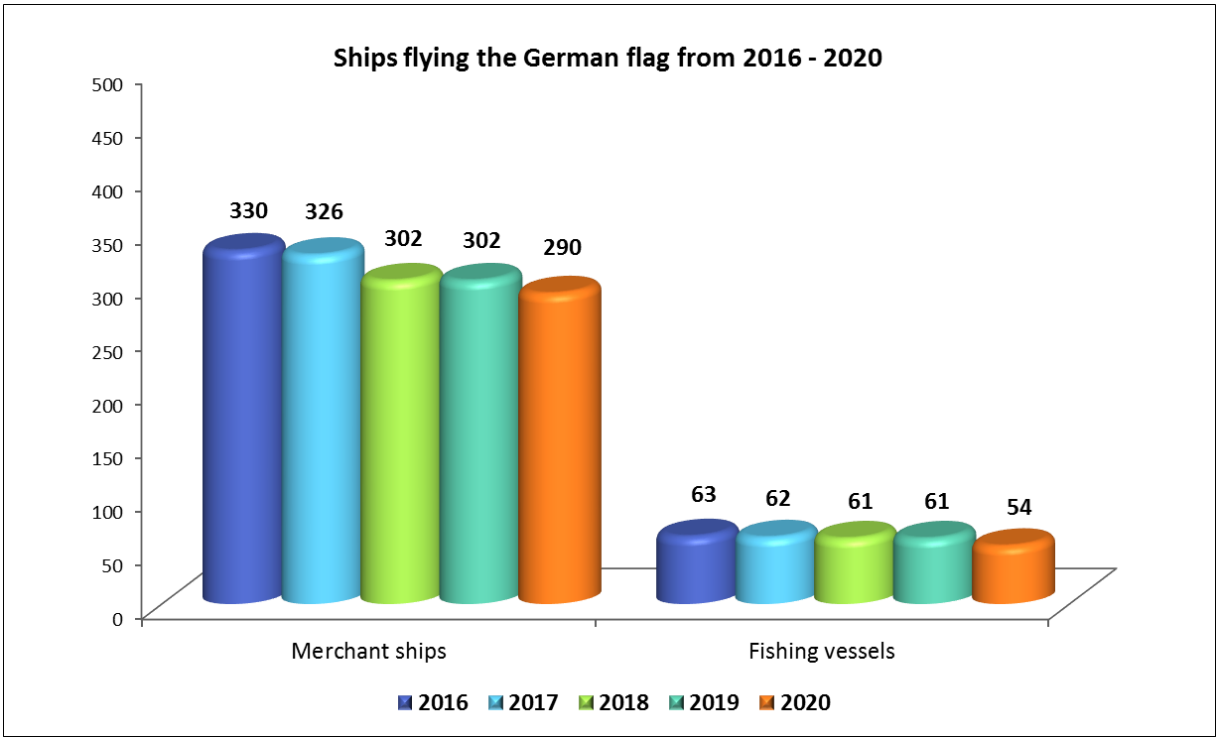
The following table summarises the trend over the past five years. The leap in figures in 2018 can be explained by the BSU's new approach to classification.



6.3 Ships flying the German flag[33]

The stagnancy in the German flag observed last year did not consolidate and most certainly did not take a positive turn. On the contrary, the contraction of previous years continued both for merchant vessels and now also for fishing vessels. The number of merchant vessels registered under the German flag is now only 290 and that of fishing vessels 54, which corresponds to a decline of more than 10%.

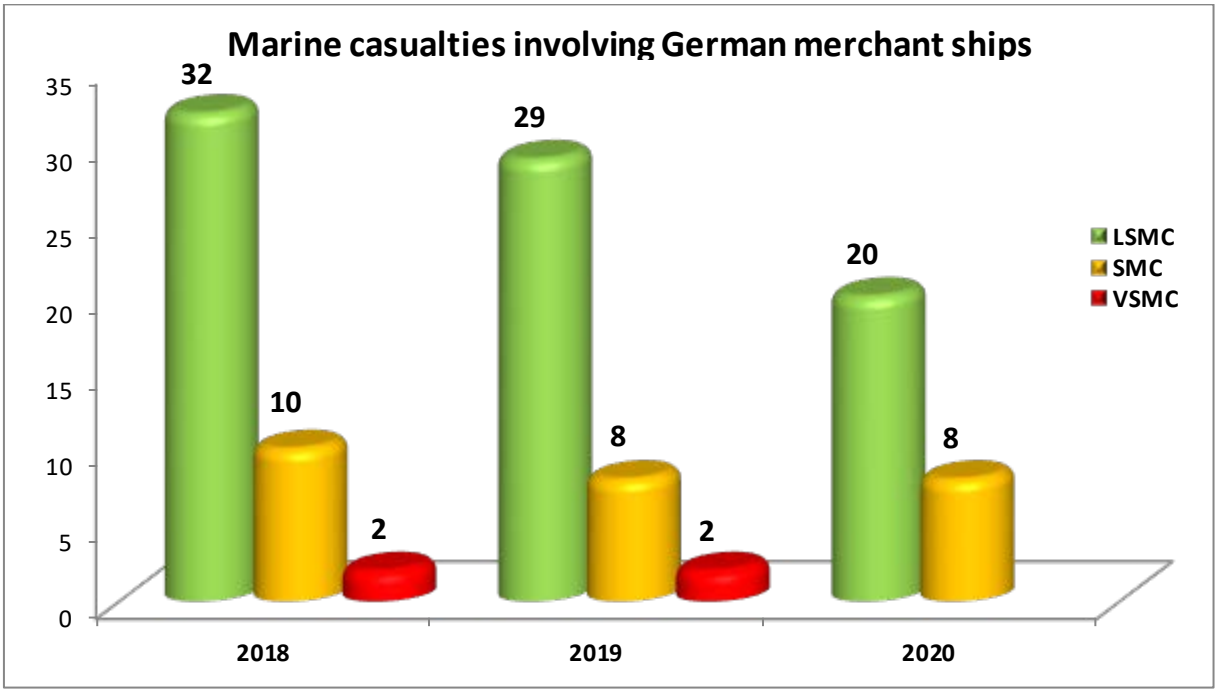
[33] Source: BSH.

