

Chapter 4 Marine accident and incident investigations

1 Marine accidents and incidents to be investigated

<Marine accidents to be investigated>

Paragraph 5, Article 2 of the Act for Establishment of the Japan Transport Safety Board

(Definition of marine accident)

The term "Marine Accident" as used in this Act shall mean as follows:

- 1 Damage to a ship or facilities other than a ship related to the operations of a ship.
- 2 Death or injury of the people concerned with the construction, equipment or operation of a ship.

<Marine incidents to be investigated>

Item 2, paragraph 6, Article 2 of the Act for Establishment of the Japan Transport Safety Board

(Definition of marine incident)

A situation, prescribed by Ordinance of Ministry of Land, Infrastructure, Transport and Tourism, where deemed to bear a risk of Marine Accident occurring.

Article 3 of Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board

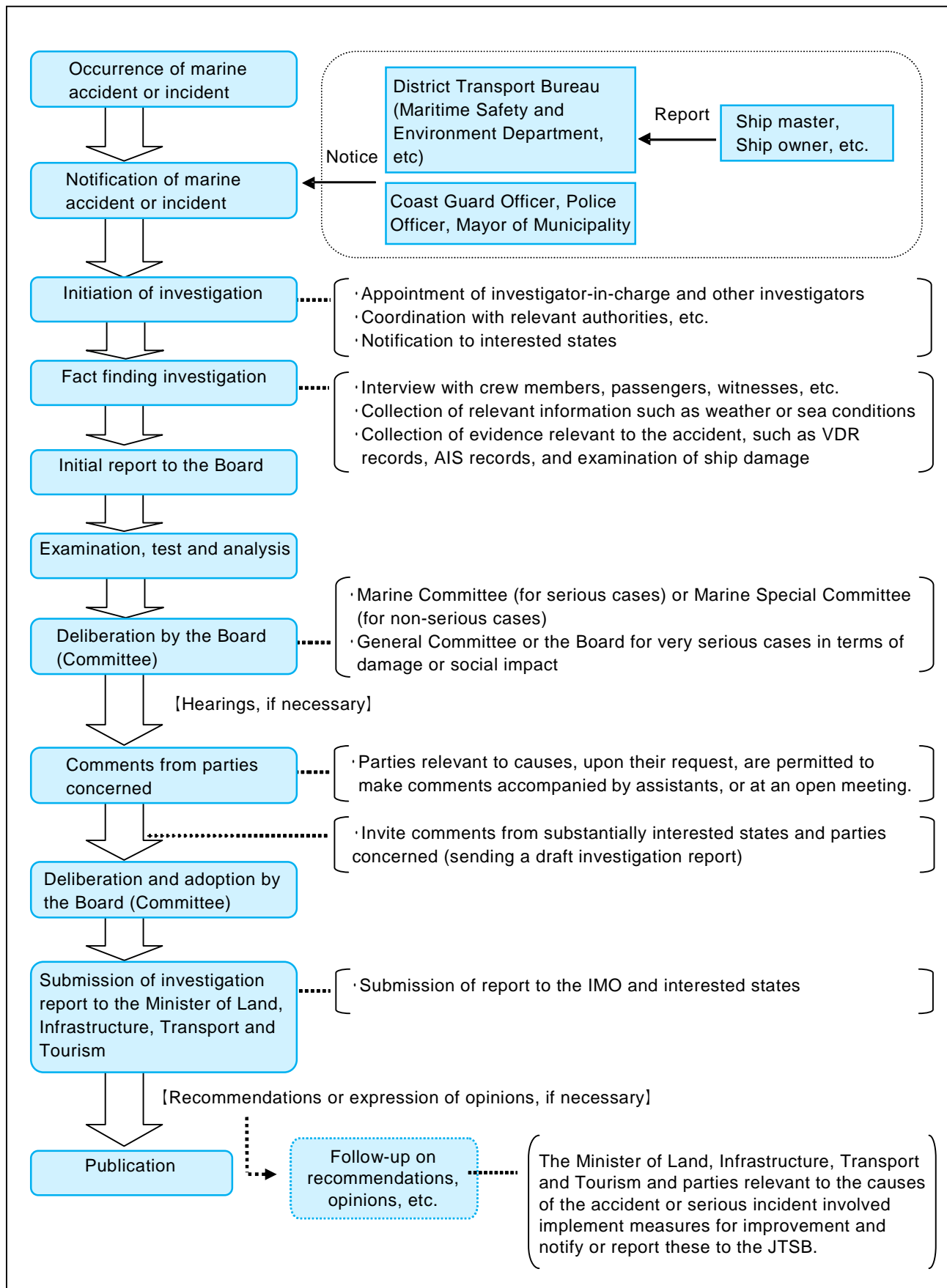
(A situation, prescribed by Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism, stipulated in item 2, paragraph 6, Article 2 of the Act for Establishment of the Japan Transport Safety Board)

- 1 The situation wherein a ship became a loss of control due to any of the following reasons:
 - (a) navigational equipment failure;
 - (b) listing of a ship; or
 - (c) short of fuel or fresh water required for engine operation.
- 2 The situation where a ship grounded without any damage to the hull; and
- 3 In addition to what is provided for in the preceding two items, the situation where safety or navigation of a ship was obstructed.

<Category of marine accident and incident>

Marine accident and incident to be investigated		Type of marine accident and incident
Marine accident	Damage to ships or other facilities involved in ship operation	Collision, Grounding, Sinking, Flooding, Capsizing, Fire, Explosion, Missing, Damage to facilities
	Casualty related to ship structures, equipment or operations	Death, Death and injury, Missing person, Injury
Marine incident	Navigational equipment failure	Loss of control (engine failure, propeller failure, rudder failure)
	Listing of ship	Loss of control (extraordinary listing)
	Short of fuel or fresh water required for engine operation	Loss of control (fuel shortage, fresh water shortage)
	Grounding without hull damage	Stranded
	Obstruction of ship safety or navigation	Safety obstruction, Navigation obstruction

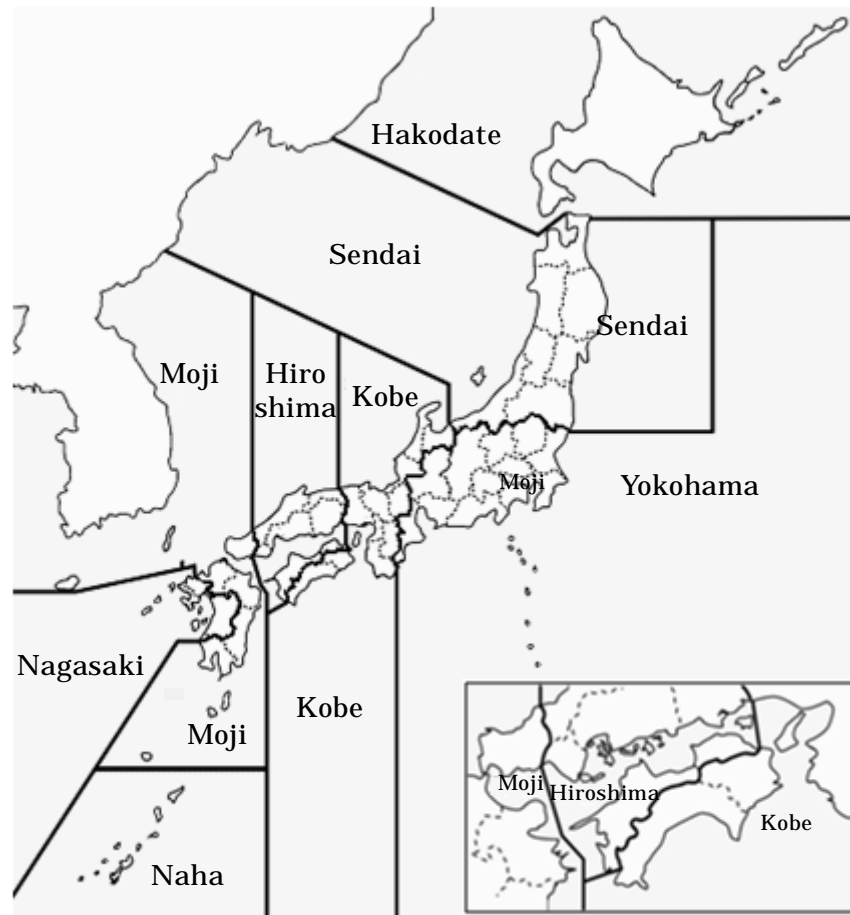
2 Procedure of marine accident/incident investigation



Chapter 4

3 Jurisdiction of the Offices over marine accidents and incidents

For the investigation of marine accidents and incidents regional investigators are stationed in the regional offices (eight offices). Our jurisdiction covers marine accidents and incidents in the waters around the world, including rivers and lakes in Japan. The regional offices are in charge of investigations in the respective areas shown in the following map. Marine accident investigators in the Tokyo Office (Headquarters) are in charge of serious marine accidents and incidents.



