



16 February 2021

Dear BSSAC member,

Agenda Item 9 – Annual Report of incidents and accidents recorded from 1 Jan – 31 Dec 2020 [Doc H1, BSSAC #106]

1.0 Introduction

This report provides a brief summary of the number of incidents recorded over the calendar year 1 January – 31 December 2020.

1.1 - This review is based upon a UK total 190¹ boat incidents based on 177 events recorded by 21 October 2020. Six events resulted in fire affecting more than one boat. See Annex A for a more detailed breakdown.

1.2 - Fires and CO incidents are recorded as 80 fires; 49 on inland waterways and a further 31 fires on coastal waters.

1.3 - Concerning 16 of the 49 fire and CO inland incidents reported, the cause is unknown/not conclusive/TBC (33%). This high figure probably reflects the BSS Teams concentration on delivering projects and having a shortfall of staff, as well as a lack of information coming from the navigation authorities.

Of the 31 coastal water incidents, 17 are unreported causes.

1.4 - Concerning 14 of the 41 fire and CO incidents reported, the boat is known to have been used intensively, i.e. for residential or extended use which is a similar proportion to last year. Committee members should note that the use of 19 boats has not been reported or identified.

2.0 Updates and BSS activity concerning fatal 2019 incidents

2.1 important 2019 incident updates

2.1.1 – A surveyor's report (2020) into a fatal fire on an intensive use narrowboat in late 2019, raised the possibility that braided gas hose used to connect the hob may have deteriorated due to heat from oven. That the occupant was also known to leave the oven running unattended may have meant the temperature in the area concerned at the back and above the oven could have exceeded the manufacturers stated operating temperature routinely.

While not conclusive the evidence suggests that at the time of the fire the occupant was in/on the bed and the oven was running.

2.1.2 – **BSS Activity** – BSSTC is further considering implications for risk linked to the use of braided or un-braided hose. This has been placed on the risk register and some sample testing of hoses is envisaged.

2.1.3 – Two CO Fatalities: In December last year, two men were found dead on a steel motor cruiser moored in York. They had been on a cruise and failed to return or contact their families. A post-mortem in January pointed to the probability that the men died from carbon

¹ Note a) Total incidents (counting the further affected boats) – 155, b) Total incidents on inland waterways is 125. Generally, incidents from the coast are included unless specifically excluded. This is on the basis that the risk assessment and judgements should take account of relevant risk information if it can be associated with boats and systems in use on inland waterways.

monoxide poisoning but there was no confirmation for HM Coroner, and we are still awaiting news of a full inquest.

However, the Marine Accident Investigation Branch (MAIB) learned of the incident and commenced a full investigation. This has yet to be published but the MAIB has concluded the issues are so important that it has published an interim Safety Bulletin 2/2020: Diversion <https://www.gov.uk/government/organisations/marine-accident-investigation-branch>

The Branch has concluded that the men died from CO poisoning arising from the use of a fuel-oil (diesel) blown air heater with an improvised exhaust arrangement comprising of a silencer and components from another manufacturer.

A full report is likely to be published in Spring 2021.

The published MAIB flyer points to these lessons

- It is essential that diesel-fuelled cabin heaters are installed in accordance with the manufacturer's instructions and all components, used in a marine environment, should be approved for marine use.
- The appliance and associated system should also be inspected by a suitably qualified engineer after installation and appliances should be routinely serviced and all issues identified should be fixed competently.
- Continued promotion of BSS CO alarm requirements for boats with accommodation space is necessary by all partners and stakeholders.

2.1.4 – BSS Activity – the BSS Office has assisted the MAIB inspector with his investigation as requested by them.

The BSS promoted its CO alarm requirements by news release, supporting the messages has been published and shared with stakeholders.

Implications from this event in respect on improvised exhaust systems has been placed on the risk register and further outcomes of a MAIB investigation are expected.