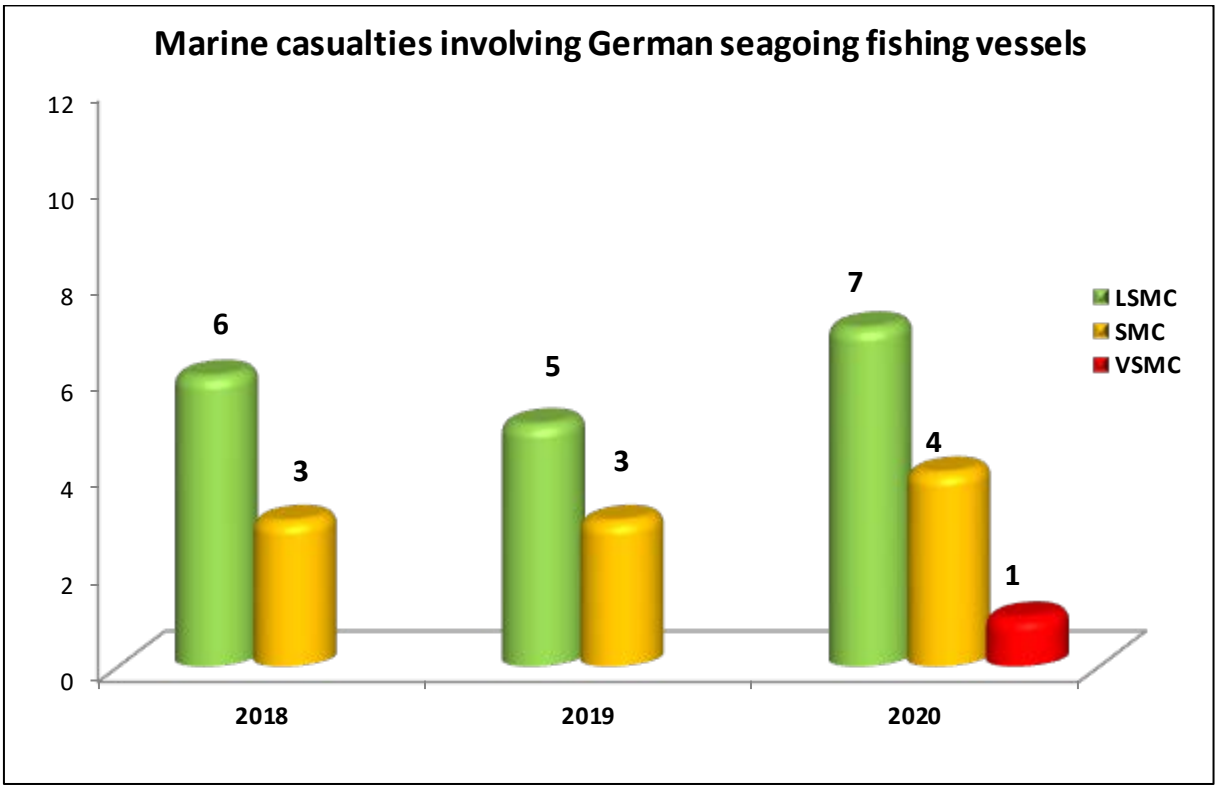


This year we are once more able to compare the figures from the two previous years directly. These reveal that overall there were once again fewer marine casualties on merchant ships flying the German flag in 2020 than in previous years. Fortunately, there were no VSMCs, either. This is only partly attributable to less maritime traffic because of the coronavirus or a contracting German flag. An increased safety culture has presumably also contributed to this.

The figures for seagoing fishing vessels must be viewed somewhat differently. Although their total number dropped from 61 to 54, the number of accidents increased from eight to 12, representing an increase of 50%. We must also sadly report that a fisherman lost his life for the first time since 2018. The investigations carried out by the BSU over the past five years[34] show that a great deal more needs to be done on seagoing fishing vessels to enhance safety.

[34] *Inter alia*, see BSU reports 20/20, 168/16, 46/16, and 44/16.





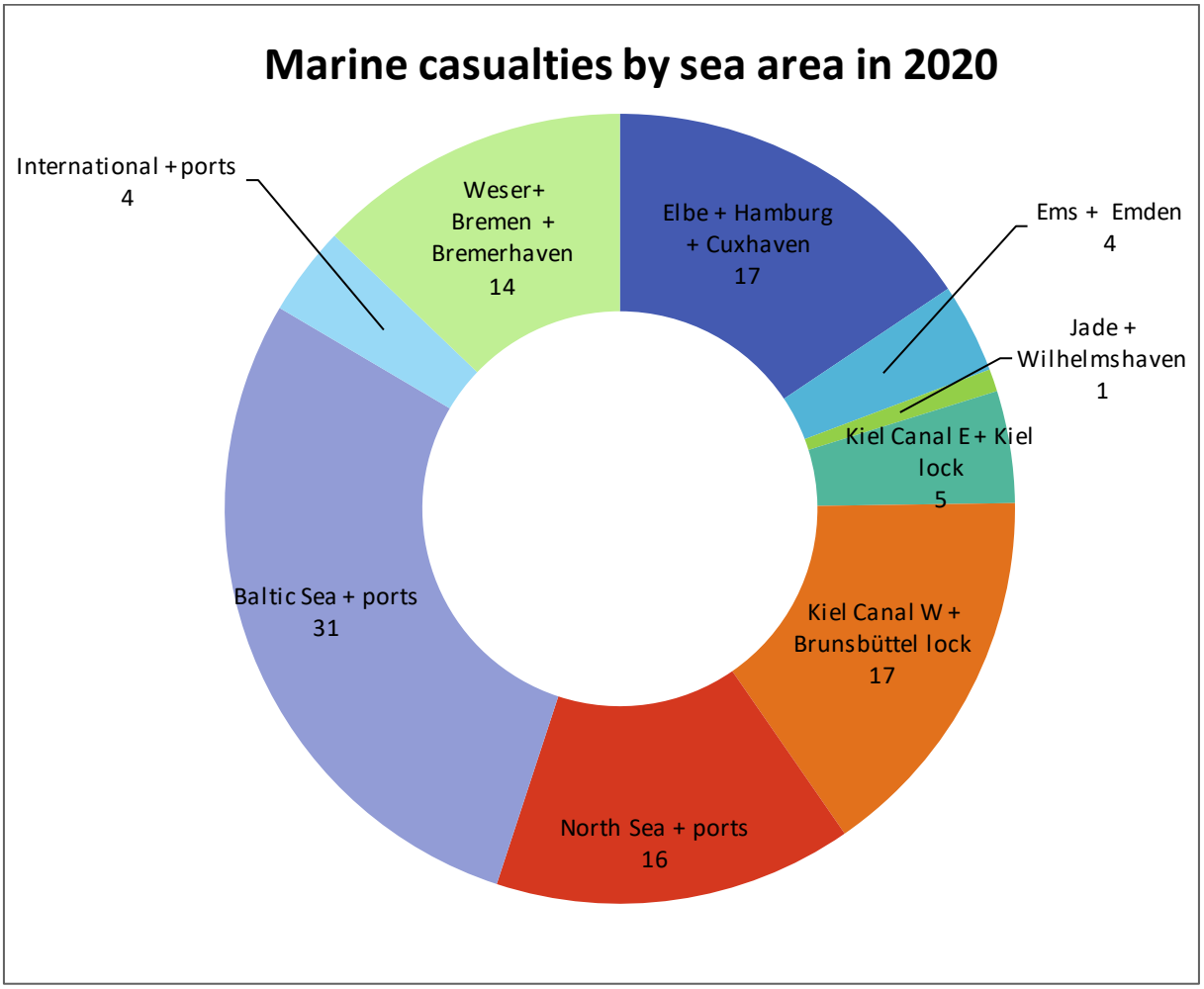
On the other hand, it is extremely encouraging to note that the number of fatalities and injuries in **merchant shipping** is at an all-time low compared to previous years. As

