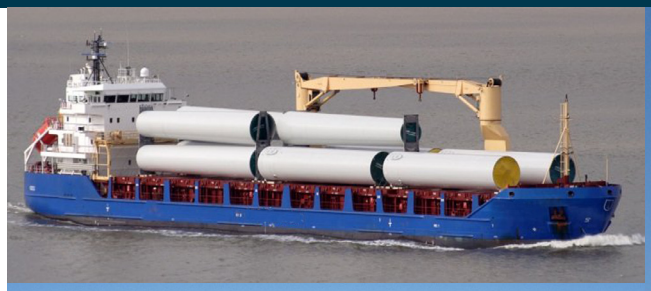
Australian Government
Australian Transport Safety Bureau

Australian Shipping Occurrence Statistics 2005 to 2012



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Addendum

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Safety summary

Why did we do this report

The ATSB receives reports on accidents and other safety incidents involving Australian registered trading vessels (cargo and/or passengers) around the world and trading vessels flying foreign flags within Australia's maritime jurisdictions. The aim of this report is to provide participants in the shipping industry and other interested parties with information on what accidents and incidents have happened, how often they have happened, and what can be learnt from them.

What the ATSB found

In 2012, there were 154 marine safety occurrences reported to the Australian Transport Safety Bureau. This was over 50 per cent higher than the 2005-12 average of 100 occurrences each year. The increase in occurrences in 2012 was due to substantial increases in the number of reported 'incidents' (137) and 'serious incidents' (12). Fewer than 10 accidents were reported each year between 2005 and 2012, with five in 2012.

Between 2005 and 2012, there were 245 people killed, missing or seriously injured from reported marine occurrences. In 2012 there were 6 deaths and 33 serious injuries; the latter was the highest number for any year of the report period.

Bulk carriers and cargo vessels (including container, roll-on – roll-off cargo, heavy lift and livestock ships) have been the most common vessels involved in occurrences since 2005 and their involvement increased substantially in 2012. There were also increases in the involvement of tankers, offshore support vessels and tugs.

The number of foreign vessels involved in occurrences grew considerably in 2012. This was predominantly due to an increased involvement in incidents (up 55 per cent on 2011), but there were also more foreign registered vessels involved in serious incidents. The number of Australian registered vessels involved in occurrences also increased in 2012 and the highest number of occurrences recorded was by Australian, Panamanian and Singaporean registered vessels.

Between 2005 and 2012, the most common types of occurrence were damage to the ship or equipment, serious injury and equipment failure. In 2012, there were increases in five of the six most common occurrence types, with serious injury, equipment failure and machinery failure reaching their highest levels for any year of the 2005-2012 period.

Safety message

Marine occurrence statistics provide a reminder to everyone involved in shipping that accidents, incidents, and injuries happen more often than is widely believed. Some of the most frequent accident types are preventable, particularly fatalities to crew and shipboard workers. Operators should learn from the experiences of others in the industry to help identify the safety risks in their operation that could lead to a similar accident or serious incident.

Thorough reporting of safety incidents is paramount. Analysis of reported occurrences helps to understand why accidents and incidents happen, and where the major safety risks are. This helps everyone in the marine industry to better manage their safety risk.

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Contents

Context

This is the second statistical report of marine occurrences reported to the Australian Transport Safety Bureau (ATSB). It adds two additional years' of data to the first edition published in 2011, reporting on the 7 years from 2005 to 2012. It has been generated to provide information on safety occurrences involving Australian registered trading vessels (cargo and/or passengers) around the world and trading vessels flying foreign flags within Australia's maritime jurisdictions.

The occurrences documented in this report are confined to those incidents and accidents that are considered to be immediately reportable matters under Part 3 of the *Transport Safety Investigation Regulations 2003* and were reported to the ATSB. This involves Australian ships undertaking trade or commerce (cargo and/or passengers) engaged in international and interstate operations, and foreign trading ships in Australian waters.

This report does not cover marine operations involving the following vessels:

- trading ships on intrastate voyages
- Australian fishing vessels on domestic voyages
- fishing fleet support vessels on domestic voyages
- inland waterways vessels
- pleasure craft
- off-shore industry mobile units that are fixed to the seabed
- Australian defence ships
- exempt foreign ships (foreign defence ships).

Fast rescue boat involved in an incident on board the Isle of Man registered liquefied natural gas tanker *British Sapphire* off Darwin, Northern Territory on 16 May 2010 (ATSB investigation MO-2010-004).

Marine Occurrences

Occurrence categories

Table 1 shows the number of shipping occurrences from 2005 to 2012 related to Australian vessels or vessels within Australian marine jurisdictions as per reporting requirements under the *Transport Safety Investigation Regulations 2003*. There was an average of 100 occurrences each year across the period, which consisted (on average) of 90 incidents, 5 accidents and 5 serious incidents.

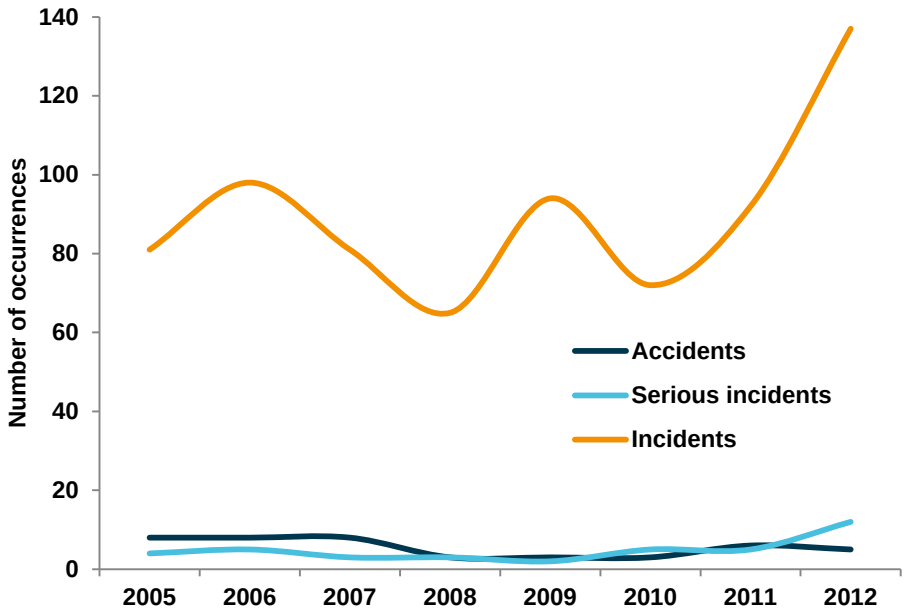
Table 1: Commercial shipping occurrence accidents and incidents, 2005 to 2012

Occurrence category	2005	2006	2007	2008	2009	2010	2011	2012	Total
Accidents	8	8	8	3	3	3	6	5	**44**
Serious incidents	4	5	3	3	2	5	5	12	**39**
Incidents	81	98	81	65	94	72	92	137	**720**
Total occurrences	**93**	**111**	**92**	**71**	**99**	**80**	**103**	**154**	**803**

In 2012, the total number of occurrences was over 50 per cent above the 2005-12 average. This was due to substantial increases in the number of reported ‘incidents’ and ‘serious incidents’, with both categories reaching their highest level for the period.