Implications for checks related to engine exhaust condition possibly with section 2.15 of the BSS Core Checking procedures and the relevance of Check C2.24.1 of the Non-Private Boat Standards have been placed on the Risk Register for review.

CO alarm non-compliance in boats continues to be around 8-10% (based on examination data) which compares well with studies of CO alarm usage in homes in the UK. However, there is no room for complacency if boaters and their crews are to be kept from CO harm and the regular promotion in the use and care of CO alarms should continue.

2.2 Serious incidents in 2020

2.2.1– Major Injury MOB & Propeller Strike #1: - Following a request for help from MAIB, the BSS team recorded a very serious MOB incident on a wide-beam hire boat in February.

Two people who had hired a boat from the same company before had just started their break when one slipped fell off the stern when trying to recover a dog that jumped in the water.

The hirer was caught in the propeller and one of their leg was severely injured. Following treatment, we understand the victim has retained both legs.

The navigation authority had no record of this incident. The incident was reported to the MAIB by the hire boat operator.

2.2.2 – Major Injury Propeller Strike on a Day Hire Boat

In June, an unrecorded number of hirers were using a 5m day hire cruiser. The incident happened as member of a hire party already in the water, not clear if fallen in or jumped in, was attempting to re-board the boat at the stern and as his shorts tangled in the propeller his leg came into contact with the blades. He needed stitches for injuries.

Our current information does not indicate if alcohol was, or was not, a factor. The hire company has a very strict no alcohol policy.

This is not a subject of formal MAIB investigation.

2.2.3 – Major Injury MOB & Propeller Strike Hire Boat #2: In August, shortly after starting a holiday on a borrowed narrowboat, the skipper was pushed of the aft deck of the reversing boat by the tiller swinging when the rudder struck something

He was drawn onto the propeller blades and suffered very significant and deep injuries to the lower part of body.

He survived and friends launched a charitable funding appeal, attracting in national/regional newspaper coverage. This brought the incident to the attention of the BSS.

2.2.4 – Fatal MOB & Propeller Strike Hire Boat #3: In August, a Broads hire cruiser with forward controls is reported to have crashed into a quay heading in what may be an erratic or emergency manoeuvre. One crew member was on the boats steps at the stern that rise from the short aft deck to the sun deck on the roof of the cruiser. These are designated crew areas with BSS-compliant, hand holds. The hire boat achieved its BSS Certification in 2017.

The victim lost their hold and were thrown into the water. They died due to multiple injuries and drowning due to, or as a consequence of, entrapment beneath the boat.

This matter is subject of a full MAIB investigation and a report is expected in 2021.

It is likely that MAIB and any other investigations may consider:

- handover processes and support information
- designated crew areas and non-slip surfaces
- hand holds and other 'prevention from falling overboard' measures
- propeller protection

British Marine and Broads Authority reps on BSSAC have committed to keeping members up to date with any developments concerning the impact on the HBC and any MAIB recommendations.

2.2.5 – Fatal MOB & Propeller Strike on a Hire Boat #4: In September young hirers who had been drinking were pushing each other into the river. One was swept or drawn by the current into the rotating propeller blades as the boat reversed towards him.

Although one of the crew shouted to the helm to cut the engines, he was not heard.

The victim suffered leg injuries so significant that despite being rescued, they died in hospital.

This is not a subject of a formal MAIB Investigation.

2.2.5 BSS Activity – The BSS Office has a watching brief from BSSMC concerning MOB incidents – the recent trend of MOB incidents and the anticipated engagement with the MAIB full investigation concerning the Broads tragedy may influence BSSMC to review their brief.

The propeller strike incidents information has been placed in the Risk Register Watch List which would consider various mitigations including MOB prevention, hirer information, propeller protection, etc.

Other Fatal and serious incidents

2.2.6 MOB: In January a boat owner entered the river from their intense-use boat and their body was found several days later after an intensive search. It was not possible to determine how and why this occurred.