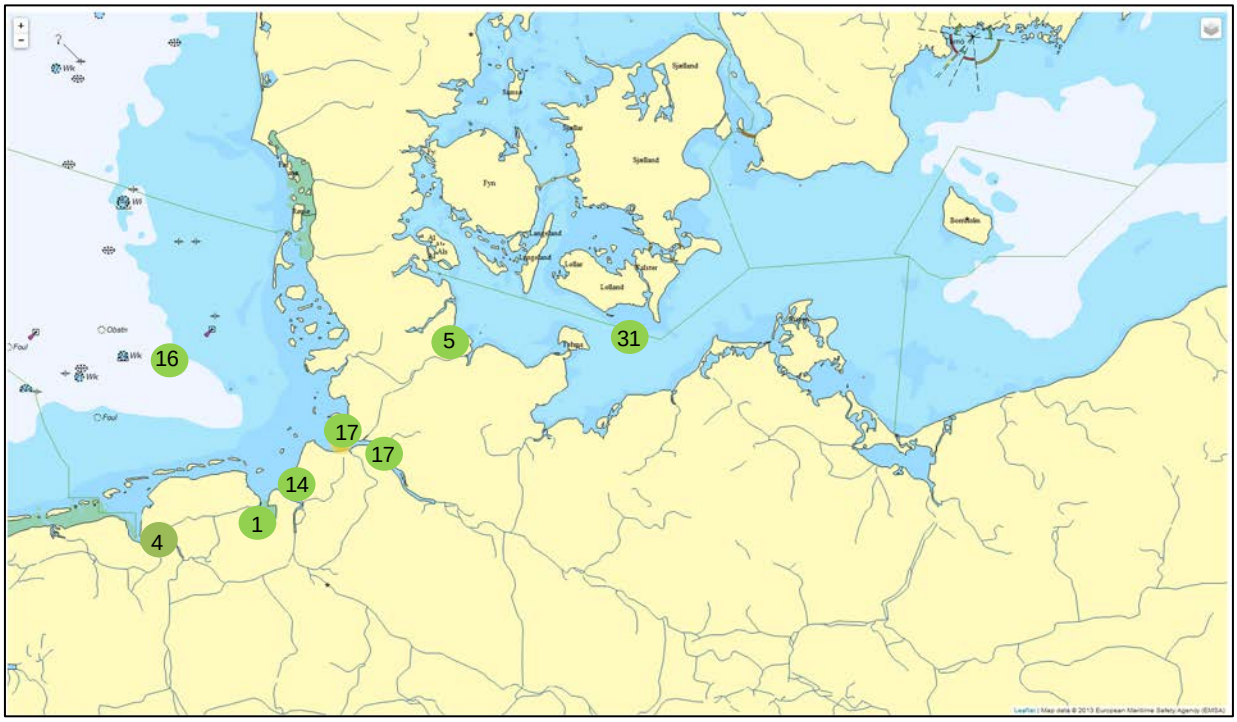
shown in the table below, this downward trend has now continued for years and may well be due to increased safety awareness on board ships and in shipping companies.

	2016	2017	2018	2019	2020
Fatalities	5	4	2	2	1
Injured	60	51	31	36	24

6.4 Distribution of marine casualties by sea area

The distribution of marine casualties in accordance with the IMO Code within German sea areas changed last year. The port of Hamburg and the River Elbe are no longer the accident hotspot but rather share the top position with Kiel Canal West (incl. locks). The numbers have also risen in the North Sea and its surrounding ports, as well as on the River Weser with Bremen and Bremerhaven. They were more or less stable in the Baltic Sea and fell sharply in the global ports, which is undoubtedly due to the contraction of Germany's merchant fleet.





There has been little change in the distribution of the scene of accidents over the past three years. However, their share is subject to strong fluctuations, as shown in the table below. A real trend cannot be discerned here. This may be revealed in the coming years. The share is shown as a percentage in the interest of comparability.

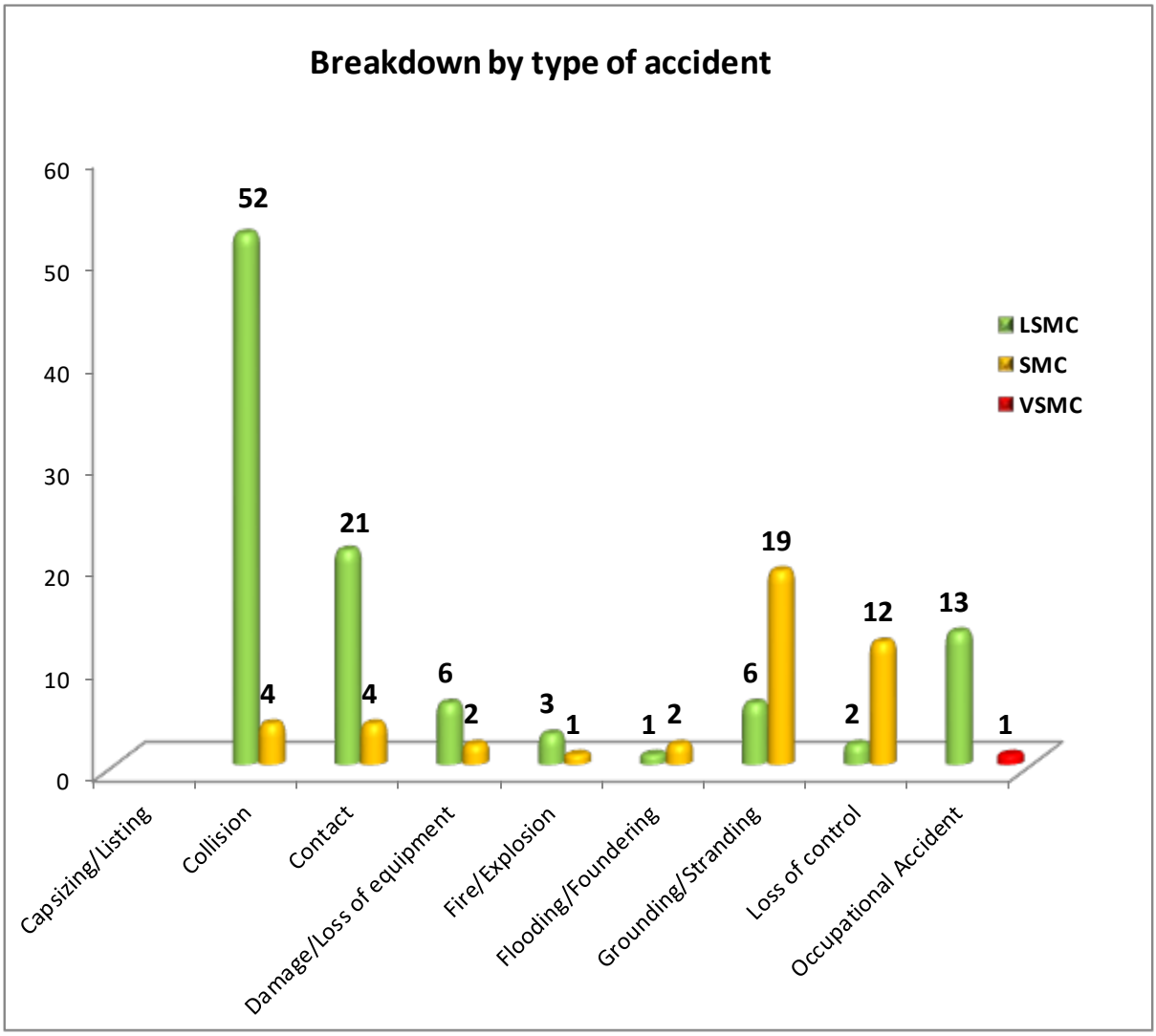
	Weser, HB BHV	Elbe CUX HH	Ems EMD	Jade WHV	Kiel Canal East	Kiel Canal West	North Sea ports	Baltic Sea ports	Int. German flag
2020	**13**	**16**	**4**	**1**	**5**	**16**	**15**	**28**	**4**
2019	**7**	**30**	**4**	**0**	**10**	**5**	**9**	**25**	**11**
2018	**13**	**23**	**2**	**4**	**5**	**7**	**15**	**24**	**9**
2017	**13**	**24**	**1**	**2**	**11**	**17**	**21**	**18**	**3**

6.5 Distribution by kind of accident and type of ship

The figures here differ greatly from the aforementioned total number of marine casualties. This is explained by the fact that several vessels may be involved in an accident or that two ‘accident factors’ are fulfilled, for example. Accordingly, a collision

(ship/ship) always involves at least two ships, engine damage can lead to grounding, etc. The following tables in this section show the number of ships that have suffered a corresponding accident.

