



16 February 2010

Dear BSSAC member,

**Agenda Item 12 – Annual report of incidents and accidents recorded for the year 2009, inferences drawn and proposed 2010 BSS risk-activity [Doc G1 BSSAC #71]**

This is a report of incidents and accidents for the calendar year Jan 1 - Dec 31 2009 as recorded by the BSS as of 11 Feb 2009.

**1.0 Introduction**

1.1 - The inferences drawn from reviewing incident reports are key to the effective planning of BSS activity to reduce risk. Incident reports are used to help identify patterns of risk and any new risks not previously envisaged. It relies on the receiving-of or gathering-in of details of boating incidents including fire, carbon monoxide (CO) poisoning, capsized and man overboard (MOB).

1.2 – The role of the BSSAC is key in determining the precise activity of the BSS Office by helping prioritise the activity and helping determine any appropriate risk-management measures based upon input at BSSAC meetings. Your attention is drawn in particular to section 5 which proposes BSS activities in 2010. Members are requested to come to the forthcoming BSSAC meeting willing to comment on the planned activities and help identify priorities.

**2.0 The Incident and Accident Data**

2.1 - 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 by the BSS office 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.

2.2 - 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. Government records nationally have previously suggested that fire services attend around 300-350 boat fires each year, although the definition of boats may not be consistent with that of other bodies.

2.3 – This review is based on 122 reports of incidents for last year obtained thus far. The BSS has gathered details of 89 incidents on inland waterways and 33 on inshore coastal waters including marinas, harbours, creeks and inlets. Based on previous years we expect to learn some details of up to another 10% for inland waters over the next year or two and if again we are able to obtain data from other organisations such as RNLI and MAIB, we could see the coastal figures double.

2.4 - 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 reported in the context of AINA's purposes of the Scheme, namely to help prevent fire spreading and affecting parties outside of the original boat.

**3.0 Summary**

3.1 – As referred to above, the total number of incidents reported for last year is 122. This is about the same as last year and slightly less than the 134 found by March 08 for 2007, but again up from 89 reports for 2006. [See Annex A for detail].

3.2 - Of all fire, explosion and arson events, 61 are recorded on Association of Inland Navigation Authority (AINA) member waterways; this is similar to last year's 60.

3.3 - The only fire fatality was on a liveaboard boat just before Boat Fire Safety Week 09. This incident was related to the use of candles and no smoke alarm was thought to be in use. There was a reduction for the second year running in people receiving hospital treatment.

3.4 – The situation in regards to CO poisoning improved again. On inland waters only one CO incident in which no injury was sustained and owners were alerted by a CO alarm.

3.5 - The second year of relatively moderate numbers of solid fuel stove related incidents, compared with 2007, may indicate that boaters are more wary of stoves and more careful how they run and maintain these appliances. However it is still a key source of incidents and there is no room for complacency as it could however be related to the use of the stoves and the weather patterns so this figure may change in 2010.

3.6 - There continues to be significant number of boats used for residential purposes featured in the reports. As with previous years fatalities the person that died in a fire aboard her boat was living on it.

3.7 – However we have to point out the rise in accidental fires not due to conflagration; rising to 42 from 38 last year. This is far lower than the 56 in 2007 and similar to the 2006 figure (see earlier caveat). There are two areas in particular we would want to draw attention to, the steep rising curve in electrical fires and the marked blip in petrol related incidents.

3.8 – Deliberate fire setting continues to be by a big lead, the single largest cause of fire on inland boats. Although it fell by around 40% to 17, that figure still represents a slightly above average level.

3.9 – there is a steep rise in figures for sinkings, collisions and MOB incidents. This is probably due to more information coming forward from new access to BW emergency call logs and reports from some insurance sources.

#### 4.0 'Dangerous Boat' Reports

4.1 - BSS Examiners reported 98 immediately 'dangerous boats' out of approximately 16400 certificates issued (0.6%). By way of comparison, in 2008 BSS Examiners reported 107 immediately 'dangerous boats' out of approximately 13000 certificates issued (0.82%) and in 2007 189 immediately 'dangerous boats' were reported out of approximately 11000 certificates issued (1.66%). A more detailed breakdown is provided at Annex A, Table A8.

### **5.0 Planning BSS Activity in 2010**

**5.1 –*Electrical fires (systems and appliances)*** – The incidents recorded relate to a broad spectrum of causes from loose and unprotected connections to problems with chargers and inverters as well as faults in appliances.

**5.1.1 – A report on electrical risks has been commissioned by the BSS and the BSSTC will be considering its contents and will be bringing forward recommendations for wider deliberation.**

**5.2 –*Petrol engine and vapour incidents*** – This increase in petrol related risks has been subject of separate papers to BSSTC, BSSAC and BSSMC.