2.2.7 MOB: In February a boater entered the water of a canal from their boat and their body was discovered at breakfast time. It was not believed to be suspicious. There is no further information available.

2.2.8 Explosion: January, a narrowboat moored in St Pancras Basin, London suffered a gas explosion when the cylinder was being changed. A seized valve was freed suddenly, gas filled the bow, & then entered the boat interior. The gas was ignited by the lit solid fuel stove. The occupant was taken to hospital by ambulance.

2.2.9 Possible CO poisonings: January, around 4am firefighters were called to reports of a possible carbon monoxide leak on a boat. Fire crews and paramedics rescued two casualties from the boat. They were both subsequently taken to hospital. Firefighters also used a carbon monoxide reader to measure the levels of carbon monoxide on the boat.

2.2.10 Fire: An owner and dog escaped from a burning narrowboat at around 10am. The victim was given oxygen by firefighters before being taken to hospital by a friend. The owner may have been asleep when the fire started. There was no smoke alarm fitted.

2.2.11 Fire: February the owner was cooking toast on the hob with the engine running. A spray paint can vibrated off the counter and split open when it hit the floor. The owner threw the can into the sink to contain the paint at which paint fumes were ignited by the hob flames. The owner's hands and arms were burnt. The boat's galley area was badly damaged!

2.2.12 Explosion: In August, two people were taken for specialist care at the Regional Burns Centre after an explosion on board a boat in Stourport outside Sirius Marine. The cause was recorded by the fire service as a camping stove that allowed a build-up of flammable gases which then ignited.

2.2.13 Explosion: In August, a small cruiser suffered an explosion and fire as the owner decanted petrol from a spare fuel can to the portable outboard tank aboard the craft and with doors open. The marine surveyor's report for the insurance company identified a connected 3-way lpg/dc/ac fridge. The surveyor believes the fridge pilot light ignited stray petrol vapours and this caused a rapid ignition. The owner received some light burns. The BSS is investigating the fact that a gas fridge was installed and in use on the petrol-engined boat.

2.2.14 Explosion: In September, a liveaboard yacht in a coastal marina was destroyed by fire when candles ignited a sudden gas leak. The owner was treated in hospital for smoke inhalation.

2.2.15 Explosion and large fire: a yacht owner sustained burns and was taken to hospital for checks following a large fire on a 12m boat shortly after 9pm at a coastal marina. The cause is under investigation but believed to be accidental. The marina contacted the BSS to ask for copies of our fire and CO booklets to distribute to berth holders.

2.2.16 Explosion: An explosion has destroyed an 8m cruiser on an urban mooring on a canal. According to a police report, one passing towpath user injured needed hospital treatment. The owner of a house next to the canal said that their house shook when the explosion occurred. The media has reported the cause as being a gas canister leak.

2.2.17 Two narrowboat fires in December: both fires were linked to the use of solid fuel stoves. On one boat, the post fire repair works revealed that an unprotected gas line was running behind the stove. No smoke or CO alarm was found.

2.3.1 – BSS Activity – BSS Office will strive to fill in missing information to support committee work and our development of advice.

2.3.2 – BSS Activity – BSSTC review of smoke alarm requirements may take note of the known incident data.

2.3.3 – BSS Activity – The BSS technical team are watching carefully the progress of an HSE investigation into a house explosion in South Wales in July that left a mother and her two sons seriously hurt. The cause may have transferrable implications as it is thought that older LPG equipment is implicated and in particular that the propane cylinder regulator failed to operate correctly and cylinder pressure, approx. 7 bar was delivered to the appliance. New fields are being added to the Examination Report to record any regulator related risks.

2.3.4 – BSS Activity: - During the year, the BSS has been dealing with various investigations of incidents by external bodies. We understand that individual examiners may also have been approached by various bodies and agencies to provide information about their examinations when incident have occurred.

We have reminded examiners about the importance of protecting themselves by following all the end-to-end published BSS Examination processes, including making good notes, retaining completed examination checklists and keeping all documentation for six years.