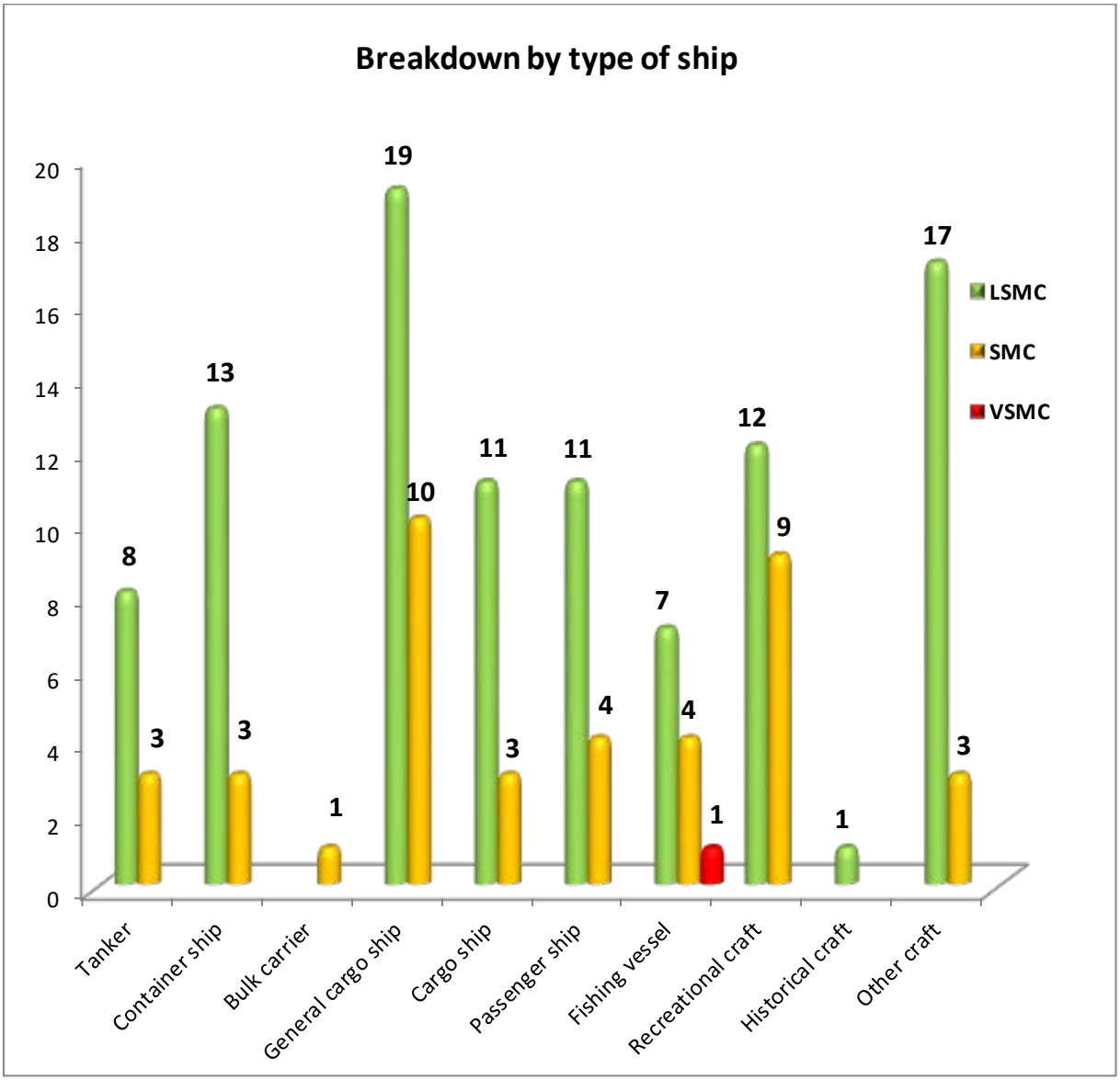
In the distribution by kind of accident, there have been no major differences at the top compared to the last few years. Collisions have always led the statistics.



In turn, personnel injuries and fires were falling. On the other hand, ground contact has increased. Since the BSU has renamed, expanded or divided the kinds of accident according to EU proposals, the following table does not allow any conclusions to be drawn about earlier years. However, this will be the case again in the coming years. The figures are expressed as a percentage (149 vessels corresponding to 100%).

Kind of accident	In %
Capsize and/or list	0
Collision	38
Contact with object or installation	17
Damage and/or loss of equipment	5
Fire and/or explosion	3
Water ingress	2
Grounding and/or contact with embankment	17
Engine and/or rudder damage	9
Accident involving people	9

It is also important to note that incidents are not listed here because they do not constitute shipping casualties internationally. The far more frequent engine or rudder failures without ensuing consequences are therefore not shown in these lists. See Section 6.7 for further information.



With regard to distribution by type of ship, general cargo carriers have been leading the way for years, as can be seen in the following table. As above, the share of vessel types is shown as a percentage in the interest of comparability. 'Other' includes seagoing ships covered by the SUG that have yet to be mentioned, such as tugs, pilot boats, offshore supply vessels or others.

	2015	2016	2017	2018	2019	2020
Tanker	12	4	8	6	13	9
Container	18	23	20	16	16	12
Bulk cargo	5	4	8	7	5	1

General cargo	28	27	29	22	25	22
Ro-ro cargo	5	3	8	4	5	11
Passenger	6	11	3	11	8	12
Fishing	6	6	4	9	8	9
Recreational craft (g)[35]	3	6	6	5	6	16
Traditional	2	3	3	0	1	1
Miscellaneous	15	14	11	20	14	15

Apart from a few outliers, the figures have been extremely stable over the years. The continuous decline among container vessels is encouraging. However, due to the increasing size, the consequences of an accident are often much more severe. It is interesting to note the surge among commercial recreational craft, which is something the BSU believes is partly attributable to the coronavirus pandemic. Since many types of holiday were not possible (package tours or hotel stays, for example), more recreational craft were chartered for holiday purposes, resulting in higher traffic volumes (possibly coupled with little experience) and thus more accidents.

6.6 Causes of a marine casualty

We now move on to accident causes. The BSU does not only classify every accident according to LSMC, SMC or VSMC, but also according to accident cause. The following matrix is used for this purpose:

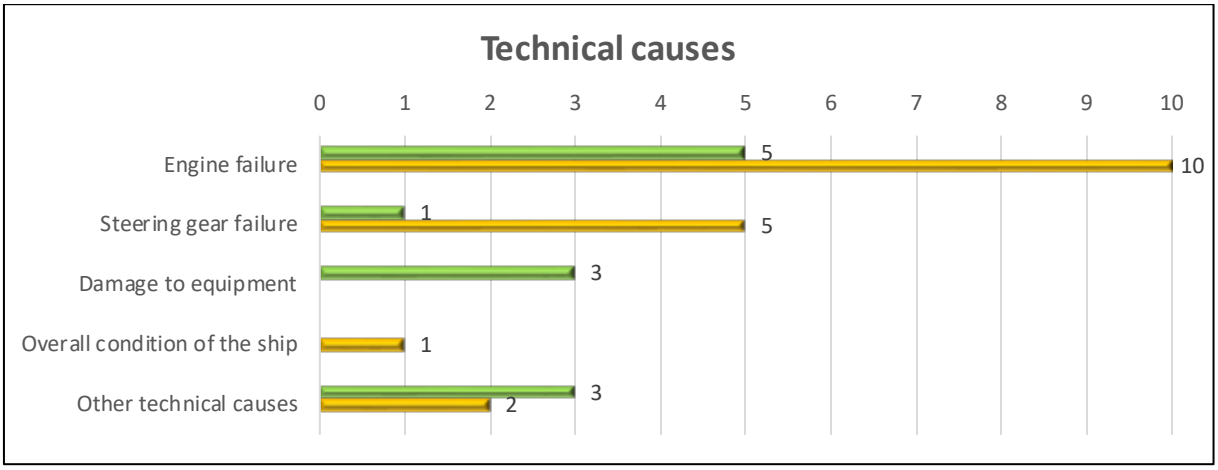
Human causes
Error in judgement
Improper communication
False coordination or lack of coordination with opponent
Poor navigation
Misjudgement of right of way

Technical causes
Engine failure
Steering gear failure
Damage to equipment
Defects to nautical equipment
Overall condition of the ship
Other technical causes

[35] Commercial use – charter boats are always included in this category, even if skippers and possibly other crew members usually do not engage in commercial activities and often do not meet any professional requirements for operating a vessel.