Between 2005 and 2012 there were fewer than 10 accidents each year. There were 11 accidents across 2011-12 which is slightly up on the previous three years but average across the whole period.

Figure 1: Commercial shipping occurrence accidents and incidents, 2005 to 2012



In 2011, there were six accidents which involved:

- the death of the boatswain (bosun) on board the bulk carrier *Hanjin Sydney* as a result of injuries received after falling about 25m from the hatch coaming of the ship's number eight cargo hold to the tank top below
- the death of an advisor on the tug Adonis who was trapped in the wheelhouse when the tug capsized in the port of Gladstone
- a crew member of the bulk carrier *CSL Thevenard* sustaining a serious injury when his finger was crushed by a roller whilst closing a cargo hatch lid
- the death of an oiler from the car carrier *Pegasus Ace* who was lost overboard
- the death of the master of the bulk carrier *Ocean Caesar* who was lost overboard
- the death of a seaman from the container ship *MSC Siena*'s who was knocked off the accommodation ladder by a wave and was lost overboard near Rottnest Island off the port of Fremantle.

The five accidents in 2012 involved:

- the death of a deck cadet from the bulk carrier *Ocean Lord* who was lost overboard
- the death of a shore worker who fell from a cherry picker while repairing a hold ladder on board the bulk carrier *Glory Xiamen* berthed in Newcastle
- the death of a stevedore working on board the general cargo ship *Weaver Arrow* while it was berthed in Newcastle, after being crushed under packs of aluminium ingots which toppled over during loading
- the death of a crew member on board the bulk carrier *RTM Wakmatha* who was found unconscious in the deck store
- the death of the second engineer on board the fishing vessel *Antarctic Chieftain* who was reported to have fallen into a ballast tank during pumping operations.

Girting of the Australian registered tug *Adonis* in Gladstone, Queensland, on 11 June 2011 (ATSB investigation MO-2011-005).

Injuries

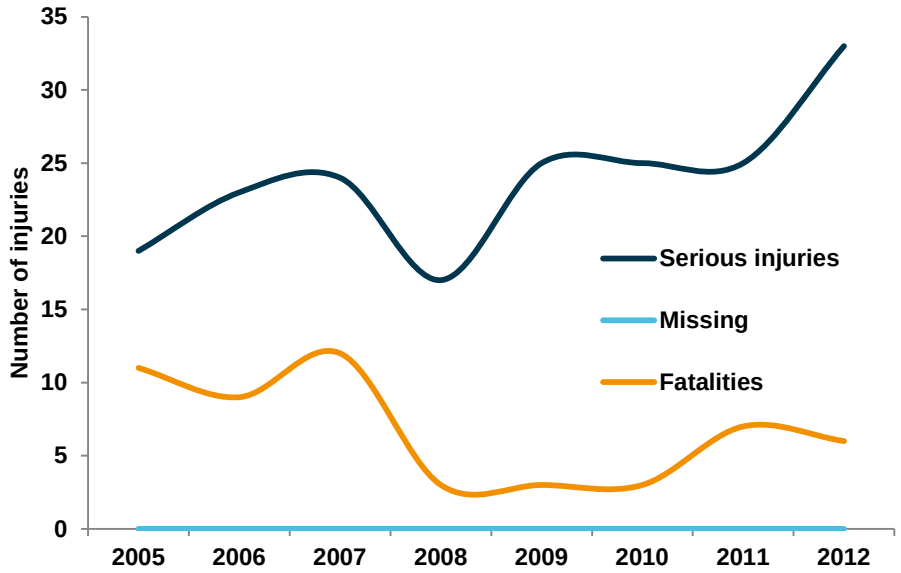
Between 2005 and 2012, there were 213 occurrences involving fatalities, serious injuries or people missing overboard. A breakdown of these injuries is listed in Table 2 below. Some occurrences involved multiple injuries with a total of 245 people killed, missing or seriously injured.

Table 2: Injuries from reported marine occurrences, 2005 to 2012

Number of people injured	2005	2006	2007	2008	2009	2010	2011	2012	Total
Serious injuries	19	23	24	17	25	25	25	33	**191**
Missing	0	0	0	0	0	0	0	0	**0**
Fatalities	11	9	12	3	3	3	7	6	**54**
Total injuries	**30**	**32**	**36**	**20**	**28**	**28**	**32**	**39**	**245**

There were 25 people seriously injured each year from 2009 to 2011, but this increased to 33 in 2012. After a spike in 2007, the number of fatalities was low and stable from 2008 to 2010, but has increased to seven deaths in 2011 and 6 in 2012. Five of the 11 fatalities in 2005 were from the sinking of *Malu Sara* in Torres Strait.

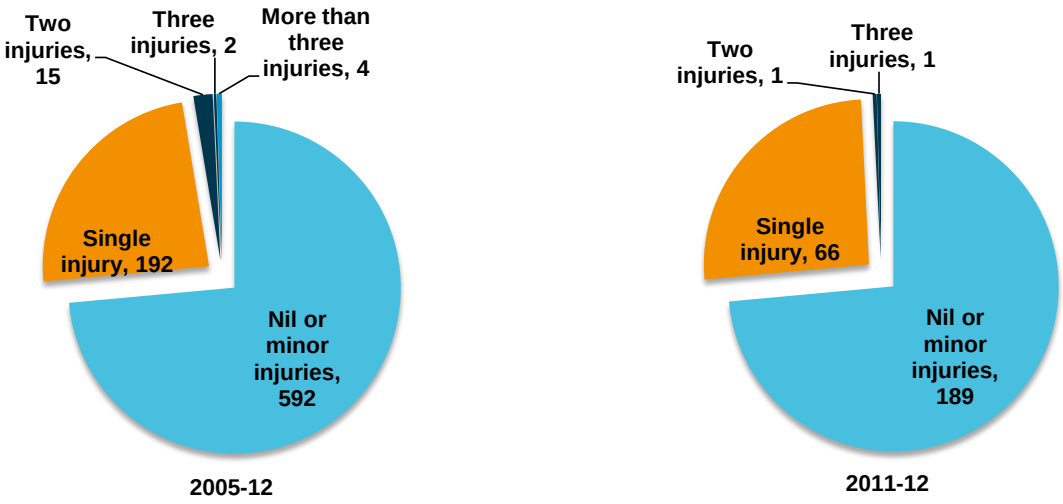
Figure 2: Personal injuries related to commercial shipping occurrences, 2005 to 2012



Multiple injuries

There were 21 occurrences where more than one person was seriously or fatally injured (see Figure 3 below). There were four occurrences where more than three people were seriously or fatally injured, all of which occurred between 2005 and 2007. During 2011-12, there were no occurrences involving multiple fatalities and two occurrences involving multiple serious injuries.

Figure 3: Number of serious or fatal injuries in marine occurrences



On 17 November 2011, a wave knocked a seaman off *MSC Siena*'s accommodation ladder while he was rigging a combination pilot ladder in preparation to embark a harbour pilot (ATSB investigation MO-2011-010).