**5.2.1 – It is intended to implement the actions set out in the papers to the committees as a medium term campaign covering the various messages and developing knowledge and information over the next three years. Relevant messages the differing audiences related to the variety of engines using petrol will start to be developed and disseminated during this year.**

**5.3 –*Safety self-awareness*** – Fatal and non-fatal fires are still a feature of a lack of, or a lack of application, of basic fire safety behaviour such as the use of candles, or safe petrol handling practices.

**5.3.1 - In 2010 the BSS intend to work with appropriate partners especially fire services through boat fire safety week to promote safety self-awareness messages. These will include simple measures for owners about staying safe and avoiding very obvious risks associated with the use of fuels and appliances. The simple measures will be included within regular BSS media updates.**

**5.4 - Portable Appliance Use** – BSS continues to have concerns about the lack of proper respect for the nature of the potential risks of fire and CO poisoning associated with equipment brought on to the boat. The BSS has noted similar behaviours and incidents in the camping and caravanning world and as such will extract lessons based on competent guidance, where such lessons have marine relevance.

**5.4.1 – The promotion of safety self-awareness will continue to draw attention to the risks associated with the use of portable equipment.**

**5.5 – The Risk to Residential Boaters** – It is now recognised by BW that the numbers of 'liveaboards' or intensive use boats is likely to grow due to the wider economic situation and housing market problems especially in regional or local hotspots.

**5.5.1 – In the context for potential growth of living on boats, the BSS will continue to work with stakeholders (including the marine trade and Navigation Authorities) to determine the size of the risk, and with user groups and examiners to determine the nature of the risks and the best means of addressing them.**

**5.6 – Incomplete Incident Information** - The major challenge in assessing risk data relating to fires on both inland waterways (and in coastal boating), is *[detail] not known yet*. Because of the move to newspapers charging for online content, it may mean that the current single largest source of risk information will 'dry up' or cost more to gather, unless alternative routes to the same information are found.

5.6.1 - This problem manifests itself mostly concerning data fields such as cause, use of vessel, fuels in use and whether anyone was hurt or not. This is a problem for a 'risk-based' safety initiative in prioritising risks and directing the most effective ways of addressing those risks.

**5.6.2 – The BSS should have had access to all appropriate information on boat fire incidents in England from the Department for Communities new fire incident database. This will be pursued once again.**

**5.6.4 – The BSS now has access for appreciation purposes to the pre-release version of the incident database controlled via the National Water Safety Forum (NWSF). The BSS is committed to help populate the database with incident data that has not already been inputted by Navigation Authorities and we are building in common data fields in support of this aim.**

**5.6.5 – Work is planned on developing the next stage of the BSS Risk Model in support of the aim of optimising risk management decisions and this will continue into 2011.**

**5.7 - Carbon Monoxide** - CO continues to affect boaters, especially those living aboard. Solid fuel stoves and petrol engine exhaust fumes are the main sources of CO incidents

5.7.1 - Members should note two boat CO incidents already for winter 09-10, one probably related to the use of a generator and the other confirmed as being leaking exhaust gases.

**5.7.2 – A new carbon monoxide leaflet will be developed in partnership and a new CO advice website portal launched ready for the Autumn season.**

**5.7.3 - Work with the detection industry means that we may be able to amend our position to a more pro-active and positive support for the use of CO alarms on boats, including guidance on type selection and installation guidance in a similar way the BSS does with smoke alarms.**

**5.8 - Solid Fuel Stoves** - The use of solid fuel stoves continues to be a significant cause of known-cause incidents on inland waters.

5.8.1 – Key safety messages seem to be in the minds of many boaters using solid fuel, however evidence suggests there is a continuing hunger for authoritative knowledge and information about safe installations, best fuels, correct use and correct maintenance.

**5.8.2 – The BSI's Code of practice for the installation of solid fuel fired heating and cooking appliances in recreational craft is now at the print stage. Once published, we will promote the availability of the Code and we will work with partners to make any important advice it contains as widely available as possible over time.**

**5.8.3 – Once published, the BSS Office working with the BSSTC will assess the potential impact of the code, including on any need for new Navigation Authority requirements or revision of existing ones in relation to the known causes of solid fuel stove fires and CO incidents.**

**5.8.4 – Concerning the competence of installation of solid fuel stoves - The BSS intend to discuss further with BMF representatives the concept of an extension to the HETAS competent fitter registration scheme for installers working on marine installations.**

**5.8.5 – The BSS will continue to work with the Solid Fuel Association to promote good practice messages beyond our current web-based information. Information concerning the choice, storage and use of fuels will be published in the Autumn.**

**5.9 - Deliberate Fire Setting** – A major cause of fire over the years is deliberate fire setting with 43% of all fire incidents inland being caused deliberately.