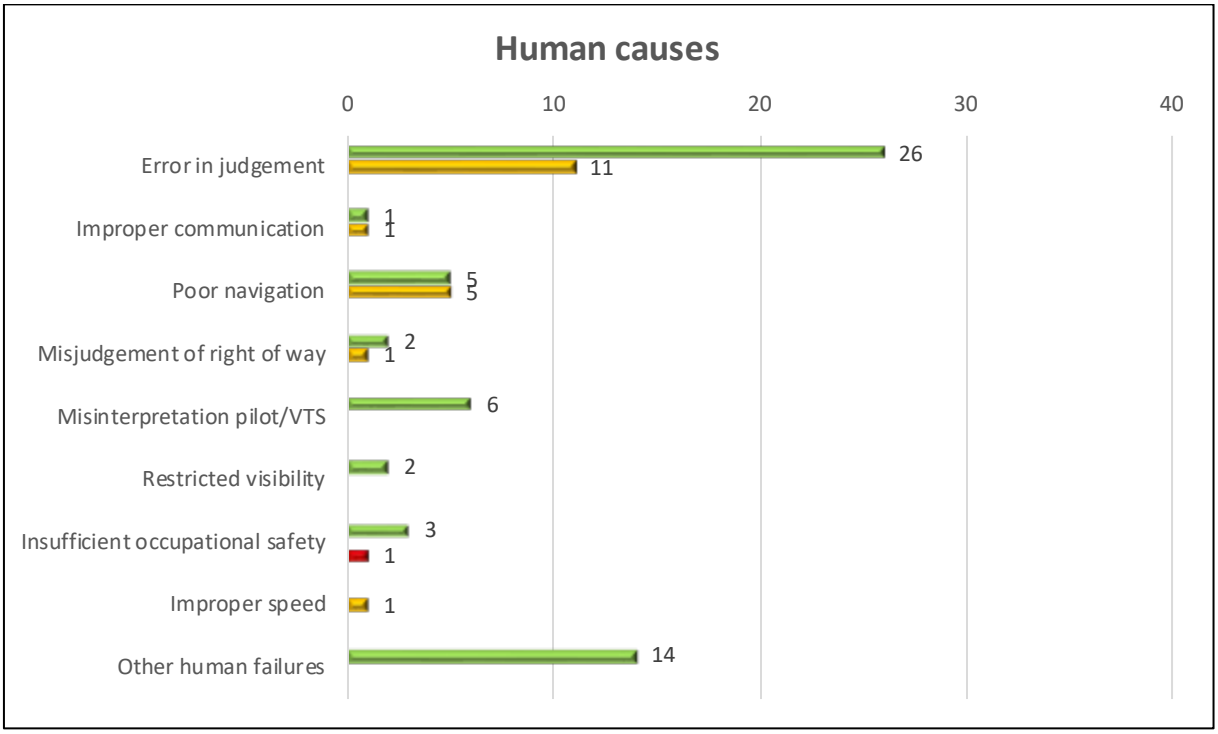
Misinterpretation pilot/VTS
Under the influence of alcohol
Heavy weather
Restricted visibility
Insufficient occupational safety
Improper speed
Other human failures
Fatigue

The accident causes may then be referred to as follows[36]:



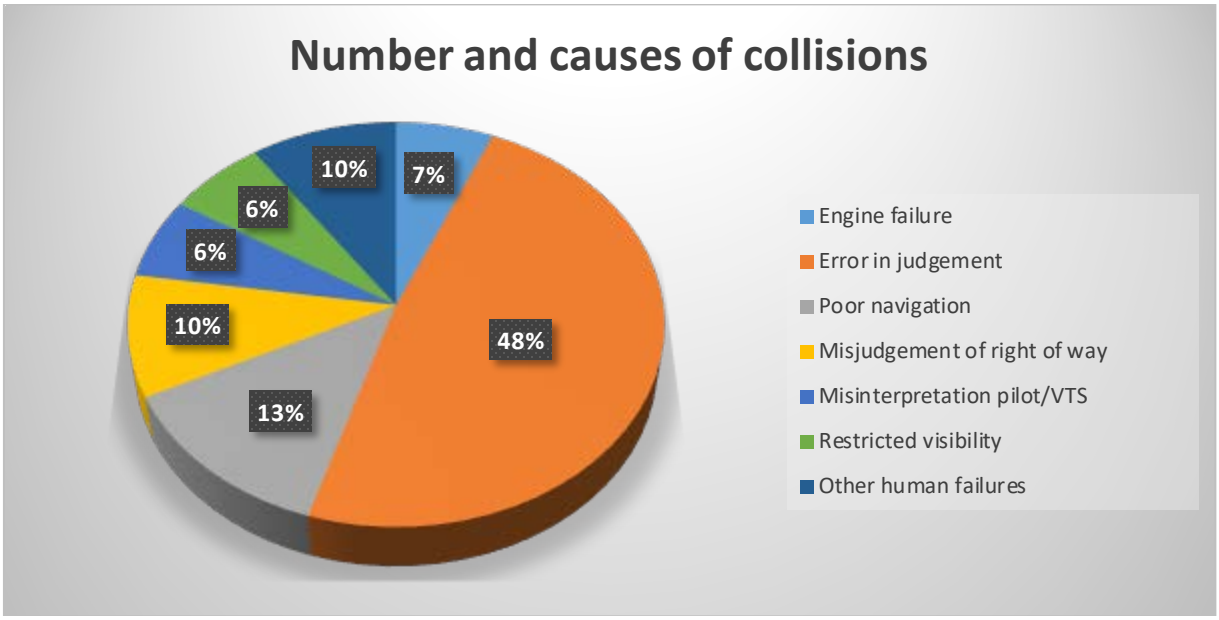
Engine failure – a perennial phenomenon – is the most common technical cause. Engine or also steering gear failure is often the cause of a SMC for purely legal reasons and although they usually go unnoticed and are without consequences, they are anything but harmless. One example here is an engine failure causes a ship to run aground, a tug pulls the ship back into the fairway and after repairs her voyage continues. Sounds harmless, and in most cases it is – but the ensuing potential risk is high, as demonstrated by the CSCL INDIAN OCEAN accident in 2016.

[36] No reference means number = 0; the colour scheme is based on the one previously used (green = LSMC, yellow = SMC and red = VSMC).