Locations of marine occurrences

Marine occurrence regions

Table 3 contains a breakdown of the general marine area of the 803 marine occurrences from 2005 to 2012. A marine area is defined by the most applicable location given the vessel's particular operation and location at the time. Most occurrences took place off the Western Australian and Queensland coasts, followed by New South Wales and Victoria.

In 2012, there was a large increase in the number and proportion of occurrences that took place off the West Australian coast. The 49 occurrences off the West Australian coast in 2012 is more than double the number of occurrences in any year since 2005 and represents almost a third (32 per cent) of all marine occurrences in 2012, compared to an average of 23 per cent for 2005-2012. Despite this increase, there was a drop in the number of occurrences in the North West Shelf in 2012.

The number of occurrences also increased in 2012 off the coasts of New South Wales, Victoria, the Northern Territory and South Australia. There was a drop in occurrences off the Queensland coast, but an increase in the Great Barrier Reef.

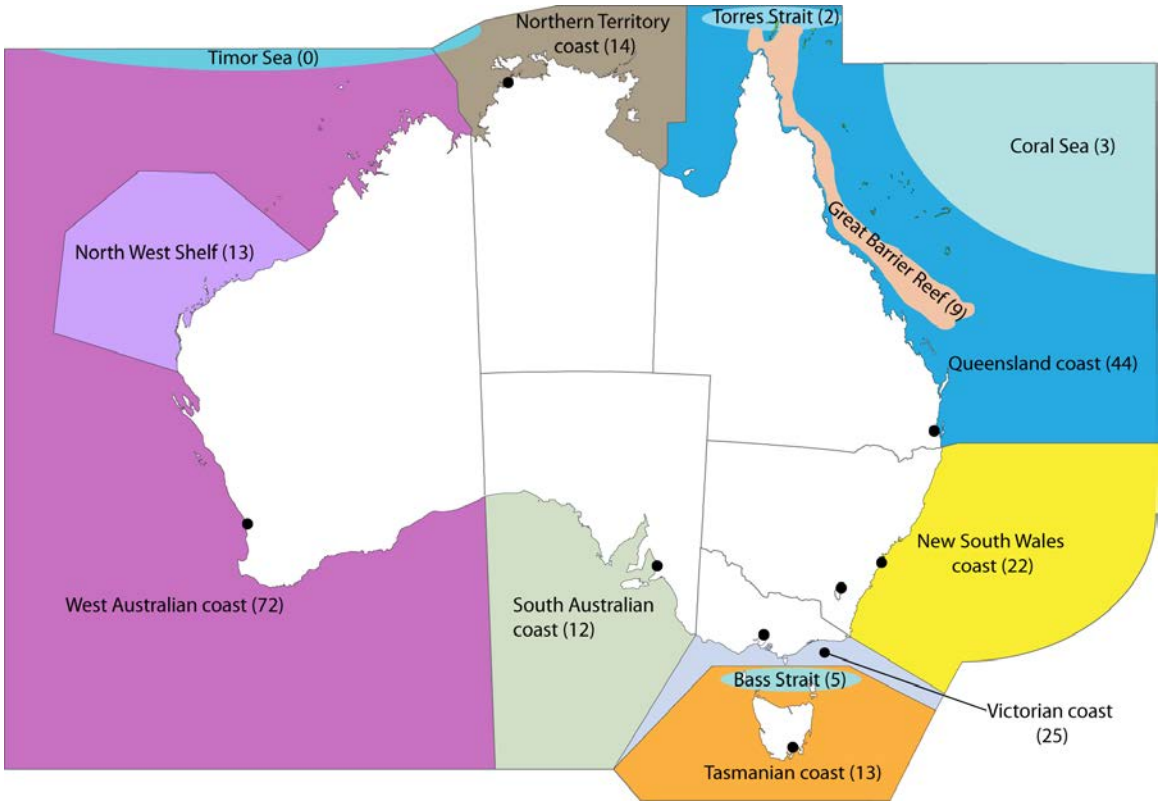
Table 3: Areas of marine occurrences by year, 2005 to 2012

Marine area	2005	2006	2007	2008	2009	2010	2011	2012	Total
West Australian coast	27	24	11	14	21	15	23	49	**184**
Queensland coast	19	18	20	14	20	17	25	19	**152**
NSW coast	16	12	11	8	13	12	8	14	**94**
Victorian coast	4	20	13	6	11	3	10	15	**82**
South Australian coast	7	6	7	5	5	5	5	7	**47**
Overseas	3	8	7	4	6	4	5	8	**45**
Tasmanian coast	6	6	6	4	1	4	4	9	**40**
North West Shelf	0	4	4	3	9	6	9	4	**39**
Northern Territory coast	2	5	1	5	7	2	3	11	**36**
Bass Strait	5	3	5	4	1	3	2	3	**26**
SAR area[1]	1	1	3	3	2	2	5	4	**21**
Great Barrier Reef	1	2	3	0	0	2	1	8	**17**
Coral Sea	2	0	1	1	1	2	1	2	**10**
Torres Strait	0	0	0	0	2	1	1	1	**5**
Timor Sea	0	0	0	0	0	2	0	0	**2**
Unknown	0	2	0	0	0	0	1	0	**3**

The total number of occurrences off the coast of each state is generally more than indicated in Table 3 due to more specific areas being described within most states' waters. Figure 4 shows the general proximity of marine occurrences by marine area. This map is an approximate representation of the location of these areas and does not necessarily reflect precise state or international boundaries.

[1] The SAR area refers to Australia's search and rescue area, which includes 52.8 million square kilometres of the Indian, Pacific and Southern Oceans or about one-tenth of the earth's surface.

Figure 4: Australian marine areas with number of marine occurrences, 2011 to 2012



Types of locations of marine occurrences

In 2011 and 2012, there were 80 marine occurrences while vessels were berthed in Australian waters. This represents just under a third of all occurrences in Australian waters. The other main types of locations were open sea, harbour waters or within 12 nautical miles of the coast. The exact numbers are shown by state in Table 4 below.