Jurisdiction map

4 Role of the Offices and Committees according to category of accident and incident

Serious marine accidents and incidents are investigated by the marine accident investigators in the Headquarters, and are deliberated in the Marine Committee.

Non-serious marine accidents and incidents are investigated by regional investigators stationed in the eight regional offices, and deliberated in the Marine Special Committee.

Serious marine accidents and incidents	Office in charge of investigation: Marine accident investigators in the Headquarters Committee in charge of deliberation and adoption: Marine Committee
<p>Definition of "serious marine accidents and incidents"</p> <ul style="list-style-type: none"> · Cases where a passenger died or went missing, or two or more passengers were severely injured. · Cases where five or more persons died or went missing. · Cases involved a vessel engaged on international voyages where the vessel was a total loss, or a person on the vessel died or went missing. · Cases of spills of oil or other substances where the environment was severely damaged. · Cases where unprecedented damage occurred following a marine accident or incident. · Cases which made a significant social impact. · Cases where identification of the causes is expected to be significantly difficult. · Cases where essential lessons for the mitigation of damage are expected to be learned. 	
Non-serious marine accidents and incidents	Office in charge of investigation: Regional investigators in the regional offices Committee in charge of deliberation and adoption: Marine Special Committee

5 Statistics of investigations of marine accidents and incidents (As of end of February 2014)

The JTSB carried out investigations of marine accidents and incidents in 2013 as follows:

Investigations into 789 accidents had been carried over from 2012, and 946 accident investigations newly launched in 2013. Investigation reports on 993 accidents and one interim report were published in 2013, and thereby 741 accident investigations were carried over to 2014.

Investigations into 109 incidents had been carried over from 2012, and 151 incident investigations newly launched in 2013. Investigation reports on 158 incidents were published, and thereby 101 incident investigations were carried over to 2014.

Among the 1,151 reports published in 2013, four were issued with recommendations. Two opinions

were expressed during the course of the investigation.

Investigations of marine accidents and incidents in 2013

(Cases)

Category	Carried over from 2012	Launched in 2013	Not applicable	Transferred to Tokyo Office	Total	Publication of investigation report	Recommendations	Safety recommendations	Opinions	Remarks	Carried over to 2014	Interim report
Marine accident	789	946	△1	0	1,734	993	(4)	(0)	(2)	(0)	741	(1)
Tokyo Office (Serious cases)	32	18		8	58	22	(4)		(2)		36	(1)
Regional Offices (Non-serious cases)	757	928	△1	△8	1,676	971					705	
Marine incident	109	151	△1	0	259	158	(0)	(0)	(0)	(0)	101	(0)
Tokyo Office (Serious cases)	0	1		1	2	1					1	
Regional Offices (Non-serious cases)	109	150	△1	△1	257	157					100	
Total	898	1,097	△2	0	1,993	1,151	(4)	(0)	(2)	(0)	842	(1)

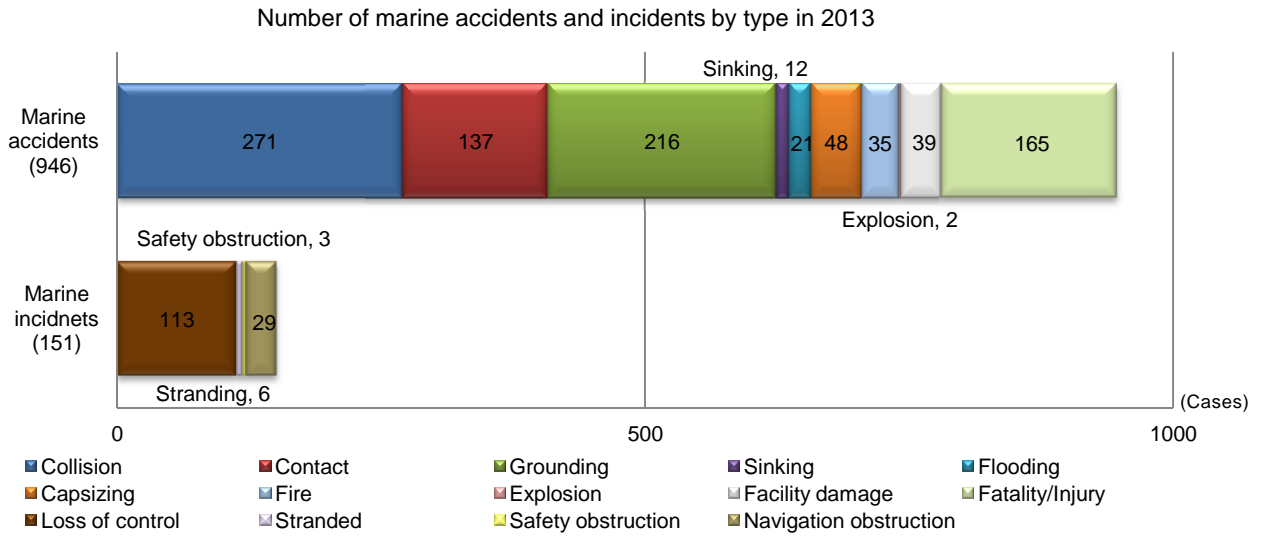
Note 1: The column "Not applicable" shows the number of cases which did not come under the category of accident or incident as defined in Article 2 of the Act for Establishment of the Japan Transport Safety Board.

Note 2: The column "Transferred to Tokyo Office" shows the number of cases where the investigation found out that it was serious and the jurisdiction was transferred from the regional office to the Tokyo Office.

6 Statistics of investigations launched in 2013 (As of end of February 2014)

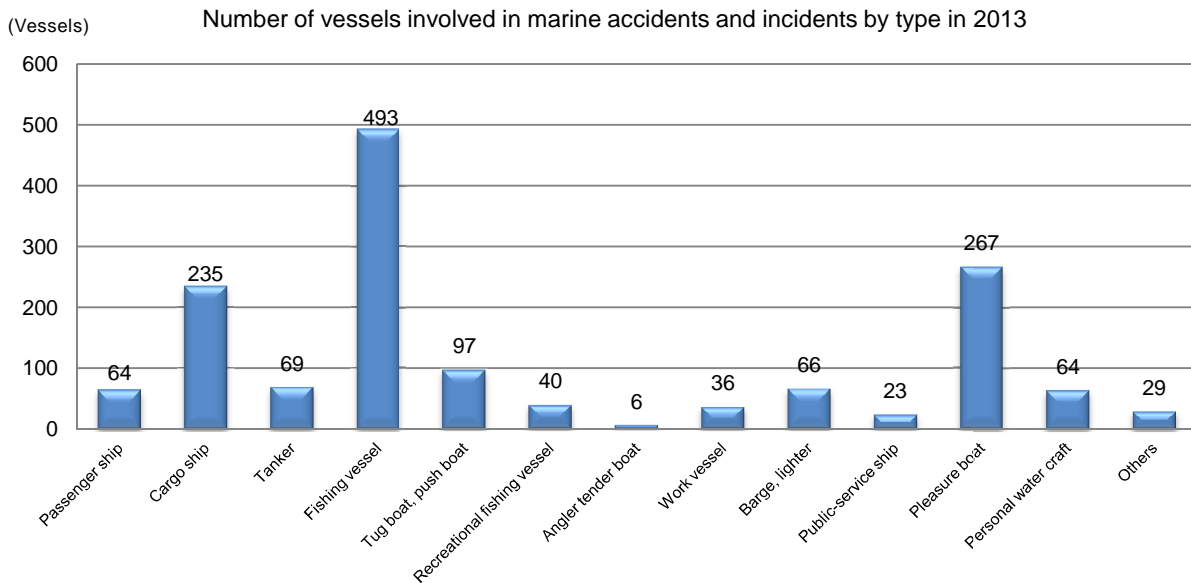
(1) Types of accidents and incidents

The 1,097 investigations launched in 2013 are classified by types as follows: With regard to marine accidents, there were 271 cases of collision, 216 cases of grounding, 165 cases of fatality/injury, and 137 cases of contact. With regard to marine incidents, there were 113 cases of loss of control (including 69 cases of machinery failure, 6 cases of rope entangling, etc.), 29 cases of navigation obstruction, and 6 cases of stranded. The objects of contact were quays in 39 cases, breakwaters in 25 cases, and light buoys in 14 cases.