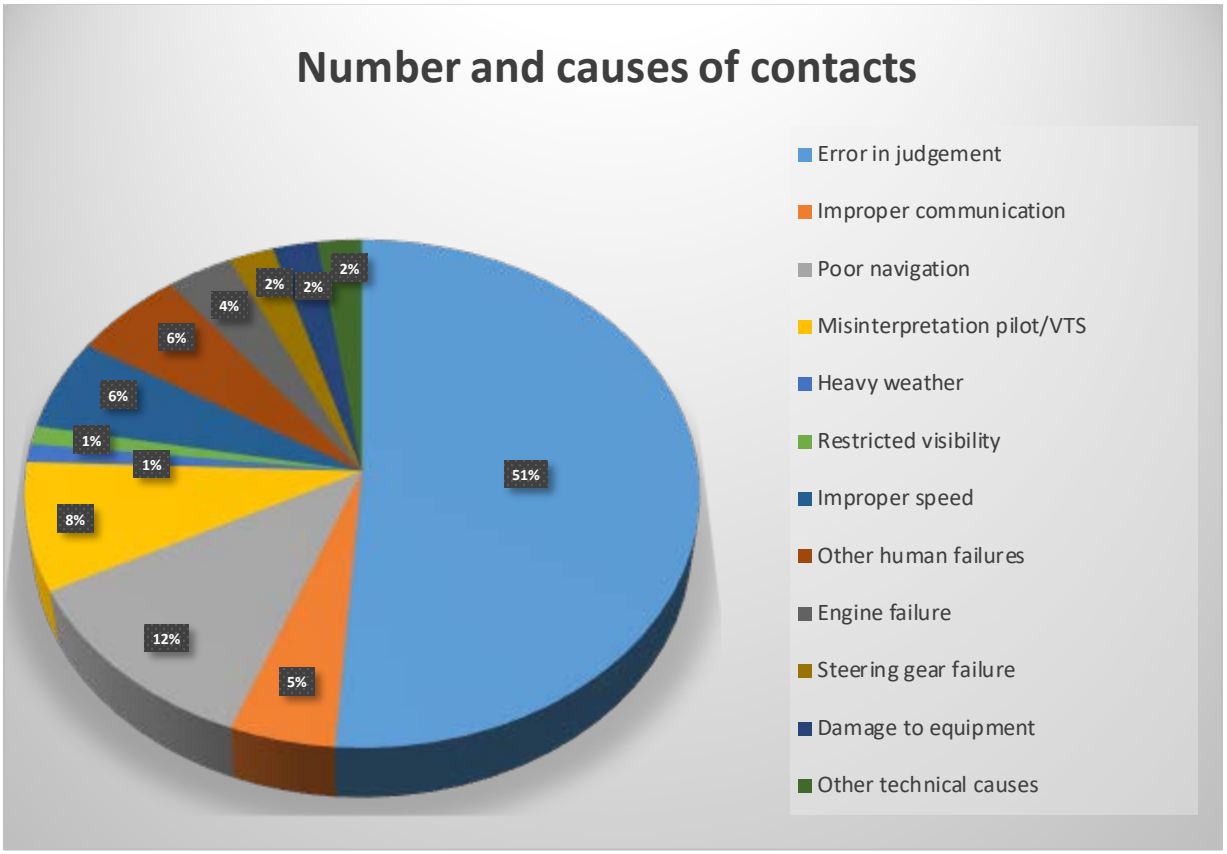


'Error in judgement' is the most common human cause. This can be navigational errors or underestimating winds or current, for example. The key point here is that in the case of accidents, i.e. those with serious consequences, it is the human causes that predominate. On the other hand, technical causes are most common in the case of incidents, as can be seen below. This is due to the fact that humans can often take countermeasures to prevent damage in the case of a technical error, which is usually no longer possible in the case of a human error, of course.

This becomes particularly evident in an analysis of the collisions. The following graph shows the cause of collisions in all categories, including incidents. It is striking that only two out of 31 collisions have technical causes. 29 in number and thus 93% are the result of human behaviour.



A very similar picture can be found in the closer examination of contacts, i.e. allisions with fixed or permanently installed bodies such as a harbour pier, lock gates, dolphins or fairway buoys. 77 and thus almost 90% of a total of 86 contacts are the result of human behaviour; only 10% of the causes are technical.



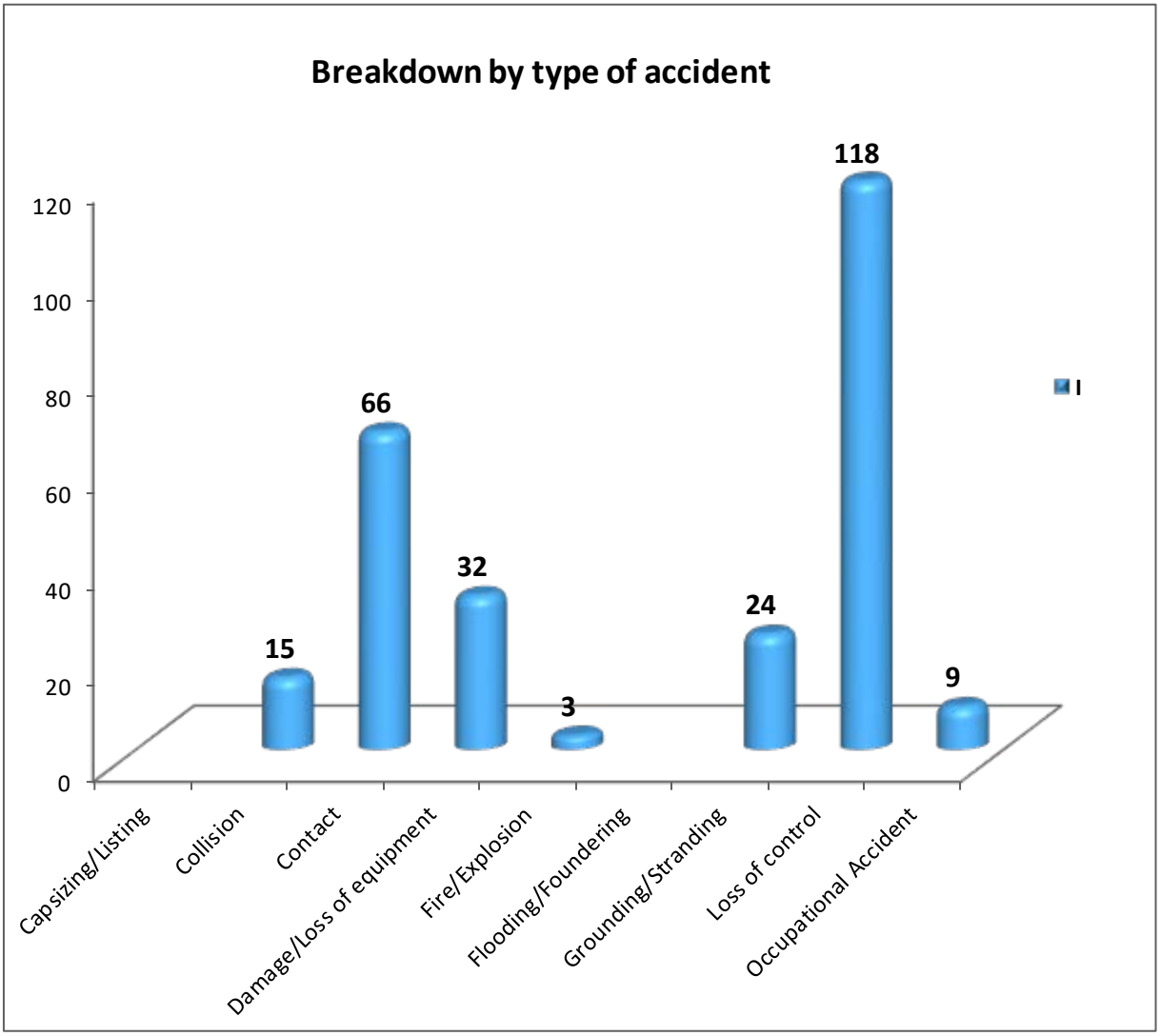
Finally, and to confirm, an analysis of the causes leading to injuries to people:

Injured			
	Number of accidents (total)	Accidents with one casualty	Accidents with two casualties
Total	**27**	**24**	**3**
of which due to technical accident causes	5	4	1
of which due to human accident causes	22	20	2