Table 4: Types of locations[2] of marine occurrences, 2011 to 2012

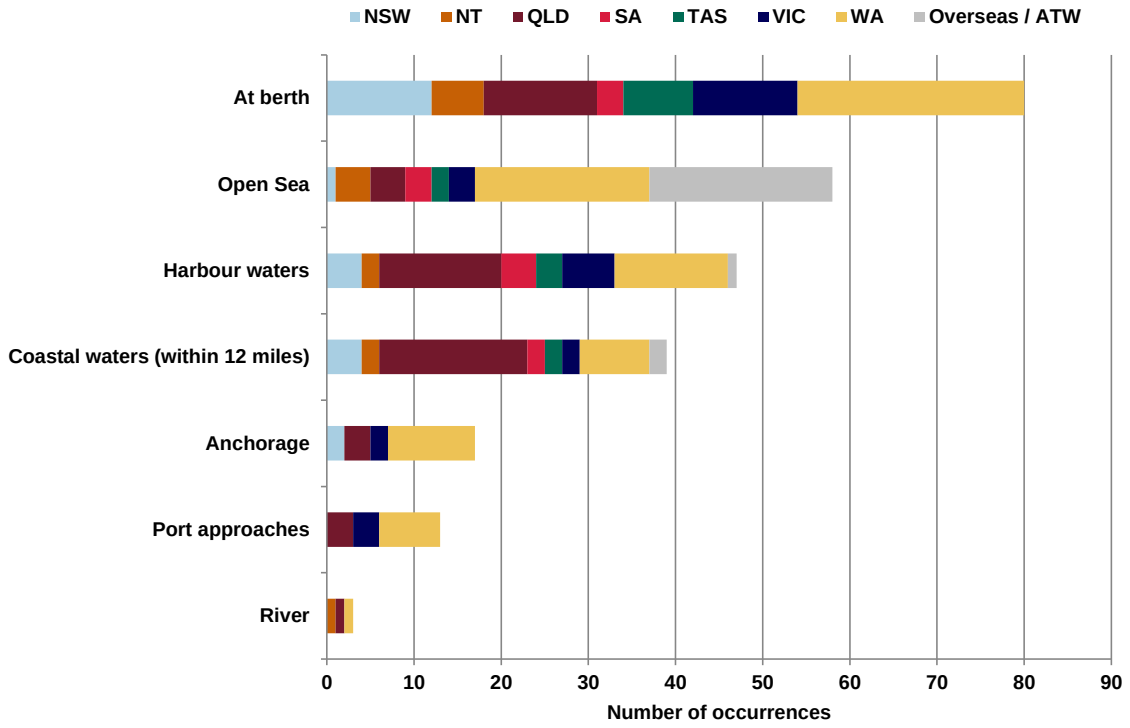
Type of location	NSW	NT	QLD	SA	TAS	VIC	WA	Overseas or other ATW[3]	Total
At berth	12	6	13	3	8	12	26	0	80
Open Sea	1	4	4	3	2	3	20	21	58
Harbour waters	4	2	14	4	3	6	13	1	47
Coastal waters (within 12 miles)	4	2	17	2	2	2	8	2	39
Anchorage	2	0	3	0	0	2	10	0	17
Port approaches	0	0	3	0	0	3	7	0	13
River	0	1	1	0	0	0	1	0	3

[2] State locations reported in Table 4 and Figure 5 may differ slightly from marine areas shown in Table 3 and Figure 4. This is due to some parts of marine areas being outside state boundaries.

[3] ATW refers to Australian Territorial Waters, 12 NM from the coast, including Australian territories outside of designated state boundaries (eg. Christmas Island).

About 54 per cent of all marine occurrences in Australian waters occurred while the vessel was berthed or in harbour waters. This ranged from 46 per cent in Western Australia to 73 per cent in Tasmania. A relatively high proportion (31 per cent) of Queensland occurrences were located within coastal waters. This is shown in Figure 5 below.

Figure 5: Types of locations of marine occurrences, 2011 to 2012



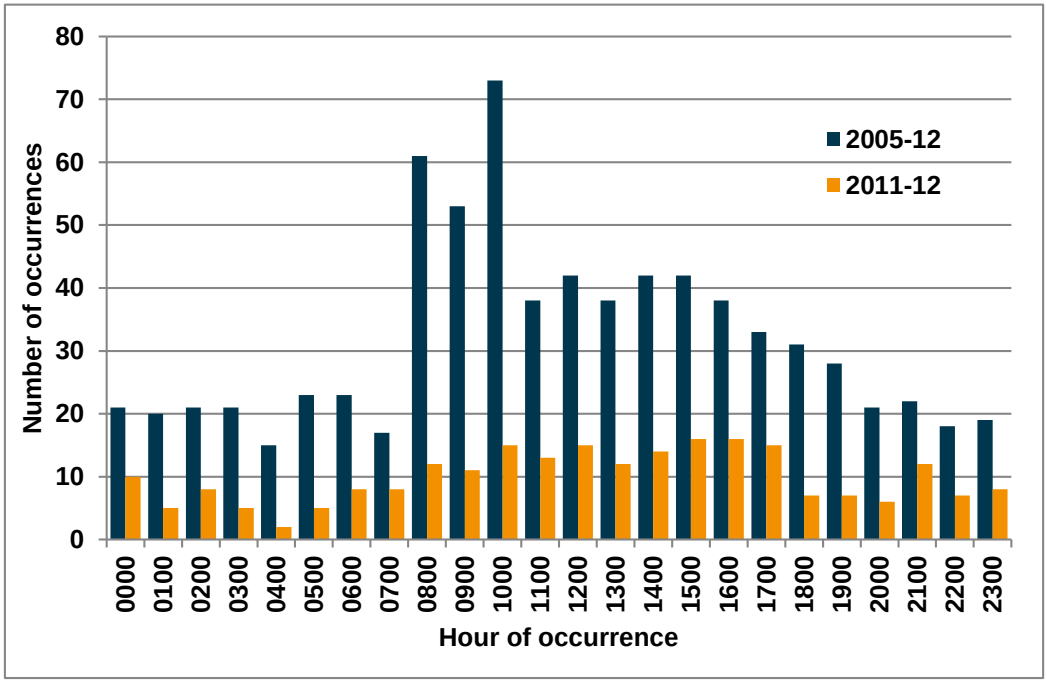
Man overboard fatality from the container ship *MSC Siena*, off Fremantle, Western Australia, 17 November 2011 (ATSB investigation MO-2011-010).

Time of marine occurrences

Figure 6 shows the approximate time of day of marine occurrences (where known) for the periods 2005-12 and 2011-12. For 2005-12, there was a peak in occurrences between 0800 and 1100. The number of occurrences is fairly constant through the late morning and afternoon and then gradually decreased to 2000. Between 2000 and 0800, the number of occurrences each hour remained consistently low.

For 2011-12, occurrences increased from a low at 0400-0500 to an afternoon peak between 1500 and 1700. The morning peak of 2005-12 is not evident, with occurrences more evenly spread throughout the late morning and afternoon. The number of occurrences each hour is lower through the evening and early morning with spikes at 21:00-22:00 and midnight-01:00.

Figure 6: Hour of day of marine occurrences (where known), 2005 to 2012 and 2011 to 2012



Vanuatu registered bulk carrier *Polska Walczaca,* involved in a fatality on board at sea off Queensland on 15 November 2010 (ATSB investigation MO-2010-010).

Vessels in Occurrences

Number of vessels involved in occurrences

There were 867 vessels involved in the 803 Australian marine occurrences reported to the ATSB between 2005 and 2012. These are shown for each year in Table 5 below. There were 163 vessels involved in occurrences in 2012 which was 50 per cent higher than the 2005-12 average of 108. The vast majority (92 per cent) of occurrences across the period involved a single vessel, with slightly higher proportions in 2011 and 2012 (95 per cent and 94 per cent, respectively).

Table 5: Occurrences by number of involved vessels, 2005 to 2012

Vessels in occurrence	2005	2006	2007	2008	2009	2010	2011	2012	Total vessels	Total occurrences
1	85	102	83	68	89	70	98	145	**740**	**740**
2	8	9	9	3	10	9	5	9	**124**	**62**
3	0	0	0	0	0	1	0	0	**3**	**1**
All vessels	101	120	101	74	109	91	108	163	**867**	**803**

Multiple vessel occurrences

During 2005-12, there was an average of almost 8 multiple-vessel occurrences each year. All but one multiple-vessel occurrence involved two vessels with a single three-vessel occurrence in 2010, a collision between the off-shore support vessel *Far Swan* and the un-manned barge *Miclyn 131* in tow with the tug *Global Supplier*.