Compiled by the Boat Safety Scheme Office – 16 February 2021

Annex A – Total - 1 January to 21 October 2020

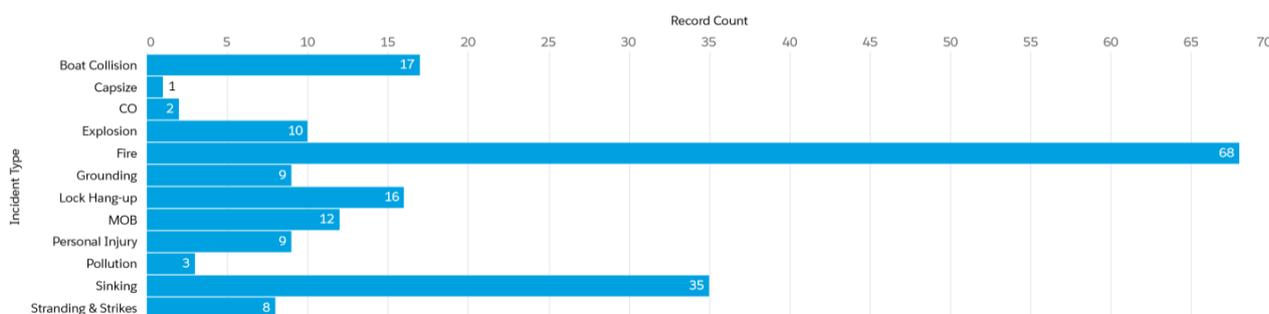
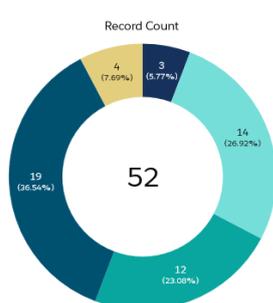
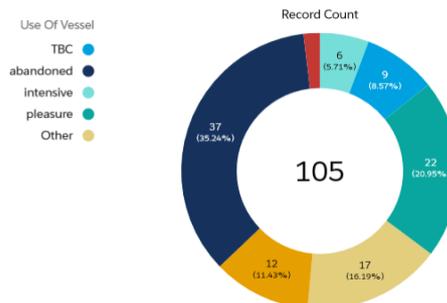


Table A1 Basic statistics from the records (inland & coastal)	All incidents
Number of incidents recorded	190
Fire/explosion (including 'immediate risk of') *	78
CO (including near incidents)	2
Pollution	3
Man Overboard	12
Personal Injury	9
Capsize, collision, grounding, stranding, sinking including lock hang-ups*	86

*vessels included in multi-vessel incidents



Fire, CO & Pollution



MOB & Navigation

Table A2 Boat classification - Inland waterways only [Note: Navigation = all other inc Capsize, Sinking, Grounding etc]	Fire, CO & Pollution (52)	'MOB & Navigation' (105)
Pleasure and leisure	12	17
Not recorded/not known	19	39
Intensive [residential and extended use) including rented	14	22
Hire and passenger boat	2	11
Workboats / other commercial	1	12
Brokerage / renovation / under repair	1	-
Abandoned	3	6

Table A3 Serious incidents [Note: Major injury = person treated at hospital]	<u>Fatalities</u>	<u>Major injuries</u>
<u>Totals of boaters harmed</u>	5	17
Explosion/fire, petrol, gas, fume ignition	-	9
Carbon Monoxide	-	2
MOB / Capsize/ collision / sinking	4	1
Other personal injuries	1	5