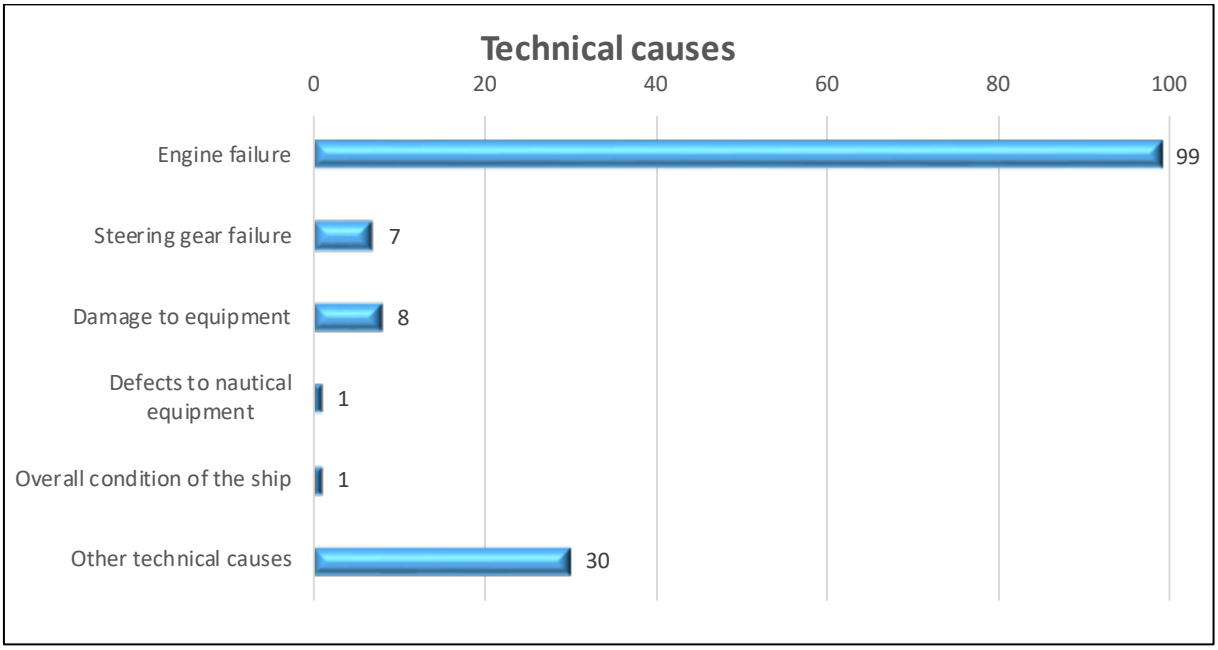
The evaluations clearly demonstrate that human factors are usually decisive for an accident situation here, too.

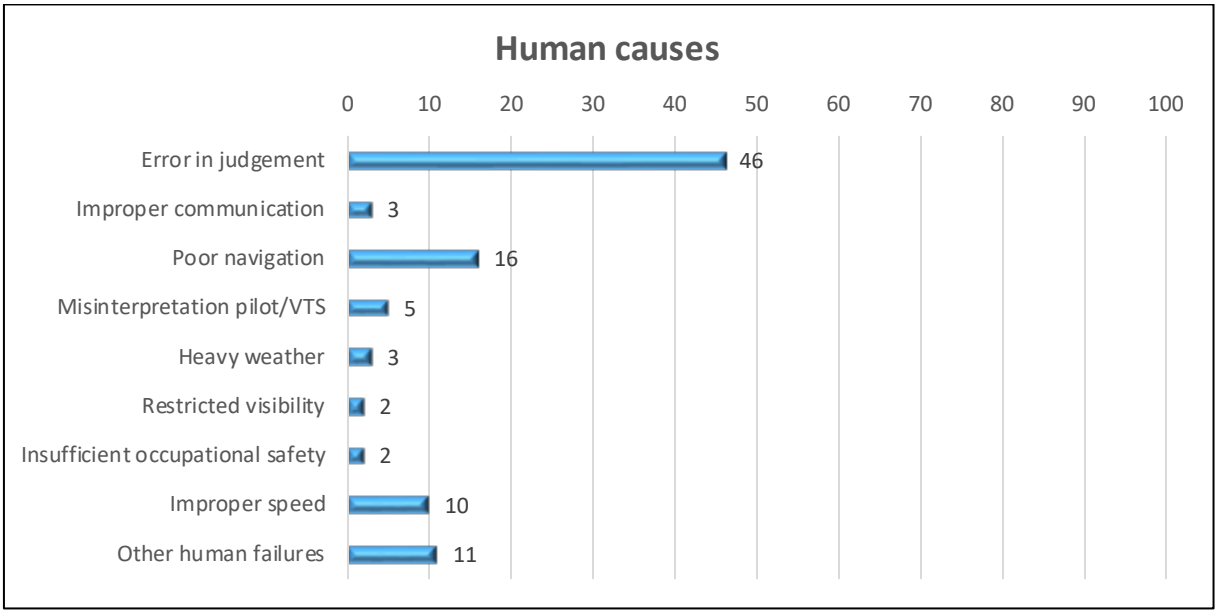
6.7 Incidents

Although it is inherent in incidents that their consequences are not serious, they too pose a threat to safety at sea. They are the cases that appear in the BSU's reporting list by far the most frequently. This remains the case in 2020. There were 244 incidents in the past year, which is far more than twice as many as all other marine casualties combined. All in all, their share is just short of 70%.



As with accidents, the BSU distinguishes between technical errors and human errors in the causes of an incident. They can be summarised as follows:

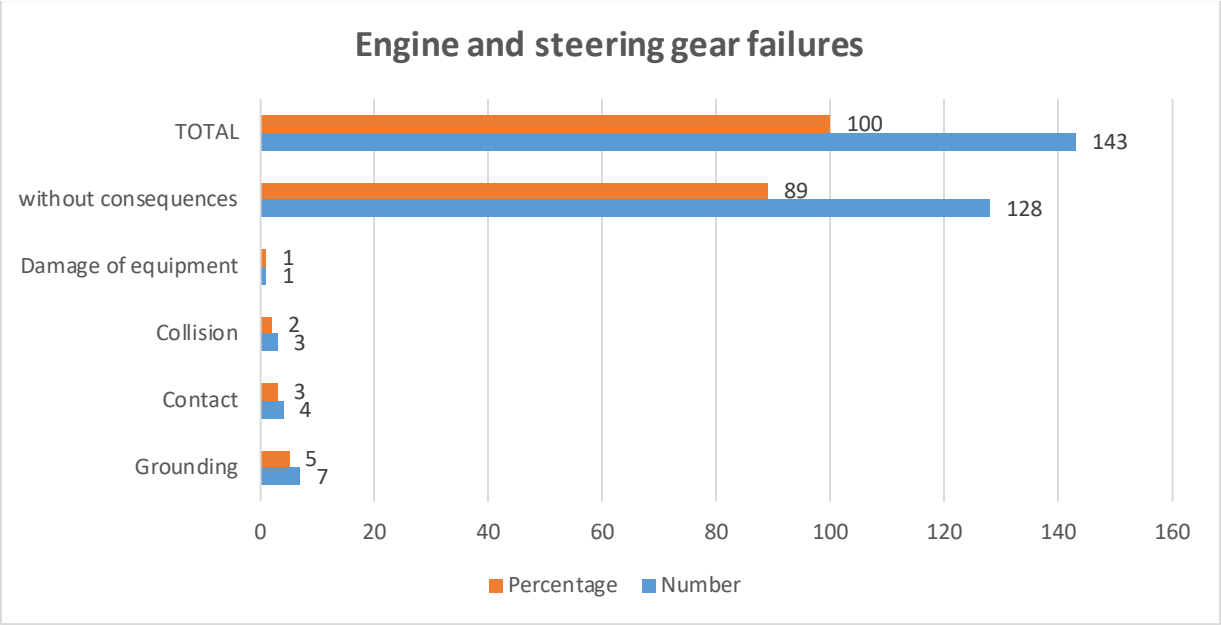




In contrast to accidents, technical causes are clearly dominant in the case of incidents. Engine failure and blackouts or misfires have led the way for years. It can usually be quickly repaired while the ship is anchored in a roadstead and the voyage then continues.