(2) Types of vessels

The number of vessels involved in marine accidents and incidents is 1,489. Those vessels are classified by type as follows: 493 fishing vessels, 267 pleasure boats, 235 cargo ships, 97 tug boats and push boats, and 69 tankers. The total of the three categories of fishing vessels, pleasure boats, and cargo



ships is 995, accounting for nearly 70 % of all the accidents and incidents.

The number of foreign-registered vessels involved in marine accidents and incidents was 124, and they were classified by accident type as follows: 63 vessels in collision, 18 vessels in grounding, and 18 vessels in contact. As for the nationality of vessels, 26 vessels were registered in South Korea, 24 vessels in Panama, 14 vessels in Cambodia, and 8 in Singapore. The number of vessels registered in Asian countries or regions was accounting for the majority of the accidents and incidents.

Number of foreign-registered vessels by nationality

(Vessels)

South Korea	26	Hong Kong	7	Bahamas	4	Malaysia	2
Panama	24	Marshall Islands	5	Liberia	3	China	2
Cambodia	14	Tuvalu	5	Taiwan	3	Philippines	2
Singapore	8	Kiribati	5	Belize	3	Others	11

(3) Number of casualties

The number of casualties was 514, consisting of 117 deaths, 29 missing persons, and 368 injured persons. By type of vessel, 173 persons in fishing vessels and 113 persons in pleasure boats. By type of accident, 192 persons in casualties (not involved in other types of accidents), 148 persons in collision, 103 persons in contact, and 29 persons in sinking or capsizing.

With regard to persons dead or missing, 80 persons were involved in fishing vessel accidents, 29 persons in pleasure-boat accidents, indicating dead or missing cases occurred frequently in fishing vessels.

Number of casualties (marine accident)

(Persons)

2013										
Vessel type	Dead			Missing			Injured			Total
	Crew	Passengers	Others	Crew	Passengers	Others	Crew	Passengers	Others	
Passenger ship	0	0	0	0	0	0	8	45	1	54
Cargo ship	9	0	2	7	0	0	8	0	2	28
Tanker	2	0	0	2	0	0	2	0	0	6
Fishing vessel	65	0	0	14	0	1	87	0	6	173
Tug boat, push boat	4	0	0	0	0	0	3	0	0	7
Recreational fishing vessel	0	1	0	0	0	0	8	38	4	51
Angler tender boat	0	0	0	0	0	0	1	4	0	5
Work vessel	0	0	1	2	0	0	2	0	3	8
Barge, lighter	0	0	0	0	0	0	0	0	0	0
Public-service ship	0	0	0	0	0	0	1	0	1	2
Pleasure boat	15	0	11	3	0	0	25	0	59	113
Personal water craft	4	0	3	0	0	0	14	0	42	63
Others	0	0	0	0	0	0	2	0	2	4

Total	99	1	17	28	0	1	161	87	120	514
	117			29			368			

7 Summaries of serious marine accidents and incidents which occurred in 2013

The serious marine accidents which occurred in 2013 are summarized as follows: The summaries are based on information available at the initial stage of the investigations and therefore, may change depending on the course of investigations and deliberations.

(Marine accident)

No.	Date and location	Vessel type and name Accident type	Summary
1	January 8, 2013 West-northwest of Katsumoto Port, Iki City, Nagasaki Prefecture	Recreational fishing vessel SHINKAI Injury to fishing passenger	When the vessel started sailing to move to the fishing grounds it was subject to a swell that caused a fishing passenger to be lifted into the air and to be injured from the subsequent fall on the deck.
2	January 10, 2013 Around 1.2 nautical miles northeast of Nakanose D Light Buoy, Tokyo Bay	LNG ship PUTERI NILAM SATU (Ship A, Malaysia) LPG ship SAKURA HARMONY (Ship B, Panama) Collision	Both ships collided while Ship A was sailing west-southwest and Ship B was sailing north in the sea east of Kawasaki Section, Keihin Port. There was no cargo on either ship and no oil spill.
3	January 23, 2013 Around 10 nautical miles southeast of Katsuura City, Chiba Prefecture	Container ship BAI CHAY BRIDGE (Ship A, Panama) Fishing vessel SEIHOU MARU No. 18 (Ship B) Collision	Ship A and Ship B collided in the sea referenced in the left column. Although Ship B listed as a result of the collision, all crew members of the ship were rescued.
4	February 7, 2013 Maruyama Minami Multipurpose International Terminal, Tsuruga Port, Fukui Prefecture	Container ship PANCON SUCCESS(South Korea) Death of crew	While the vessel was moored at the terminal referenced in the left column, a mooring rope snapped and hit a crew member, causing the crew member to die.
5	February 25, 2013 Around 3 nautical miles west of Kansai International Airport	Container ship WAN HAI 162 (Ship A, Taiwan) Fishing vessel SEINAN MARU No. 7 (Ship B) Fishing vessel SEINAN MARU No. 8 (Ship C) Collision	Ship A, Ship B, and Ship C collided in the sea referenced in the left column and Ship B and Ship C capsized. One crew member died and one crew member went missing of the crew members of Ship B and Ship C.
6	March 26, 2013 Kobe Section, Hanshin Port	Cargo ship JURONG (Panama) Casualty to worker	Loaded tires fell over in the vessel anchored at the location referenced in the left column, causing a Japanese worker to die and one person to be injured.

No.	Date and location	Vessel type and name Accident type	Summary
7	April 9, 2013 Hamada Port, Hamada City, Shimane Prefecture	Tug boat KOUN MARU No. 58 Capsizing	The vessel capsized while tugging out a container ship for departure and the skipper that fell overboard died.
8	April 30, 2013 Quay 4, Shiomi, Sakai Senboku District, Hanshin Port	Cargo ship FAVOR SAILING (Cambodia) Foundering	The vessel listed in the sea near Izumiotsu City, Osaka, and while the crew members attempted to restore the list after being towed to berth to the quay referenced in the left column, the vessel toppled over and foundered.
9	May 16, 2013 Wharf 2, Tenpoku, Wakkanai Port, Wakkanai City, Hokkaido Prefecture	Cargo ship TAIGAN(Cambodia) Fire	A fire broke out when the vessel was berthed to the wharf referenced in the left column, after which six dead bodies were discovered and three people were transported to the hospital.
10	May 27, 2013 East of Oishinohana, Sumoto City, Hyogo Prefecture	Push boat SANKYO MARU No. 38 Capsizing	The vessel capsized in the sea referenced in the left column. Two deckhands died and the ship foundered while being towed by a tug boat.
11	June 15, 2013 North-northeast of Genkaijima, Fukuoka City, Fukuoka Prefecture	Cargo ship FUKUKAWA (Ship A, Cambodia) Fishing vessel TSUNOMINE MARU (Ship B) Collision	Ship B was discovered capsized in the sea referenced in the left column, while the skipper was rescued from the vessel and confirmed dead. Subsequently it was determined that Ship A and Ship B collided.
12	June 23, 2013 Around 161 nautical miles 074° from Inubozaki Lighthouse, Choshi City, Chiba Prefecture	Cargo ship NOCC OCEANIC (Ship A, Marshall Islands) Fishing vessel YUJIN MARU No. 7 (Ship B) Collision	As Ship A was sailing north from Kawasaki Section, Keihin Port to Balboa Port, the Republic of Panama it collided with Ship B that was sailing southeast from Shiogama Port, Miyagi Prefecture to a fishing ground. Ship A suffered from a scratch to the bow, while Ship B was cut in half at the center, causing the skipper to go missing.
13	June 26, 2013 Oniike Port, Amakusa City, Kumamoto Prefecture	Passenger ferry FERRY AMAKUSA Injury to passenger	While berthing to the prefecture-run quay No. 2 at the port referenced in the left column, the starboard bow came in contact with the quay and three passengers suffered light injuries. The vessel sustained a dent on the hull of the starboard bow and the foundation of the quay's fender was cracked.
14	July 15, 2013 West of Fukaura Port, Fukaura Town, Aomori Prefecture	Tug boat SHIMAFUJI (Ship A) Work platform MIYABI (Ship B) Fishing vessel KYUYOSHI MARU No. 88 (Ship C) Collision	Ship B and Ship C collided while Ship A was towing Ship B and Ship C was sailing to a fishing ground. Although ship B suffered a breach in the middle part of the starboard hull and Ship C suffered a crack in the bulbous bow, there were no casualties on either ship.