Collision between the Liberian bulk carrier *Grand Rodosi* and the Australian fishing vessel *Apollo S* in Port Lincoln, South Australia on 8 October 2010 (ATSB investigation MO-2010-008).

Vessel Flag States

Between 2005 and 2012, there were 226 commercial Australian registered vessels involved in shipping occurrences reported to the ATSB and 611 vessels registered in another country. The number of occurrences involving Australian registered vessels decreased between 2005 and 2010, but has gradually increased over the last 2 years to a high of 39 in 2012. The number of foreign vessels involved in occurrences has grown considerably in 2012 to 122, which was the highest of any year in the period and was over 50 per cent higher than in 2011.

Figure 7: Number of vessels in occurrences by Flag State, 2005 to 2012[4]

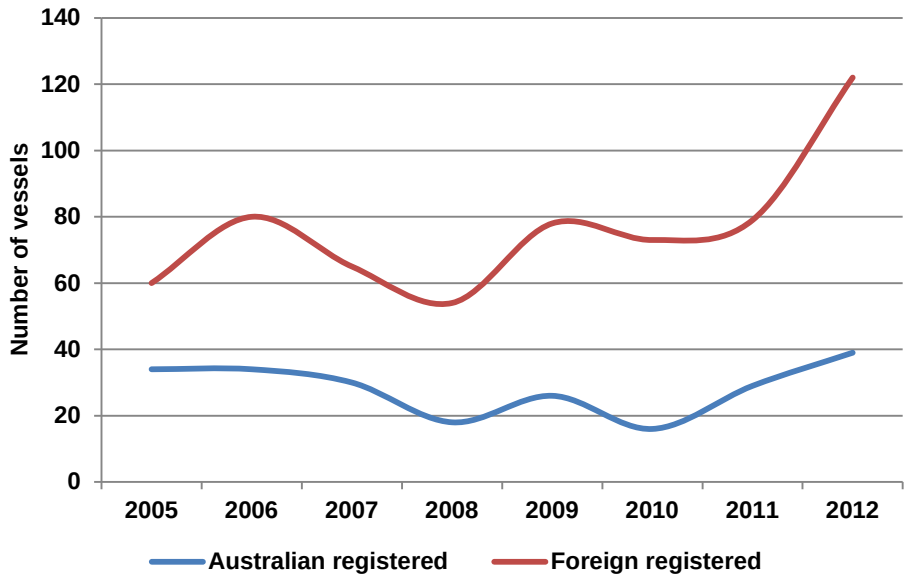


Table 6 shows the number of accidents, serious incidents and incidents by Australian and foreign flag vessels from 2005 to 2012. The number of Australian registered vessels involved in incidents has increased from a low of 15 in 2010 to a high of 37 in 2012. The number of foreign registered vessels involved in incidents in 2012 (107) was the highest across the period and was 55 per cent higher than for 2011. The number of foreign registered vessels involved in serious incidents also increased to a high of 11 in 2012.

Apart from Australia, the main vessels involved in Australian marine occurrences from 2005 to 2012 were Panama, Singapore and Hong Kong registered. In 2012, the highest number of occurrences recorded was by Australian, Panamanian and Singaporean vessels, respectively.

Table 6: Number of vessels by occurrence category and Flag State, 2005 to 2012[5]

Flag State	Occurrence Category	2005	2006	2007	2008	2009	2010	2011	2012	Total
Australian registered	Accident	2	0	0	1	1	0	3	0	**7**
	Serious Incident	1	1	1	0	0	1	1	2	**7**
	Incident	31	33	29	17	25	15	25	37	**212**
Foreign registered	Accident	6	7	8	2	2	3	4	4	**36**
	Serious Incident	3	5	2	3	2	4	6	11	**36**
	Incident	51	68	55	49	74	66	69	107	**539**

[4] Figure 7 excludes fishing and recreational vessels.

[5] Table 6 excludes fishing and recreational vessels.

Types of vessels in marine occurrences

Table 7 shows all vessels involved in commercial shipping occurrences by vessel group. The brackets describe the different types of vessels that are grouped into these categories. The 'other' category includes vessels such as barges and dredgers, which had low numbers of occurrences, or where the vessel was unknown.

Due to the nature of mandatory reportable incidents under Australian legislation, mainly large commercial vessels are involved in occurrences reportable to the ATSB. Some smaller vessels, such as fishing and recreational vessels only appear in the ATSB database due to their interactions with larger vessels. Therefore, data for these vessel groups shown in Table 7 are not indicative of the total number and type of incidents and accidents involving these types of smaller vessels.

Table 7: Number of vessels involved in occurrences by vessel grouping, 2005 to 2012

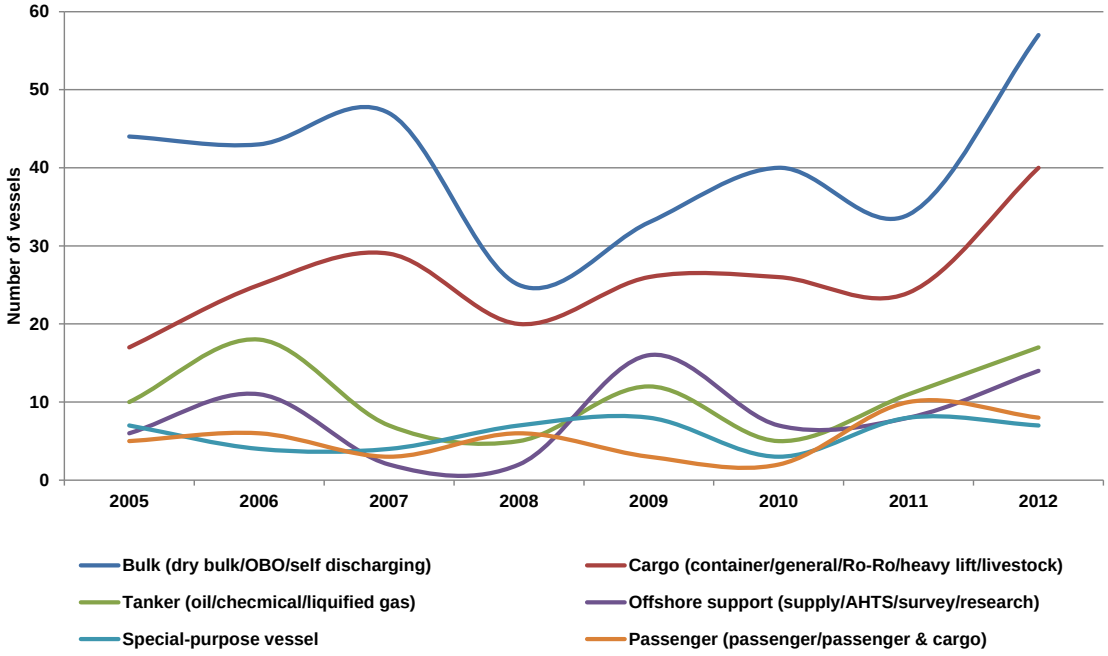
Vessel group	2005	2006	2007	2008	2009	2010	2011	2012	Total
Bulk (dry bulk / OBO /self-discharging)	44	43	47	25	33	40	34	57	**323**
Cargo (container / general / Ro-Ro / heavy lift / livestock)	17	25	29	20	26	26	24	40	**207**
Tanker (oil / chemical / liquefied gas)	10	18	7	5	12	5	11	17	**85**
Offshore support (supply / AHTS / survey / research)	6	11	2	2	16	7	8	14	**66**
Special-purpose vessel	7	4	4	7	8	3	8	7	**48**
Passenger (passenger / passenger & cargo)	5	6	3	6	3	2	10	8	**43**
Tug	1	5	0	5	4	2	5	10	**32**
Fishing[6]	3	3	4	2	3	2	0	1	**18**
Recreational (motor / sailing / training)[6]	4	3	2	0	2	0	0	1	**12**
Offshore platform (FPSO / FSO / development / production)	1	1	0	1	2	1	2	0	**8**
Border Protection/Law Enforcement (Navy / Customs / Police)	1	0	0	0	0	0	0	0	**1**
Other (includes barges and dredgers)	2	1	3	1	0	3	6	8	**24**
Total	**101**	**120**	**101**	**74**	**109**	**91**	**108**	**163**	**867**