Table A4 Trends in systems & causes, Inland waterways only [Note - All fire & CO events only]	2020	2019	2018	2017	2016	2015	2014
Totals	(49)	50	54	69	65	63	69
Deliberate Fire setting	6	7	5	11	5	11	12
Conflagration	6	9	3	4	5	11	3
Totals of accidental and original incidents	(37)	33	46	54	55	41	54
Bullseyes	-	-	-	1	0	0	0
Electrical [system / appliances]	5	3	6	7	11	7	8
Engine / engine room / exhaust	-	4	7	2	7	2	5
Flammable vapours (not yet identified)	2	1	2	7	5	4	3
Other domestic, galley, smoking, candles, etc.	1	1	0	2	4	1	0
Gas escape / installed gas appliance	2	1	2	3	3	2	0
Not known [inconclusive / tbc to BSS] ***	16	12	18	21	10	15	27
Oil fired stoves and heaters [installed]	-	-	3	3	-	1	0
Other [inc machinery, welding, DIY, etc]	1	-	0	0	-	-	2
Petrol related – leaks, refuelling, etc.	-	2	1	2	2	2	2
Portable engines / outboards / generators	1	3	-	1	-	-	2
Portable items [lpg, oil, BBQ, electric, etc]	3	3	-	0	1	-	0
Solid fuel stoves	6	3	-	6	12	7	5

Annex B

B1.0 The Incident and Accident Data Collection

B1.1 - The incident data used to populate this report is recorded by the BSS Office. The data includes incidents relating mostly to boats used on inland waterways. However, incidents of fire, explosion and CO on coastal boats are recorded where the craft may be of the type that could be used inland or where the systems aboard may be common to those on inland boats.

B1.2 - The data cannot be considered as a complete record of incidents on any waters. Many minor incidents are not reported to any agency, let alone published. Where agencies, typically fire, ambulance or other health organisations have records of a boat related incidents, there are still likely to be only a minority of such records made public.

B1.3 – In the BSS records, where fire has spread from one boat to another each boat affected is counted as one record and cause is recorded as conflagration. This is a reference to one of the purposes of the Scheme to help prevent the spread of fire from happening. It is an indicator of the potential for such events.

B1.4 – Where two or more boats collide in one event, it is counted as one incident.

B1.5 – The tidal R. Thames from Grays to Richmond i.e. an area under Port of London Authority (PLA) control, commonly used by inland waterways craft, is for the purposes of BSS incident reports included in Non-BSS Inland waterways. Likewise, incidents happening in the Cardiff Harbour Authority waters.

B2.0 - The Role of the BSS Concerning Accident and Incident Data Collection

B2.1 - The BSS Office collects reports of UK recreational boat-related accidents and incidents from any source.

B2.2 - We are interested to establish causes and circumstances to help establish trends and inform BSS Office activity aimed at helping prevent re-occurrences. Our job is to react to trends, or identify new risks or predict potential risks, in an appropriate way. This involves working with stakeholder groups through the BSS Advisory and Technical Committees. The data collected feeds into current and future BSS activities associated with the key risk areas through the application of the BSS Risk Management Process [BSSQA020]. The data is also used to support navigation authority input concerning their other activities.

B2.3 - We are not responsible for, and do not conduct investigations into accidents/incidents, but we may view fire reports or coroner's verdicts in order to inform our assessment. We may help the investigation of incidents by facilitating the return for testing of suspected faulty equipment to the manufacturer/ supplier. We also assist Navigation Authorities in their responsibilities in investigating incidents.

B2.4 - We may also test the experience of the BSS examiners by way of targeted surveys. Through partnerships, we may seek to influence relevant British and European standards-making activities.

B2.5 - In the event any accident or incident casts doubts about the issue of a BSS Certificate, the BSS Office will seek to view the vessel in order to ascertain the reasons why a certificate was issued and take forward actions based on the findings.

B2.6 - This report has been generated with information from navigation authority reports directly made to the BSS or indirectly found by the Scheme. The BSS offices also sources from social media, blue light service web sites, news sites as well the use of search engines and RSS alerts. Information from the Maritime and Coastguard Agency, RNLI and the Marine Accident Investigation Branch and dealings with Coroners' Officers is also included. Other people from the marine trade have been helpful in reporting incidents or supplying greater detail. We also review key stakeholder statistics.