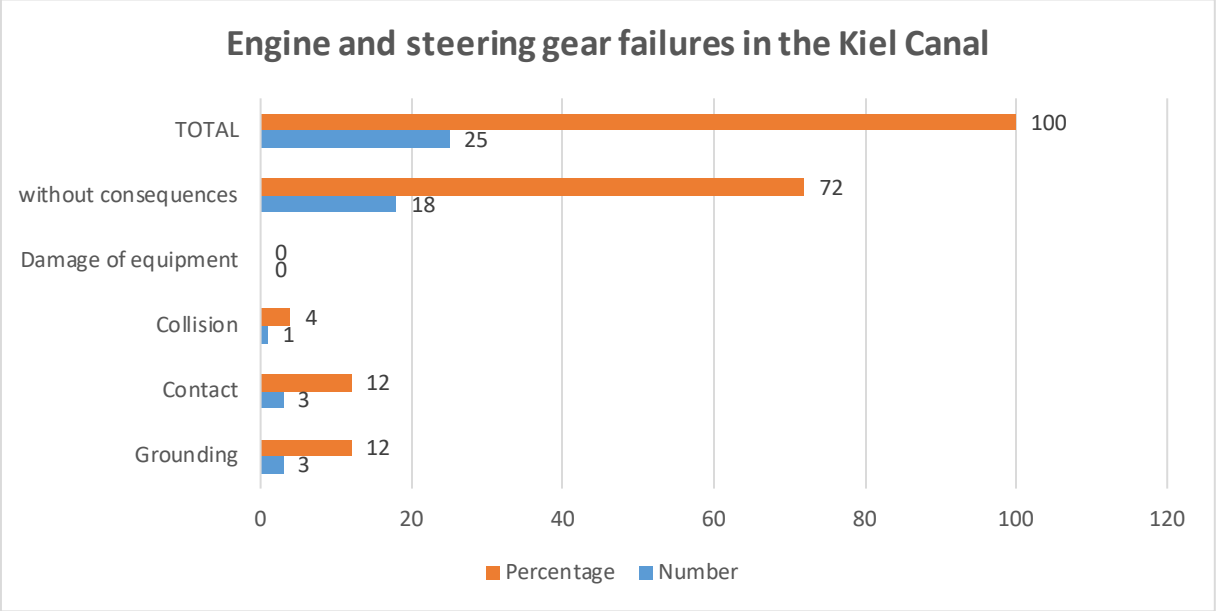
6.8 Consequences of an accident

The particular structure of EMCIP makes it possible to establish many more links between accidents and to better evaluate the consequences of an accident, or rather the consequences that follow an initial 'accident event'. For example, an engine failure leads to ground contact, which leads to damage below the waterline, which leads to pollution. Alternatively, a fire leads to serious injury to crew members, etc. It is precisely the engine and steering gear failures, i.e. the loss of control of the vessel, that are worth taking a closer look at here.



A total of 143 engine and steering gear failures occurred in all categories of accident in 2020. The above graph shows that most of them (89%) have no further consequences. The ship anchors in a roadstead, the damage is repaired and she continues her journey. However, in 11% of the cases, i.e. in more than one in ten, the accident has consequences. After all, every 15th case leads to a collision with another vessel or a contact and every 20th to ground contact – in turn, both events can give rise to further, far more serious consequences, but fortunately this did not happen in 2020.

If we now look even more closely and confine the data to the **Kiel Canal** accident zone, the following picture emerges:



Of interest from the perspective of the BSU is that while almost 90% of the failures have no consequences, as shown above, this figure is only 72% in the Kiel Canal. In 28% of the cases, the loss of control over the vessel in the Kiel Canal has consequences (groundings or contacts, in particular). Of course, this is due to the narrowness of the fairway and associated lack of possibilities for evasion or manoeuvring. The various contacts with a gate over the past three years confirm the increased risk posed by the canal, which is not true of the Elbe and Weser waterways, however.

6.9 Investigation reports published and lessons learned

It is appropriate to close the statistics section and thus also this annual report with the summaries of the published investigation reports (including interim), the lessons learned, and those reports of foreign investigation authorities where the BSU played a major role in the associated investigation and made explicit reference to their publication.

The BSU published 15 investigation reports in 2020. They include three interim reports *(in italics)* and three summary reports.

Number	Published on	Report number	Kind of accident
1	16/01/2020	32/19	SMC – MV BORE BANK runs aground after steering gear failure level with buoy 18 in the Rostock sea channel on 17 January 2019
2	23/01/2020	241/18	SMC – Grounding of the motor tanker PAZIFIK off Indonesia on 9 July 2018
3	30/01/2020	15/19	SMC – Fire in the area of the deck cargo on board the container ship YANTIAN EXPRESS in the Atlantic Ocean on 3 January 2019
4	25/03/2020	12/16	SMC – Collision between the Rendsburg transporter bridge and freighter EVERT PRAHM with subsequent grounding of the EVERT PRAHM on 8 January 2016
5	08/04/2020	421/18	LSMC – Occupational accident on board the MV SVENJA at the pier in the port of Rostock on 31 October 2018
6	*05/06/2020*	*211/19*	*VSMC – Collision between traditional vessel Nº 5 ELBE and container vessel ASTROSPRINTER on the River Elbe on 8 June 2019*
7	25/06/2020	2/19	VSMC – Containers on the MSC ZOE lost overboard on 1 and 2 January 2019
8	21/07/2020	405/18	SMC – Destruction of the main engine's turbocharger with subsequent fire in the engine room of the BALTIC BREEZE in the North Sea on 14 October 2018
9	30/07/2020	310/16	LSMC – Fire in the vicinity of the combined boiler with two injured crew members on board the tanker WEICHSELSTERN in the Neue Weser Nord Reede roadstead on 19 August 2016

10	*20/08/2020*	*338/19*	*VSMC – Fire in the engine room on board the multi-purpose carrier KELLY with one deceased and two injured crew members on the River Elbe/buoy 51 on 6 September 2019*
11	06/10/2020	129/20	LSMC – Allision with lock gate by motor vessel RIMINI in the Alte Nordschleuse lock at Brunsbüttel on 17 May 2020
12	09/12/2020	182/20	LSMC – Deflagration on the Danish sail training ship DANMARK off Fehmarn on 30 June 2020
13	11/12/2020	283/16	LSMC – Water ingress in the RoPax ferry BERLIN's forepeak after an allision with the fender system in the port of Gedser (DK) on 30 July 2016
14	17/12/2020	19/19	LSMC – Accident involving a person on the multi-purpose vessel MARFAAM at the Rüsterbergen pilot station on the Kiel Canal (NOK) on 13 January 2019
15	*18/12/2020*	*452/19*	*VSMC – Personnel accident with subsequent loss of life on board the SAJIR in the roadstead off Ningbo (China) on 19 December 2019*

The BSU played a major role in the following reports of foreign investigation authorities, which have since been published:

Number	**Investigation authority**	**Date**	**Description of accident**
1	DMAIB	04/03/2020	Danish investigation report on the collision between the WORLD BORA and RABA east of Rügen on 19 February 2019

2	SHK	08/09/2020	Swedish final report on engine damage and fire on the PETER PAN in the southern Baltic Sea on 9 July 2019
3	BEAmer	15/10/2020	French investigation report on the marine casualty involving the MOMO in the southern fairway of the Gironde estuary on 29 November 2018

The BSU also published one lesson learned:

Serial number	**Date**	**Kind of accident**	**Description of accident**
06	13/12/2020	SMC	Grounding after rudder failure in a port entrance