[6] Occurrences involving these vessel groups are not reportable to the ATSB unless the occurrence also involved a vessel from another vessel group listed in the table.

Bulk carriers and cargo[7] vessels made up the vast majority of marine occurrences and fluctuations in the number of occurrences within these vessel groups has a large effect on the total number of marine occurrences. The substantial increase in the total number of vessels involved in occurrences in 2012 largely reflects the involvement of bulk and cargo vessels but there were also increases in the involvement of tankers, offshore support vessels and tugs.

Figure 8 below illustrates the dominance of bulk and cargo vessels in occurrences but also shows increases for the top four vessel groups in 2012.

Figure 8: Number of vessels involved in occurrences, 2005 to 2012 - Top 6 vessel groups by year



Dry bulk (ore) carrier *Hanjin Sydney* involved in a crew member fatality on board at sea on 2 February 2011 (ATSB investigation MO-2011-002).

[7] Cargo vessels refer to container, roll-on – roll-off cargo, general cargo, heavy lift and livestock ships.

Occurrence Types

Occurrence types

Accidents and incidents are usually the result of a complex set of circumstances, often involving a chain (or sequence) of events. The ATSB categorises each reported accident and incident into one or more occurrence type to identify what happened in the occurrence, and how the sequence of events played out to lead to the accident or incident. Classifying occurrences in this way helps to understand what types of occurrences have taken place, and identify potential areas for safety improvement and communication.

There are 18 occurrence types currently used by the ATSB to classify marine accidents and incidents. There may be more than one event during an occurrence sequence for each vessel and an occurrence type may be assigned to multiple vessels in a single occurrence. Accidents and serious incidents generally have more occurrence types coded than incidents, as they are more likely to be investigated, and their severity usually means that there is a greater amount of information to draw upon for analysis and coding.

Occurrence types do not explain why an accident or incident happened, but generally are a description of what occurred. This report does not cover the safety factors (individual actions, local conditions, risk controls, or organisational influences) that explain what led to an occurrence, as these are more valuable when considered in a cluster of accidents and incidents that have a similar occurrence type.

The Panamanian registered general cargo ship *Mimasaka* involved in loss of deck cargo off Coffs Harbour, New South Wales n 4 October 2010 (ATSB investigation MO-2010-007).

There were 1,200 unique occurrence types associated with Australian marine occurrences between 2005 and 2012. Table 8 shows that the top three occurrence types were damage to the ship or equipment (present in 226 occurrences), serious injury (173 occurrences) and equipment failure (149 occurrences).

In 2012, there was a 46 per cent increase in the number of occurrence types identified compared with 2011. There were increases in five of the six most common occurrence types, with serious injury, equipment failure and machinery failure reaching their highest levels for any year of the 2005-2012 period.

Table 8: Occurrence types during marine occurrences, 2005 to 2012

Occurrence type	2005	2006	2007	2008	2009	2010	2011	2012	Total
Damage to ship or equipment	31	30	28	21	42	31	17	26	**226**
Serious injury	19	21	20	16	23	20	22	32	**173**
Equipment failure	14	16	24	20	17	15	17	26	**149**
Fire/explosion	10	13	10	17	9	10	12	12	**93**
Machinery failure	7	22	7	2	7	8	9	24	**86**
Grounding/stranding	11	10	6	11	4	7	12	12	**73**
Contact	6	5	5	7	13	12	13	11	**72**
Fatality	7	**8**	8	3	3	3	5	6	**43**
Hull failure / failure of watertight openings	4	6	6	2	6	4	4	7	**39**
Collision	7	7	7	2	7	3	3	1	**37**
Pollution	0	7	3	2	8	5	1	4	**30**
Lifeboat accident	4	3	2	2	4	4	2	1	**22**
Flooding	1	2	4	2	3	0	2	8	**22**
Close quarters	3	2	2	1	2	2	1	3	**16**
Capsizing/listing	0	1	1	0	2	2	2	0	**8**
Foundered	1	0	1	0	1	1	0	1	**5**
Missing assumed lost[8]	1	0	0	0	0	1	0	0	**2**
Other	6	11	11	7	23	17	10	19	**104**
Total	**132**	**164**	**145**	**115**	**174**	**145**	**132**	**193**	**1,200**

[8] Missing assumed lost occurrence type included one occurrence involving the loss of a vessel (in 2005) and one involving loss of cargo without loss of life or injury (in 2010).

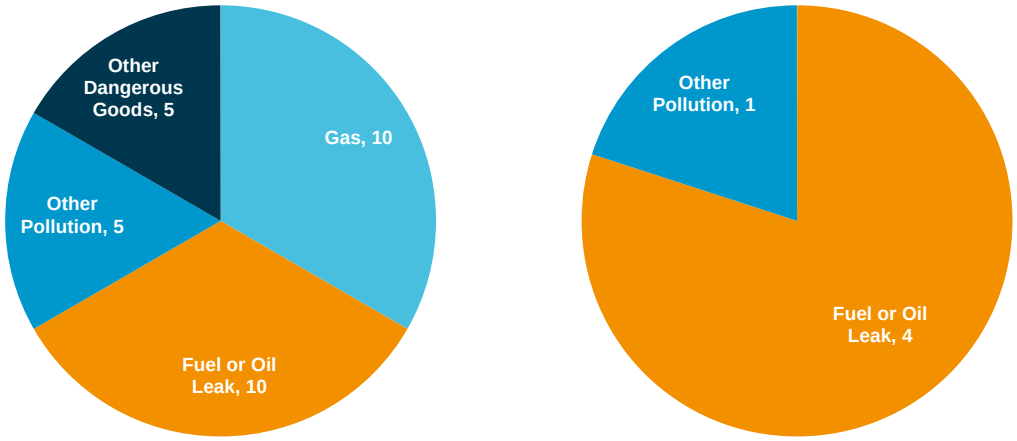
Between 2005 and 2012, the number of occurrences involving pollution each year has fluctuated between zero and eight. Of the 30 pollution occurrences across the whole period, 10 involved gas and 10 involved fuel or oil leaks. In 2011-12, four of the five pollution-related occurrences involved fuel or oil leaks.