No.	Date and location	Vessel type and name Accident type	Summary
15	August 12, 2013 North of Nokonoshima, Fukuoka City, Fukuoka Prefecture	Roll-on roll-off cargo ship URIZUN 21 (Ship A) Cargo ferry FERRY TAISHU (Ship B) Collision	The ships collided in the area referenced in the left column while Ship A was sailing to the entrance of Hakata Port and Ship B was sailing to exit Hakata Port. Ship A suffered bending and scratches in the bulwark on the port bow, while Ship B suffered scratches and holes in the hull of the port side of the stern and the ship's ramp way was deformed. Neither ship suffered any casualties.
16	August 13, 2013 South Quay B, Funabashi Central Wharf, Funabashi City, Chiba Prefecture	Cargo ship WELLINGTON STAR (Bahamas) Death of worker	While containers (40ft containers, weight of 24t) were being loaded using the vessel's deck crane while the vessel was berthed to the quay referenced in the left column, one stevedore became caught between a container and the vessel's sludge tank and then died.
17	August 14, 2013 Rocks on northeast of Oshima located in Mikuni Town, Sakai City, Fukui Prefecture	Recreational fishing vessel HOSHIN MARU No. 5 Grounding	While the vessel crewed with the skipper and other crew members and carrying three fishing passengers was returning from recreational fishing, it grounded on the rocks referenced in the left column and all crew members including the fishing passengers were injured.
18	September 11, 2013 Himeji Port, Hyogo Prefecture	Cargo ship GREEN HOPE (Panama) Injury to worker	While stevedoring work was being conducted at Nakajima Quay 3 at Himeji Port, the cargo handling crane on the deck fell over and one Japanese worker operating the crane suffered from a pelvic fracture.
19	September 22, 2013 Rocks in Yashiro Bay, Obama City, Fukui Prefecture	Recreational fishing vessel SATO MARU No. 7 Contact with rocks	The vessel came in contact with Okinoishi (rocks) while sailing in Yashiro Bay, Obama City. Six fishing passengers and the skipper were injured, and the bow was severely damaged.
20	September 27, 2013 Approximately 4.4 nautical miles west of Izu Oshima, Oshima Town, Tokyo	Cargo ship JIA HUI (Ship A, Sierra Leone) Cargo ship EIFUKU MARU No. 18 (Ship B) Collision	The ships collided in the area referenced in the left column while Ship A was sailing southwest from Kawasaki Section, Keihin Port to Busan Port, South Korea and Ship B was sailing northeast from Nagoya Port, Aichi Prefecture to Katsunan District, Chiba Port, Chiba Prefecture. Ship B capsized and all six crew members died. In addition, the bow of Ship A was damaged.
21	September 28, 2013 Breakwater at entrance of Dokai Bay, Kitakyushu City, Fukuoka Prefecture	Recreational fishing vessel DAISHIN MARU Contact with breakwater	The vessel came into contact with the breakwater referenced in the left column while sailing to the fishing ground. Two fishing passengers and the skipper were injured, there was a breach in the bottom of the bow, and water flooded the engine room.

No.	Date and location	Vessel type and name Accident type	Summary
22	December 17, 2013 Isla Cedros, United Mexican States	Cargo ship ONOE Death of crew	While conducting cargo handling operations at Isla Cedros, United Mexican States, the second officer fell 5 to 6m from the shore gangways onto the dolphin wharf and subsequently died despite being transported to the hospital.

(Marine incident)

No.	Date and location	Name of incident	Summary
1	June 11, 2013 Kanmon passage (east of Mutsurejima, Shimonoseki City, Yamaguchi Prefecture)	Car carrier AUTO BANNER (Ship A, Panama) Training ship SHIMAYUKI (Ship B) Safety obstruction	The ships came close to each other in the sea referenced in the left column as Ship B was sailing north and Ship A was sailing south.

Column**Recreational fishing vessel rock collision accident****Marine accident investigator**

There was an accident in which a recreational fishing vessel crewed by the skipper and carrying six fishing passengers came into contact with the Okinoishi rocks in the night while sailing in Yashiro Bay, Obama City, Fukui Prefecture, and as a result all fishing passengers and the skipper suffered serious injuries.

It is probable that the accident was caused by the collision with the rocks as a result of the skipper of the recreational fishing vessel not noticing that he was sailing into rocks because a proper lookout could not be kept. The skipper of the recreational fishing vessel said that one of the factors that prevented a proper lookout from being kept was the work light that was lit attached to the outer wall in front of the steering house. Because this work light was lit, it created an area of high-brightness in a portion of the field of vision near the bow, and this glare caused a reduction in the ability to see, making visual confirmation near the bow difficult.

Glare refers to over-brightness, and according to a reference document, it causes the ability to see to be reduced as stated above and for other areas to be difficult to see. One of the characteristics of glare is that its effects become more significant the higher the luminance is, the larger the apparent area is, and the closer the bright area is to the line of vision.

Regarding this accident we identified the measures which the owner of the recreational fishing vessel needs to take, including securing a field of vision towards the bow by turning off work lights on the bow when sailing during the night and keeping a proper lookout by properly using navigational equipment such as GPS plotters. Additionally, to make these measures widely known, we have requested cooperation from recreational fishing related organizations that provide training to persons in charge of recreational fishing vessel operation so that they provide guidance to recreational fishing businesses.

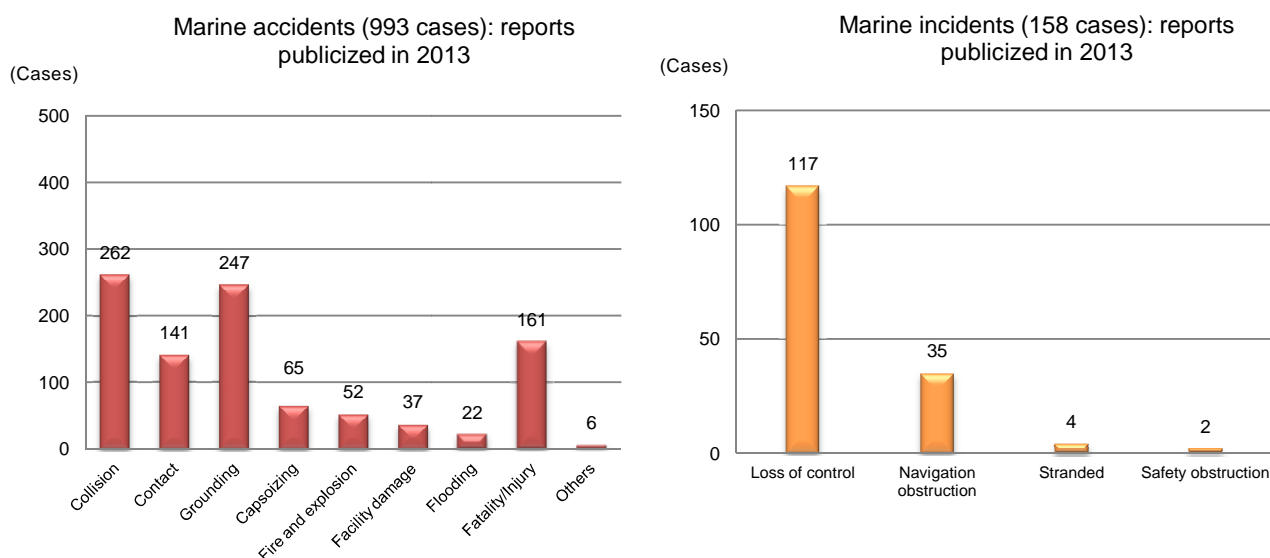
Lighting Handbook (Compact Edition) (edited by The Illuminating Engineering Institute of Japan, published in 2006 by Ohmsha)

8 Publication of investigation reports

The number of investigation reports of marine accidents and incidents published in 2013 was 1,151 composed of 993 marine accidents (among them, 22 were serious) and 158 marine incidents (among them, 1 was serious).