**5.9.1 - In 2008 the BSS was asked to keep navigation authorities apprised of incidents and arson control information, the incidence of deliberate fire setting will continue to feature in quarterly incident reports. The figures will also be shared with fire and rescue services for Boat Fire Safety Week so participating brigades can consider whether their arson prevention work can help reduce levels in 2010.**

**5.10 - Smoke Alarms** – One of the major impacts of 2007 was the strong BSS recommendation for smoke alarms in boats with overnight accommodation and the guidelines for selection and installation and maintenance.

5.10.1 – In 2008 we undertook a survey of boats that found that smoke alarms are fitted in boats in small numbers (27%). The fate of lady who died in the fire in 2009 could have been changed by having an effective alarm.

**5.10.2 – The importance of smoke alarms to address the risk to 'vulnerable' sector boat dwellers was accepted in last years report.**

**5.10.3 - The BSS intend to help further develop the promotion of smoke alarms on boats and has adopted the Fire Kills 'Don't Drown In Toxic Smoke' campaign theme as this has both relevance and resonance for people sleeping on boats. We will be promoting the use of smoke alarms throughout the year and particularly during the next Boat Fire Safety Week starting week commencing Mon 31 May. We also intend measuring the effectiveness of the 'get a smoke alarm' safety message.**

**5.10.4 – We are working with major manufacturers and specialist suppliers to help influence the availability of suitable models labelled as suitable for use in boats and other leisure accommodation vehicles.**

### **5.11 - Inherent Fire Prevention and escape facilities–**

5.11.1 – Fire prevention and escape overlaps with areas of work such as the solid fuel stove standards and the smoke alarm work. Through the BSSTC, the BSS is reviewing the effectiveness of older portable fire extinguishers and other means of preventing and controlling fires.

**5.11.2 - The BSS Manager is involved in the review of fire protection standard ISO 9094, Small craft – Fire protection. This updated code is expected to be published this year.**

Please be prepared to comment on the planned activities and help identify priorities at the forthcoming BSSAC meeting.

Annex A provides a detailed breakdown of the incident data collected concerning 2009.

Annex B sets out the role and responsibility of the BSS concerning incident and accident reporting and is attached to provide context.

Rob McLean, Dave Washer and Graham Watts, 16 February 2010

## Annex A

Table A1 <b><u>Basic statistics from the records</u></b>	<u>Inland BSS</u>	<u>Non-BSS</u>	<u><sup>1</sup>Coastal</u>
Number of incidents recorded	<b>85</b>	<b>4</b>	<b>33</b>
Fire/explosion (inc immediate risk of)	61	4	-
CO (including near incidents)	1	-	-
Man Overboard	7	-	-
Capsize, collision and sinking (inc near incident)	15	-	-
Other	1	-	-

<sup>1</sup> Coastal incidents - only fire & CO are recorded by the BSS usually

Table A2 <b><u>When accidental fire happens</u></b>	<u>Inland BSS</u>	<u>Non-BSS</u>	<u>Coastal</u>
Craft underway (underway, moving off, in lock)	8 (18%)	-	
Moored	27 (60%)	3 (100%)	
Abandoned	1 (2%)		
Not recorded/not known	9 (20%)	-	
totals	45	3	

Table A3 <b><u>Systems &amp; causes: all fire &amp; CO</u></b>	<u>Inland BSS</u>	<u>Non-BSS</u>	<u>Coastal</u>
	62	4	
Appliance	1	-	
Deliberate Fire setting	16	1	
Conflagration	5	2	
Electrical (system / appliances)	10	-	
Engine / engine room / exhausts	4	-	
Not known (inconclusive / not known to BSS)	11	-	
Oil fired stoves and heaters (installed)	1	-	
Other (lightning)	1	-	
Petrol leak / refuelling	7	-	
Portable engines / outboards	-	-	
Portable items (candles)	1	1	
Solid fuel stoves	5	-	

Table A4 <b><u>Use of vessel</u></b> (All incident types)	<u>Inland BSS</u>	<u>Non-BSS</u>	<u>Coastal</u>
Pleasure and leisure	35	3	
Intensive (residential use and extended periods)	12		
Not recorded/not known	29	1	
Brokerage / renovation / under repair	-		
Abandoned	1		
Hire and small passenger boat	4		
Workboats / other small commercial	4		