The pollution-related occurrences in 2011-12 involved the following:

- an estimated 5 tonnes of fuel oil were spilled during bunkering operations between the bunker vessel *Valiant III* and the livestock carrier *GL Lan Xiu* at Hamilton Wharf, Brisbane
- approximately 2,150 litres of marine gas oil were spilled into Mackay Harbour during fuel transfer operations on board the tug *Terlak* when a tank high level alarm failed to operate and fuel overflowed out of the breather pipe
- about 25 to 50 litres of oil were spilled off Barrow Island, WA, when the tug *BKM 102* collided with *Taurus II* whilst manoeuvring alongside. The tug's hull was punctured resulting in water ingress and an oil spill
- about 50 litres of marine gas oil were spilled into the harbour and 100 litres onto the deck of the fishery patrol vessel *Steve Irwin* when a fuel line was blown through and fuel sprayed from the fuel tank vent following the transfer of bunkers from the tanker *Zemira* at Williamstown, Melbourne
- less than 5 litres of linear alkyl benzene were spilled into Botany Bay in Sydney from a defective manifold pressure valve during the discharge of cargo from the tanker *Golden Wave*.

The full range of pollution occurrence types for the periods 2005-2012 and 2011-2012 can be seen in Figure 9.

Figure 9: Type of pollution for pollution-related occurrences, 2005 to 2012 & 2011 to 2012



Occurrence types associated with injuries

Table 9 shows that, apart from the fatality and serious injury occurrence types, occurrences resulting in fatal and serious injury during 2011-12 were associated with only four occurrence types: equipment failure, capsizing/listing, fire/explosion and damage to ship or equipment. These occurrence types were associated with the following six occurrences:

- the explosion of an oil-fired thermal oil heater on board the oil tanker *Qian Chi* while at anchor in Moreton Bay, Queensland. The explosion seriously injured three crew members and severely damaged the thermal oil heater and surrounding equipment and fittings
- the parting of the aft spring line of the cargo ship *Iron Monarch* in Port Kembla, New South Wales causing a suspected broken forearm to a crew member
- the explosion of a drum during welding on board the bulk carrier *Abu Al Abyad* in Port Kembla, New South Wales, injuring a crew member
- the death of an advisor on the tug *Adonis* who was trapped in the wheelhouse when the tug capsized in the port of Gladstone
- the third mate on board the woodchip carrier *Universal Gloria* suffered burns to his hands and face when the air compressor he was using to fill an oxygen breathing apparatus cylinder exploded
- the death of the barge master who was struck by a stores container which fell while the berthed oil tanker *British Beech* was taking on stores from a barge in Brisbane.

Table 9: Occurrence types and highest injury 2011 to 2012

Occurrence type	Fatal	Missing	Serious
Fatality	11	0	0
Equipment failure	1	0	1
Capsizing/listing	1	0	0
Serious injury	0	0	54
Fire/explosion	0	0	3
Damage to ship or equipment	0	0	1

The Panama registered woodchip carrier *Universal Gloria* involved in a crew member injury on board at sea, off New South Wales, on 11 October 2011 (ATSB investigation MO-2011-007).

Occurrence types associated with accidents and serious incidents

Between 2005 and 2012, there were 140 occurrence types associated with accidents and serious incidents. The most common occurrence type was fatality, which accounted for 30 per cent of all occurrence types. There were at least three fatality occurrence types assigned for each year of the period. The next most common occurrence type was damage to ship or equipment (14 per cent of occurrence types).

During 2011-12, there were 34 occurrence types associated with accidents and serious incidents. As for 2005-12, the fatality occurrence type accounted for 29 per cent of the total, with machinery failure and serious injury the next most common. There was only one instance of damage to a ship or equipment in 2011-12, the second most common occurrence type between 2005 and 2012.

Table 10: Occurrence types associated with accidents and serious incidents, 2005 to 2012

Occurrence Type	2005	2006	2007	2008	2009	2010	2011	2012	Total
Fatality	7	8	8	3	3	3	4	6	**42**
Damage to ship or equipment	4	3	3	3	1	4	1	0	**19**
Machinery failure	2	2	0	0	1	2	1	3	**11**
Serious injury	2	2	1	0	2	0	2	2	**11**
Fire/explosion	0	1	2	1	1	2	1	2	**10**
Grounding/stranding	1	1	0	2	0	2	1	0	**7**
Hull failure/failure of watertight openings	0	3	1	0	0	1	1	0	**6**
Equipment failure	0	1	1	2	0	1	1	0	**6**
Collision	0	1	2	0	0	1	0	1	**5**
Pollution	0	1	0	0	0	2	1	1	**5**
Flooding	1	1	1	0	0	0	1	0	**4**
Foundered	1	0	1	0	0	1	0	0	**3**
Contact	0	0	0	0	0	0	1	2	**3**
Capsizing/listing	0	0	1	0	0	1	1	0	**3**
Lifeboat accident	0	0	1	0	0	0	0	0	**1**
Missing assumed lost	1	0	0	0	0	0	0	0	**1**
Other	2	0	0	0	0	0	0	1	**3**

Steering gear breakdown serious incident on board the New Zealand registered tug *Tuahine*, off Queensland 31 October 2011 (ATSB investigation MO-2011-009).

Occurrence types associated with incidents

Nearly 90 per cent of all occurrence types assigned to vessels during the period 2005 to 2012 were associated with incidents. The top three occurrence types associated with incidents were damage to ship or equipment, serious injury and equipment failure. These three occurrence types account for almost half of all the occurrence types assigned to incidents.

In 2012, there was a 51 per cent increase in the number of occurrence types associated with incidents compared with 2011. This increase was in line with the overall rise in incidents (up 49 per cent). There were large increases in machinery failure, equipment failure, damage to ship or equipment and serious injury.

Table 11: Occurrence types associated with incidents, 2005 to 2012

Occurrence type	2005	2006	2007	2008	2009	2010	2011	2012	Total
Damage to ship or equipment	27	27	25	18	41	27	16	26	207
Serious injury	17	19	19	16	21	20	20	30	162
Equipment failure	14	15	23	18	17	14	16	26	143
Fire/explosion	10	12	8	16	8	8	11	10	83
Machinery failure	5	20	7	2	6	6	8	21	75
Contact	6	5	5	7	13	12	12	9	69
Grounding/stranding	10	9	6	9	4	5	11	12	66
Hull failure/failure of watertight openings	4	3	5	2	6	3	3	7	33
Collision	7	6	5	2	7	2	3	0	32
Pollution	0	6	3	2	8	3	0	3	25
Lifeboat accident	4	3	1	2	4	4	2	1	21
Flooding	0	1	3	2	3	0	1	8	18
Close quarters	3	2	2	1	2	2	1	3	16
Capsizing/listing	0	1	0	0	2	1	1	0	5
Foundered	0	0	0	0	1	0	0	1	2
Fatality	0	0	0	0	0	0	1	0	1
Missing assumed lost	0	0	0	0	0	1	0	0	1
Other	4	11	11	7	23	17	10	18	101

Cargo hold fire on board *BBC Baltic* at Port Hedland, Western Australia, 26 January 2012 (ATSB investigation MO-2012-002).