Looking those accidents and incidents by type, there were 262 cases of collision, 247 cases of grounding, 161 cases of fatality/injury, and 141 cases of contact in marine accidents. Whereas in marine incidents, there were 117 cases of losses of control, (including 112 cases of navigational equipment failure and five cases of out-of-fuel), 35 cases of navigation obstruction, and four cases of stranded.

As for the objects of contact, 36 were quays, 21 were breakwaters, and 16 were breakwater blocks.



The number of vessels involved in marine accidents and incidents was 1,520. Looking at those vessels by type, the vessels involved in marine accidents were 460 fishing vessels, 246 cargo ships, 244 pleasure boats, 80 tug boats and push boats, and 65 tankers. The vessels involved in marine incidents were 61 fishing vessels, 24 pleasure boats, 20 cargo ships, and 17 passenger ships. The sum of the number of fishing vessels, pleasure boats, and cargo ships involved in accidents or incidents is 1,055, accounting for almost 70 % of all the vessels involved in accidents or incidents.

Number of vessels by type involved in marine accidents and incidents for which reports were publicized in 2013

Classification	(Vessels)													Total
	Passenger ship	Cargo ship	Tanker	Fishing vessel	Tug boat, push boat	Recreational fishing vessel	Angler tender boat	Work vessel	Barge, lighter	Public-ser vice ship	Pleasure boat	Personal water craft	Others	
Marine accident	60	246	65	460	80	38	4	34	56	15	244	42	15	1,359
Marine incident	17	20	15	61	8	2	0	1	2	3	24	7	1	161
Total	77	266	80	521	88	40	4	35	58	18	268	49	16	1,520
%	5.1	17.5	5.3	34.2	5.8	2.6	0.3	2.3	3.8	1.2	17.6	3.2	1.1	100.0

An overview of the published investigation reports on serious marine accidents and incidents in 2013 is as follows.

List of published investigation reports on serious marine accidents (2013)

No.	Date of publication	Date and location	Name of accident	Summary
1	January 25, 2013	July 6, 2011 Southeast of the Daikoku Wharf in Section 3, Keihin Port, Yokohama	Cargo ship AQUAMARINE (Ship A, Vietnam) Fishing vessel HIRASHIN MARU (Ship B) Collision	Heading southeast on the Tsurumi passage established in Section 3, Keihin Port, Yokohama, Ship A crewed by the master and 21 crew members collided with Ship B crewed by the skipper and one crew member while making a turn pulling a trawl net. In terms of Ship B, the skipper died and the deckhand was injured, the keel buckled, there were breaches, etc. In terms of Ship A, damage included dents to the bulbous bow.
2	January 25, 2013	May 2, 2011 Basin for small crafts at Omuta River in Omuta City, Fukuoka Prefecture	Motor Boat KEN-YU Explosion	The vessel was embarked by the skipper and three friends, who were preparing to depart from a basin for small crafts. When the main engine was started, there was an explosion within the engine casing. Two occupants of the vessel suffered broken bones and the side shell plating, bulwark, and cockpit instrument panel, etc. were damaged.
3	February 22, 2013	November 27, 2011 North of Okinoshima, Munakata City, Fukuoka Prefecture	Cargo ship MARUKA (Ship A, South Korea) Fishing vessel KAIRYO MARU No. 18 (Ship B) Collision	The ships collided while Ship A was crewed by the master and seven other crew members sailing northwest to Masan Port in South Korea and Ship B was crewed by the skipper and one crew member sailing south-southeast to Hakata Port, Fukuoka City, Fukuoka Prefecture. In terms of Ship B, one of the crew members went missing, the skipper suffered injuries including a rib fracture, the ship was cut in half near the center, and the ship foundered leaving nothing but the bow part. Ship A suffered from breaches in the bulbous bow on the starboard side and cracks in the center of this area.
4	February 22, 2013	June 19, 2011 West coast of Takahama Canal, Section 2, Keihin Port, Tokyo	Pleasure boat PEERLESS Contact with quayside	The vessel boarded by the skipper and five persons came into contact with a quayside while sailing south along the Takahama Canal in Section 2, Keihin Port, Tokyo. The skipper and all persons on the vessel suffered injuries, and the hull of the bottom of the bow suffered breaches and scratches. The quay on the west side of the Takahama Canal bank suffered breakage and dents to the safety fence.

No.	Date of publication	Date and location	Name of accident	Summary
5	February 22, 2013	June 26, 2011 South of Imagireguchi, Lake Hamana, Shizuoka Prefecture	Motor Boat HEISEI VII Capsizing	While the vessel boarded by the skipper and three persons was fishing in the Sea of Enshu at the location referenced in the left column, the waves began to get high, so they stopped fishing and started sailing north towards Lake Hamana. At that point a wave from behind washed over the vessel and the vessel capsized. One of the occupants died, the skipper and two other occupants suffered injuries, and the vessel soon foundered after capsizing.
6	March 29, 2013	November 18, 2011 Northeast of Fukuejima, Goto City, Nagasaki Prefecture	Passenger ferry MANYO Listing	The ship was crewed by the master and 13 crew members and carrying 316 passengers and cargo including 21 vehicles. While sailing northeast in the sea northeast of Fukuejima, the ship listed significantly to the port side. Three passengers suffered from injuries, ten trucks and two cars suffered damage including dents, and the weathertight door accessing the port side engine room on the car deck was damaged.
7	March 29, 2013	June 24, 2012 South of Nakama Port, Taketomi Town, Okinawa Prefecture	Passenger ship ANEI GO No. 3 Injury to passenger	Refer to “9. Summaries of recommendations and opinions” (page 105-)
8	March 29, 2013	June 26, 2012 South of Nakama Port, Taketomi Town, Okinawa Prefecture	Passenger ship ANEI GO No. 38 Injury to passenger	Refer to “9. Summaries of recommendations and opinions” (page 105-)
9	April 26, 2013	September 21, 2011 Kawasaki Section, Keihin Port	Cargo ship BEAGLE VII (Panama) Contact with quayside	The vessel was crewed by the master and 16 crew members, and dragged the anchor while anchored south of Ogishima at the location referenced in the left column when faced with a southerly wind as the center of Typhoon No. 15 passed near Keihin Port. After weighing the anchor, the vessel became overwhelmed by the pressure of the southerly wind and came into contact with a quayside on the southeast of Ogishima. While the hull of starboard side was dented and partially cracked, there were no casualties. In addition, the concrete of the quayside was exfoliated.

No.	Date of publication	Date and location	Name of accident	Summary
10	April 26, 2013	February 7, 2012 Section 7, Sakai Senboku District, Hanshin Port	Chemical tanker KYOKUHO MARU No. 2 Death of crew	Refer to “9. Summaries of recommendations and opinions” (page 108-)
11	April 26, 2013	April 4, 2011 Near Hachinohe wave observation light buoy	Fishing vessel RYOEI MARU No. 18 Foundering	The vessel crewed by the skipper and five crew members departed Hachinohe Port, Hachinohe City at around 22:30 on April 3 in order to fish with a small trawl net. After a light was witnessed by another fishing vessel at the location referenced in the left column at around 04:30 on April 3, because it was not possible to make contact, a search for the vessel was conducted. It is probable that the vessel foundered as nothing was discovered during the search. While three of the crew members were found drifting and their death was confirmed, the skipper and two crew members could not be found and have been declared dead.
12	May 31, 2013	May 23, 2012 Near north end of West Breakwater of Section 4, Rumoi Port, Rumoi City, Hokkaido Prefecture	Angler tender boat ARAKAZE Contact with breakwater	The vessel crewed by the skipper and carrying three fishing passengers departed from the mooring in the timber yard of Section 2, Rumoi Port, Rumoi City, Hokkaido. While sailing to take the fishing passengers across to the West Breakwater of Section 4, Rumoi Port, the vessel came into contact with near the northern end of the inner side of the West Breakwater. One fishing passenger and the skipper suffered an injury and the bow of the vessel was crushed.
13	May 31, 2013	July 15, 2011 Northeast of Saruru Fishing Port, Okoppe Town, Hokkaido Prefecture	Recreational fishing vessel TAIKO MARU No. 18 Injury to fishing passenger	The vessel crewed by the skipper and carrying five fishing passengers departed Saruru Fishing Port, Okoppe Town, Hokkaido. While sailing for the fishing ground in the sea northeast of the port, the bow was lifted up by the high waves from the direction of the bow, and one fishing passenger standing on the deck at the bow was injured from the impact when the bow fell back to the surface of the sea. There were no injuries to the other fishing passengers and the vessel was not damaged.