Table A5 <b><u>Serious incidents</u></b> (Major injury = treated at hospital) <b><u>inland waterways</u></b> 14 incidents causing 6 deaths, 9 major injury cases		
<u>Totals</u> (Number of incident in brackets below)	<u>Fatalities, inland</u> 6 incidents 6 people died	<u>Major injuries, inland</u> 8 incidents 9 people treated
Personal Injury (1)	-	1
Explosion/fire, petrol, gas, fumes ignition (4)	-	4
Fire, portable appliance and candles(1)	1	-
MOB (5)	5	2
Sinking (1)	-	2

Table A6 <b><u>Incidents on BSS applied waterways</u></b>	
Craft having current BSS certificates	41
Boats with annex 15 supporting licence	1
Certificate status not known to BSS	38
Boat not certified	5

Table A7 <b>Incidents by Navigation Authority</b>	<u>Fire</u>	<u>CO</u>	<u>other</u>
BW	41	-	17
BWML	3	-	1
EA	7	-	4
MSC-Bridgewater	2	-	-
Broads	2	-	-
Cams Conservators	2	1	-
Avon Trusts	3	-	1
Windermere	3	-	-

Table A8 <b><u>'Dangerous Boat' Reporting 2009</u></b> (2008 figures in brackets)	
<p>The number of 'dangerous boat' reports received from examiners and then actioned by the BSS Office is: <b>98</b> (107).</p> <p>98 reports represents 0.6% (0.82%) of the total boats certificated, the breakdown of the reports is as follows:</p>	
<b>87</b> (88.8%) covered gas leaks (71% last year)	<b>2</b> (2%) covered other significant gas faults, including 1 report of a gas burner issue and one open ended gas pipe found (15% last year)
<b>7</b> (7.1%) covered significant shortfalls of ventilation (16% last year)	<b>9</b> (9.2%) covered significant flue faults (8.5% last year)
<b>4</b> (4.1%) covered fuel leaks, 3 petrol (1.86% last year)	<b>2</b> (2%) gas fridge on petrol boat (0.9%)
<b>1</b> exposed wires on 240V electrical system	<b>1</b> severe scorching from exhaust
<b>The geographic spread of the reports generally reflects the spread of boats;</b>	
<b>42</b> reports (42.8% of the total number of reports) concerned boats on BW waters (45% last year)	<b>26</b> on EA –Thames (26.5%), (29% last year)
<b>22</b> on EA – Anglian (22.4%), (8.5% last year)	<b>6</b> on Broads Authority waters (6.1%), (9.5% last year)
<b>1</b> Lower Avon Navigation Trust	



Table A9 all inland <b><u>Trends in systems &amp; causes: all fire &amp; CO</u></b>	<u>2009</u>	<u>2008</u>	<u>2007</u>	<u>2006</u>
<b>Totals</b>	<b>66</b>	<b>67</b>	<b>76</b>	<b>51</b>
Deliberate Fire setting	17	29	15	10
Conflagration	7	0	5	1
Totals of accidental and original incidents	42	38	56	40
Electrical [system / appliances]	10	7	3	4
Engine / engine room	4	3	6	2
Galley incidents / accidents and smoking	0	0	3	1
Gas escape / installed gas appliance	0	2	7	5
Not known [inconclusive / not known to BSS[	11	8	13	12
Oil fired stoves and heaters [installed]	1	2	2	0
Other [inc machinery failure, welding, DIY, etc]	2	0	4	2
Petrol leak / refuelling	7	4	1	2
Portable engines / outboards	0	4	1	3
Portable items [inc LPG, oil, spirit, BBQ, electric]	2	4	0	2
Solid fuel stoves [inc steam pressure explosion]	5	4	16	7

### ***The Role of the BSS Concerning Accident and Incident Data Collection***

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

*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. The data is also used to support navigation authority input concerning their other activities such as the development of the MCA hire boat code.*

*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.*

*We may also test the experience of the 200+ independent BSS examiners by way of targeted surveys. Through our partnership with Warwickshire Fire and Rescue Service (WFRS) we may identify research needs and seek sponsorship for such research and through our representation at British Standards Institution (BSI) we may seek to influence relevant standards-making activity.*

*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 investigate any potential for an inconsistent examination.*

*This report has been generated by the interrogation of Fire and Rescue Service web sites, news sites and boating newsgroups. Information from the Maritime and Coastguard Agency and the Marine Accident Investigation Branch and dealings with Coroners Officers is also included. Discussions with BW and EA navigation staff have generated further reports of accidents/incidents and a number of BSS examiners and others people from the marine trade have been helpful in reporting incidents or supplying greater detail. We also review key stakeholder statistics such as from the Royal National Lifeboat Institute and CO-Gas Safety.*