Occurrence types associated with vessel groups

Table 12 shows the number of occurrence types for each vessel grouping in 2011-12. Where two vessels were involved in one event, such as a collision, the event was counted for each vessel.

Vessel groups are exposed to different marine hazards due to the varying methods and types of operation they involve. For example, passenger vessels were more likely to be assigned serious injury occurrence types, accounting for 41 per cent of all passenger vessel occurrence types. Similarly, offshore support vessels were more likely to be involved in occurrences where contact occurred (19 per cent of all offshore support vessel occurrence types).

The top three overall occurrence types were serious injury, damage to ship or equipment and equipment failure, which together accounted for 43 per cent of all occurrence types. The most common occurrence types largely reflect those assigned to bulk carriers and cargo vessels which account for 56 per cent off all occurrence types.

Collision between the Singapore registered offshore supply vessel *Far Swan* and the barge *Miclyn 131* at Dampier, Western Australia on 6 October 2010 (ATSB investigation MO-2010-006).

Table 12: Vessels with associated occurrence types by vessel group, 2011 to 2012

Occurrence Type	Bulk	Cargo	Tanker	Offshore support	Special-purpose vessel	Passenger	Tug	Offshore platform	Fishing	Recreational	Border Protection	Other	Total
Serious injury	23	6	7	6	1	9	1	1	0	0	0	0	**54**
Damage to ship or equipment	11	12	5	4	3	3	1	0	0	0	0	5	**44**
Equipment failure	14	16	4	3	2	0	3	1	0	0	0	1	**44**
Machinery failure	15	13	2	0	0	0	3	0	0	0	0	0	**33**
Contact	6	3	2	5	4	1	2	0	0	0	0	3	**26**
Fire/explosion	7	6	3	3	1	3	0	0	0	0	0	1	**24**
Grounding/stranding	3	4	4	2	3	2	3	0	0	0	0	3	**24**
Hull failure/failure of watertight openings	1	0	3	2	2	1	0	0	0	0	0	2	**11**
Fatality	6	2	1	0	1	0	0	0	1	0	0	0	**11**
Flooding	3	1	1	0	2	1	1	0	0	0	0	1	**10**
Collision	1	1	1	1	0	0	1	0	0	1	0	0	**6**
Pollution	0	1	1	0	2	0	1	0	0	0	0	0	**5**
Close quarters	2	2	0	0	0	0	0	0	0	0	0	0	**4**
Lifeboat accident	3	0	0	0	0	0	0	0	0	0	0	0	**3**
Capsizing/listing	0	1	0	0	0	0	1	0	0	0	0	0	**2**
Foundered	0	1	0	0	0	0	0	0	0	0	0	0	**1**
Other	15	7	1	0	2	2	1	0	0	0	0	1	**29**

Data sources and explanatory notes

Data sources

The ATSB's marine occurrence database was used for this report. Due to current reporting requirements under sub-Regulation 3.1 of the *Transport Safety Investigation Regulations 2003*, generally only larger vessels conducting international trade, transport or offshore support operations are included in this data set. Some fishing vessels and recreational craft are included in the data set due to the interaction of these types of vessels with larger vessels where reporting is required.

The data is analysed without any normalising variable (such as marine shipping movements) as this data was not available. Therefore, as the number of occurrences within any vessel group or marine area will be affected by the amount of activity, direct comparisons between groups/areas need to be made with this fact in mind.

Disclaimer

All effort has been taken to ensure that this data is correct, however, over time this data may change due to factors such as changing thresholds for definitions and further information coming to light on particular occurrences.

Structure of data in this report

Each chapter of this report is structured according to the particular element being reviewed. The data is shown for occurrences between 1 January 2005 and 31 December 2012.

- Occurrence data in *Marine Occurrences* is a count of the total occurrences and total injuries. This chapter represents the amount of reported incidents, serious incidents and accidents.
- Vessel data in *Vessels in Occurrences* is based on the total number of vessels in reported occurrences. As there is more than one vessel in some occurrences, there are more vessels than occurrences.
- Occurrence type or event based data in *Occurrence types* is based on a count of the number of individual events that have occurred over the period of study, and also the number of events that have been associated with vessels. Please note that:
  - there is often more than one event during an occurrence, and therefore the number of events is significantly more than the number of occurrences.
  - counts have also been performed for events affecting different types of vessels. As there are multiple vessels in some occurrences which share a common event, such as a collision, counts performed for these occurrence types will have two vessel events recorded.

Other key points

The highest injury refers to the most serious injury sustained during the occurrence or on board the vessel depending on the particular report chapter. This does not represent the total number of injuries. Minor injuries are not included as the reporting of minor injuries for non-investigated occurrences is probably inconsistent. The severity of injuries is in the following order: fatal injury, missing, serious injury.

‘Serious injury’ and ‘Fatality’ occurrence types reflect when at least one of these injuries has occurred. Counts of these occurrence types do not necessarily reflect the total number of these injuries.

The ‘Missing assumed lost’ occurrence type can included occurrences where a vessel was lost and an occurrence where an object from a vessel such as a container was lost at sea. Therefore, this occurrence type does not reflect the number of occurrences where a person was lost overboard.

Further definitions of terminology can be found at the end of this report.

Australian Transport Safety Bureau

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

Terminology used in this report

***Accident*:** an occurrence involving a vessel where:

- a person dies or suffers serious injury as a result of an occurrence associated with the operation of the vessel; or
- the vessel is destroyed or seriously damaged as a result of an occurrence associated with the operation of the vessel; or
- any property is destroyed or seriously damaged as a result of an occurrence associated with the operation of the vessel (*Transport Safety Investigation Act 2003*).

***Australian Jurisdictional Waters*:** all of Australia's coastal and territorial waters, economic exclusion zone and search and rescue area. This is defined by the Australian Maritime Safety Authority.

***Incident*:** an occurrence, other than an accident, associated with the operation of a vessel which affects or could affect the safety of operation.

***Marine area*:** an area over an ocean or sea under Australia's maritime jurisdiction.

***Occurrence*:** accident or incident.

***Occurrence type*:** An event that occurs during a marine occurrence. Occurrence types describe what happened during the occurrence. Currently, there are 18 discrete marine occurrence types, and there can be multiple events during an occurrence.

***Serious Incident*:** an incident involving circumstances indicating that an accident nearly occurred.

***Serious Injury*:** an injury that requires, or would usually require, admission to hospital within 7 days after the day when the injury is suffered (*Transport Safety Investigation Regulations 2003*).

***Vessel group*:** groupings of vessel types with similar function.

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Investigation

ATSB Transport Safety Report
Marine Research Report
Australian Shipping Occurrence Statistics
2005 to 2012
MR-2013-002
Final – 24 April 2013