No.	Date of publication	Date and location	Name of accident	Summary
14	May 31, 2013	April 20, 2012 Near C-11 Quay, Yumeshima Container Wharf, Section 1, Osaka, Hanshin Port	Container ship EVER UNISON (Singapore) Contact with quay	While the vessel crewed with the master and 22 crew member was being piloted by the pilot and berthing to C-11 Quay, Yumeshima Container Wharf, it came into contact with the quay. While the hull of the port stern side was dented and scratched, there were no casualties. The C-11 Quay suffered damage to two fenders and four bumpers.
15	June 28, 2013	March 25, 2012 East-southeast of Shiraoi Port, Shiraoi Town, Hokkaido Prefecture	Pleasure boat MIHO VII Capsizing	While the vessel boarded by the skipper and four persons was fishing in Shiraoi Port, Shiraoi Town, Hokkaido, they stopped fishing because of increasingly strong winds. It capsized while returning. All occupants fell overboard. One of the occupants who fell overboard went missing, two of the four occupants who were rescued died, and the other two suffered from hypothermia. The vessel's navigation equipment suffered from water damage.
16	July 26, 2013	June 7, 2012 Fukuyama Port, Hiroshima Prefecture	Cargo ship JUNIPER PIA (South Korea) Death of crew	While the vessel crewed with the master and 14 crew members was sailing towards the JFE Steel Export Berth No. 2 in Fukuyama Port, the second officer was discovered bleeding and fallen over in cargo hold No.2 at the aft end of the starboard side. Although he was transported to a hospital in an ambulance after berthing, he was confirmed dead.
17	July 26, 2013	January 24, 2012 South of Hakodate City, Hokkaido Prefecture	Cargo ship RYUEI Damaged equipment	The starboard anchor of the vessel crewed by the master, chief officer, and four crew members was dropped into the water and all anchor chains were released. The vessel continued sailing in the area referenced in the left column while pulling the starboard anchor. The starboard anchor of the vessel became caught with electric lines at the bottom of the sea, and the lines were damaged. The vessel was unable to proceed as the starboard anchor became entangled with the electric lines, and the chain of the anchor was cut off and the anchor was abandoned.

No.	Date of publication	Date and location	Name of accident	Summary
18	August 30, 2013	March 23, 2012 Around 140km west-northwest of Naze Port, Amami City, Kagoshima Prefecture	Fishing vessel KASUGA MARU Capsizing	While sailing to a fishing grounds in the sea northwest of main island of Okinawa, the vessel crewed by the skipper and five crew members listed to port and capsized. Of the six crew members, two died and four were injured. It is probable that the vessel foundered after capsizing.
19	September 27, 2013	April 22, 2012 West of Satamisaki, Minamiosumi Town, Kagoshima Prefecture	Passenger ship TOPPY 1 Contact with whale	The vessel was crewed by the master, chief officer, chief engineer, first engineer, and five passenger cabin crew members and carrying 184 passengers. The hull was lifted out of the water by the lift of a hydrofoil and the vessel came into contact with a whale while sailing south to Miyanouura, Yakushima Town, Kagoshima Prefecture in the sea referenced in the left column. Light injuries were suffered by 32 passengers, while two crew members suffered heavy injuries and two suffered light injuries. The hydrofoil at the bow fell off, the hydrofoil at the stern was destroyed, breaches were suffered by the outer plate of the bulbous bow and outer plate of the bottom of the bow, and compartments No.9 and No.14 were inundated by water and the distribution switch board suffered water damage.
20	September 27, 2013	October 6, 2012 Tokuyamakudamatsu Port, Yamaguchi Prefecture	Cargo ship SAGE SAGITTARIUS (Panama) Death of worker (superintendent)	While a cargo operation was being conducted to unload coal from the ship's hold at the Kudamatsu Coal Transshipment Terminal at the Tokuyamakudamatsu it was discovered that the superintendent who had boarded the ship to conduct maintenance and instructions regarding the automatic loading equipment had gotten stuck in the unloader feeder conveyor roller and was confirmed dead.
21	November 29, 2013	December 11, 2012 West of Saka Town, Hiroshima Prefecture	Oil tanker MATSU MARU No. 12 Contact with oyster aquaculture facilities	While sailing southeast in the area referenced in the left column, the vessel crewed by the master and ten crew members came into contact with oyster aquaculture facilities. Although the hull of the bottom of the bow suffered scratches, there were no casualties. At the oyster aquaculture facilities, 40 oyster rafts were damaged and seven wire ropes used to hold oyster rafts in place were cut.

No.	Date of publication	Date and location	Name of accident	Summary
22	November 29, 2013	July 3, 2012 Mizushima Port, Kurashiki City, Okayama Prefecture	Container ship TIAN FU (TIANJIN) (Ship A, China) Chemical tanker SENTAI MARU (Ship B) Collision	While Ship A crewed by the master and 17 crew members was sailing northwest on the Mizushima Port inner route bound for Tamashima District, Mizushima Port and Ship B crewed by the master and five crew members was sailing northwest on the same route towards Mizushima District in the same port, the two ships collided near Futonjishima, Kurashiki City, Okayama Prefecture. Although Ship A suffered breaches in the hull of the port side and the Ship B suffered damage in the bow bulwark, there were no casualties on either vessel.

List of published investigation reports on marine incidents (2013)

No.	Date of publication	Date and location	Name of incident	Summary
1	November 29, 2013	December 3, 2012 Southeast of the Toden Ogishima LNG Berth in Section 2, Keihin Port, Kawasaki	LNG tanker LNG ARIES (Marshall Islands) Loss of control (blackout)	While the vessel crewed by the master, chief engineer, and 32 crew members was berthing at Toden Ogishima LNG Berth in Section 2, Keihin Port, Kawasaki with the objective of unloading liquefied natural gas from Qatar, control was lost as there was a blackout on the vessel and the main turbine (the main engine) could not be operated. The vessel was berthed to the Toden Ogishima LNG Berth using four tug boats and no casualties were suffered.

9 Summaries of recommendations and opinions

The recommendations and opinions for 2013 are summarized below.

Passenger injury on the passenger ship ANEI GO No. 3 and on the passenger ship ANEI GO No. 38
(Recommendation on March 29, 2013)

(Passenger injury on the passenger ship ANEI GO No. 3)

○ Summary of the accident

The ANEI GO No. 3 was crewed by the master and one deckhand, carrying 56 passengers. While sailing from Nakama Port, Iriomote Island, Taketomi Town to Hateruma Fishery Harbor, Taketomi Town, the vessel pitched in the sea south of Nakama Port, Iriomote Island at around 12:51 on June 24, 2012, and one passenger was injured.

○ Probable causes

It is probable that this accident was caused by a chain of events in which the ANEI GO No. 3 was sailing south-southwest at a speed of approximately 15 to 22 knots (kn) in the sea south of Nakama Port when continuous waves from the south with a wave height of approximately 2 to 2.5m hit the port bow, and because the passenger was not guided to the back cabin where the pitching is relatively low and Anei Kanko Co., Ltd. did not take measures to ensure that the passenger properly wore their seat belt, when the vessel pitched the passenger in his seat in the front passenger cabin not wearing his seat belt was lifted up from the seat and the impact on his posterior when falling back on the seat caused a compression fracture in his lumbar spine.

It is probable that on the ANEI GO No.3 the passenger was not guided to the back cabin where

the pitching is relatively low and Anei Kanko Co., Ltd. did not take measures to ensure that the passenger properly wore their seat belt because Anei Kanko Co., Ltd. did not thoroughly ensure that its crew complied with the safe operation manual for adverse weather.

(Passenger injury on the passenger ship ANEI GO No. 38)

○ Summary of the accident

ANEI GO No. 38 was crewed by the master and one deckhand, carrying 66 passengers. While sailing from Ishigaki Port, Ishigaki City, Okinawa Prefecture to Hateruma Fishery Harbor, Taketomi Town, the vessel pitched in the sea south-southwest of Nakama Port, Taketomi Town at around 09:20 on June 26, 2012 (Tuesday), and one passenger was injured.

○ Probable causes

It is probable that this accident was caused by a chain of events in which the ANEI GO No. 38 was sailing south-southwest at a speed of approximately 15 to 20kn in the sea south-southwest of Nakama Port when continuous waves from the south-southeast with a wave height of approximately 1.5m hit the port bow, and because the passenger was not guided to the back cabin where the pitching is relatively low and Anei Kanko Co., Ltd. did not take measures to ensure that the passenger properly wore their seat belt, when the ANEI GO No. 38's bow rode the high wave crest with a wave height of approximately 2.0m and fell down between the waves, the passenger's body was lifted up from the seat and the impact on her posterior when falling back on the seat caused a compression fracture in her lumbar spine.

It is probable that in the ANEI GO No. 38 the passenger was not guided to the back cabin where the pitching is relatively low and Anei Kanko Co., Ltd. did not take measures to ensure that the passenger properly wore their seat belt because Anei Kanko Co., Ltd. did not thoroughly ensure that its crew complied with the safe operation manual for adverse weather.

○ Description of the recommendations to the Minister of Land, Infrastructure, Transport and Tourism

Reinstruct operators of small high-speed vessels to thoroughly ensure compliance with safe operation manuals for adverse weather.

Operators are instructed to particularly ensure implementation of the following accident prevention measures concerning the content of safe operation manuals for adverse weather.

- (1) Guide passengers to the back cabin where the pitching is relatively low.
- (2) For ships that are equipped with seat belts, ensure that passengers are properly wearing their seat belts by conducting patrols within the ship to confirm that passengers are properly wearing their seat belts.

○ Description of the recommendations to Anei Kanko Co., Ltd.

Consider implementing the following measures and make efforts to thoroughly enforce the measures adopted in order to ensure the safe transport of passengers.

(1) Measures to prevent accidents

Guiding passengers to the back cabin where the pitching is relatively low

Guide passengers to the back cabin where the pitching is relatively low.

In addition, if significant pitching can be expected, restrict passengers so that seating is restricted for front seats of the front passenger cabin where the risk of injury is high.

Providing information to passengers regarding matters such as properly wearing seat belts and ensuring that passengers properly wear their seat belts

a Appropriately provide information to passengers

Provide information within the vessel in a visual manner that clearly stresses to passengers such as written papers like aircraft safety cards or a posting displayed behind each passenger seat containing information including the importance of properly wearing a seat belt, the risk of accidents occurring, and the proper way of wearing a seat belt.

In addition, when selling tickets provide specific explanations to passengers on disadvantageous information including the possibility of the voyage being canceled in the event of poor weather, safety information such as the level of ship pitching expected based on the weather and sea condition forecasts for that day and the weather and sea condition information subsequently acquired, and information on matters such as the importance of properly wearing a seat belt, the risk of accidents occurring, and the proper way of wearing a seat belt.

b Ensuring that passengers properly wear their seat belt through onboard announcements and patrols

Based on a. above, use onboard announcement to provide explanations regarding the proper way of wearing a seat belt.

In addition, conduct patrols to ensure that passengers are properly wearing their seat belts because if explanations and guidance that only rely on the passengers' sense of hearing are given and passengers are not aware of these explanations and guidance, there could be the risk of the passengers failing to listen to the explanations and guidance.

Speed adjustments in response to waves

In consideration of the acceleration of the pitch in seats, slow ships down to reduce pitching and carefully watch for waves.

Sharing sea condition information

The management side having an accurate understanding of the navigation status is important for navigational safety. Accordingly, establish guidelines that have the master of each ship report

sea condition information for routes where the sharing of sea condition information is highly necessary such as this route so that each ship sailing that route can be given proper instructions and so that the sea condition information obtained can be provided to passengers in a timely and proper manner.

Make additions to the safe operation manuals for adverse weather on the established report guidelines for sea condition information.

Keeping seat belts maintained and in good order

Conduct checks and maintenance of seat belts so that seat belts can be properly worn. In particular, conduct prompt replacement to new seat belts for seat belts that become difficult to adjust.

In addition, keep seat belts in good order before passengers embark on the vessel so that the seat belts are easy for passengers to notice.

Shock-absorbing materials such as cushion seats

Select cushion seats of appropriate materials such as low-resilience soft polyurethane foam and equip seats with high pitching with these materials.

- (2) Implement safety training concerning matters including the safe operation manuals for adverse weather

In consideration of the implementation status of (1) to above, further enhance the content of the safe operation manual for adverse weather and conduct continual safety training for crew members concerning the manual and safety management manuals (including operations standards).

- (3) Improve communication

Improve communication and establish a safer operation system

Establish a safer operations system through effort to improve mutual communication between the management side and the crew side, improve mutual relationships, have everyone in the company reconfirm the corporate philosophy and management philosophy, and have each and every employee strive towards closer communication with an awareness of team work.

Establish an operations schedule that reduces the burden on crew members

Establish an operations schedule that ensures crew members can operate vessels without being overly fatigued.

Death of crew member on chemical tanker KYOKUHO MARU No. 2

(Recommendation on April 26, 2013)

Summary of the accident

The chemical tanker KYOKUHO MARU No. 2 was crewed by the master, the second officer, and

three other crew members as it departed from Komatsu Wharf, Izumiotsu Port, Izumiotsu City, Osaka. As the vessel was sailing north towards Umemachi Terminal in Section 1, Osaka, Hanshin Port, at around 12:29 on February 7, 2012 the chief engineer discovered that the second officer collapsed on the port side of No.1 cargo tank.

Although the second officer was rescued, he could not breathe because of gas inhalation, and died due to an oxygen deficiency.

Probable causes

It is probable that this accident was caused by a chain of events in which AST Inc. did not thoroughly instruct its crew members on guidelines for entering cargo tanks or measuring oxygen and gas concentration, nor did AST Inc. clarify the work procedures for tank cleaning when there is residual cleaning fluid in a cargo tank. For these reasons, the second officer entered No.2 cargo tank on the port side that had residual washing water and a gas smell, and inhaled chloroform gas when checking the state of cargo tanks while the chemical tanker KYOKUHO MARU No.2 was heading north to the Umemachi Terminal.

Description of the recommendations to the Minister of Land, Infrastructure, Transport and Tourism

Provide the following guidance to coastal shipping operators that operate chemical tankers.

- (1) Provide guidance to crew members on measuring oxygen and gas concentration when entering enclosed spaces and ensure compliance, and also make regular visits to vessels to confirm that oxygen and gas concentration measurements are being faithfully conducted.
- (2) Have masters record the implementation status of oxygen and gas concentration measurements, and when gas detection equipment is used for gas concentration measurements keep records of the number of detector tubes purchased, used, and remaining. In addition, make regular visits to vessels to investigate records of implementation status and records of detector tubes to confirm that oxygen and gas concentration measurements are being accurately conducted.
- (3) Ensure that the tank cleaning work procedures including the confirmation of washing water, and removal through stripping, drying, and gas ventilation procedures if there is washing water are compiled in a simplified format that is easy to understand for crew members, and are displayed in a location that is easy to see when conducting work.
- (4) Conduct regularly education and training programs on emergency such as accidents regarding how to respond to emergencies including accidents by not acting impulsively or based on their own judgment, but to instead act in consideration of precautions.

In addition, when visiting vessels conduct checks through regular audits that include guidance to crew members on (1) through (4) above, investigation of records of detector tubes to confirm that oxygen and gas concentration measurements are being accurately conducted, efforts by operators to ensure safe transport, and efforts to improve operations management.

○ Description of the recommendations to AST Inc.

Take the following measures to prevent the recurrence of similar accidents.

- (1) Provide guidance to crew members on measuring oxygen and gas concentration when entering enclosed spaces and ensure compliance, and also make regular visits to vessels to confirm that oxygen and gas concentration measurements are being faithfully conducted.
- (2) Have masters record the implementation status of oxygen and gas concentration measurements, and when gas detection equipment is used for gas concentration measurements keep records of the number of detector tubes purchased, used, and remaining. In addition, make regular visits to vessels to investigate records of implementation status and records of detector tubes to confirm that oxygen and gas concentration measurements are being accurately conducted.
- (3) Ensure that the tank cleaning work procedures including the confirmation of washing water, and removal through stripping, drying, and gas ventilation procedures if there is washing water are compiled in a simplified format that is easy to understand for crew members, and are displayed in a location that is easy to see when conducting work.
- (4) Conduct regularly education and training programs on emergency such as accidents regarding how to respond to emergencies including accidents by not acting impulsively or based on their own judgment, but to instead act in consideration of precautions.

Collision of cargo ship NIKKEI TIGER and fishing vessel HORIEI MARU

(Recommendation in the interim report on October 25, 2013)

Summary of the accident

The cargo ship NIKKEI TIGER crewed by the master and 20 crew members departed from Shibushi Port, Shibushi City, Kagoshima Prefecture and sailed northeast bound for Vancouver, Canada, and the fishing vessel HORIEI MARU crewed by the skipper, chief fisherman, and 20 crew members sailed south in order to avoid the impact of atmospheric pressure. The ships collided at about 01:56 on September 24, 2012 (Japan time, same below) in the Pacific Ocean approximately 930km east of Kinkazan, Ishinomaki City, Miyagi Prefecture.

13 crew members of the HORIEI MARU went missing and were subsequently recognized as dead.

Description of the opinion to the Minister of Land, Infrastructure, Transport and Tourism

1 For fishing vessels that are currently not equipped with Automatic Identification System or simplified Automatic Identification System, for example, particularly for fishing vessels those operate and navigate in the open sea (second-class fishing vessel based on the Ship Safety Act), consider conducting further education and awareness raising activities towards ship owners on the effectiveness of this equipment in preventing collision accidents and other necessary measures to promote early adoption.

2 Instruct marine transport operators to obtain and use information on fishing vessel operation conditions in seas where their ships operate from sources such as the information provided by fishing industry organizations and the Japan Marine Accident Risk and Safety Information System of the Japan Transport Safety Board in order to prevent collision accidents.

Description of the opinion towards the Director-General of the Fisheries Agency

1 For fishing vessels that are currently not equipped with Automatic Identification System or simplified Automatic Identification System, for example, particularly for those operate and navigate in the open sea (second-class fishing vessel based on the Ship Safety Act), consider conducting further education and awareness raising activities towards ship owners on the effectiveness of this equipment in preventing collision accidents and other necessary measures to promote early adoption.

2 Instruct owners of fishing vessels to obtain and use information on the status of accident occurrence at fishing grounds and traffic routes and the navigation routes of merchant ships from sources such as the Japan Marine Accident Risk and Safety Information System of the Japan Transport Safety Board in order to prevent collision accidents.

10 Actions taken in response to recommendations in 2013

Actions taken in response to recommendations were reported with regard to four marine accident in 2013. Summaries of these reports are as follows.

Marine accident related to the capsizing of a cutter (unnamed)

(Recommendation on January 27, 2012)

Concerning the cutter (unnamed) capsizing accident that occurred in the north of Lake Hamana, Hamamatsu City, Shizuoka Prefecture on June 18, 2010, the Japan Transport Safety Board published a report on the investigation results of the accident and concurrently gave recommendations to Shogakukan-Shueisha Productions Co., Ltd. and the Shizuoka Prefectural Board of Education who were relevant to the cause of the accident, on January 27, 2012, and received a report on the completion (completion report) of the implementation of recommendation-based measures as follows.

Summary of the accident

18 students and 2 teachers were in the training of cutter rowing on a cutter (unnamed) of Mikkabi Youth Center as an outdoor activity lesson of the junior high school. The wind and waves became so heavy that the crew then found it difficult to continue the rowing. When running southwestward off the south of Sakume in Lake Hamana, while being towed by a motorboat Mikkabi Youth Center of the Center,

the cutter capsized portside at around 15:25 on June 18, 2010 (Friday).

The cutter capsized, and one student trapped inside the ship died. In addition, while one oar was broken, there was no damage to the hull.

Probable causes

The probable causes of this accident are as follows. Under rainy weather of which heavy rain, thunder, gale, high-wave and flood advisories had been forecast, the cutter was used for an outdoor exercise for the junior high school at the Mikkabi Youth Center and was engaged in a cutter rowing training without a trainer along an east course, which is a usual way of the training, off the north shore of Lake Hamana. The gale and wind grew stronger to render the rowing difficult, and the director of the Mikkabi Youth Center went for rescuing on the motor boat, and towed the cutter (unnamed) obliquely to port with continuous inflow of lake water thereinto from the port bow. When being towed in those states southwestward off the south of Sakume, the cutter's port list developed under increasing flowed-in water accumulation on her bottom and caused the port side oars to catch water and to turn her bow to port. Sometime later, the students sitting on the starboard side lost balance and were shifted toward port side, to further increase the port list. Consequently, the port side submerged, lake water flooded into the boat, and the boat overturned portside.

- (1) It is probable that the reason why the director of the Mikkabi Youth Center towed the cutter while the cutter (unnamed) was listing to the port side and lake water was continually pouring into the cutter (unnamed) from the port bow is that he had no experience and little knowledge of towing the cutter, and that when towing of the cutter (unnamed) was commenced the director was fully exerting himself to attaching the towlines and towing the cutter (unnamed) so that it went against the wind, and as a result did not communicate to the cutter the precautions for being towed such as the removal of accumulated water and how to operate the rudder and took a route that went against the wind.
- (2) It is probable that the reason why under rainy weather of which heavy rain, thunder, gale, high-wave and flood advisories had been forecast, the cutter was used for an outdoor exercise and was engaged in a cutter rowing training without a trainer along an east course, which is a usual way of the training, is that while the director of Mikkabi Youth Center and one leader instructor knew of the weather advisory in the weather forecast, because the forecast for 15:00 was an east wind with a wind velocity of 4m/s, they did not believe the weather conditions would interfere with the training.
- (3) It is somewhat likely that the use of the usual way of training for the training on the day of the accident by Mikkabi Youth Center was related to the occurrence of this accident.
- (4) It is probable that the reason the cutter (unnamed) was difficult to row is the fact that the instruction manual was not adequate as it had no stipulations on training suspension criteria in the case of weather advisories being issued or stipulations on training methods during periods of poor weather or training course selection timing, which means that while the gale and wind from the

south gradually grew stronger, the training was continued, which caused oars to fall out of rhythm and for students to suffer from seasickness.

- (5) It is probable that the reason the instruction manual was not adequate as it had no stipulations on training suspension criteria in the case of weather advisories being issued or stipulations on training methods during periods of poor weather or training course selection timing include the following:

Because Shogakukan-Shueisha Productions Co., Ltd. was requested by the former director the training methods including cutter training suspension criteria implemented by the previous direction when Mikkabi Youth Center was operated by the prefecture to be continued when Mikkabi Youth Center moved to a designated manager system and no requests concerning this were made by the Shizuoka Prefectural Board of Education, during year one cutter training was conducted based on the training methods including training suspension standards implemented when Mikkabi Youth Center was operated by the prefecture.

Because Shogakukan-Shueisha Productions Co., Ltd. believed it would be acceptable to continue the measures implemented when Mikkabi Youth Center was operated by the prefecture for safety measures, no safety considerations were made concerning cutter training and the instruction manual and instruction timing stipulated when Mikkabi Youth Center was operated by the prefecture were continued.

- (6) It is probable that director of the Mikkabi Youth Center had no experience and little knowledge of towing the cutter because Shogakukan-Shueisha Productions Co., Ltd. did not establish a risk management manual on a rescue system assuming cutter accidents including guidelines for towing the cutter or conduct cutter towing training for the staff at the Mikkabi Youth Center.
- (7) It is probable that the fact that Shogakukan-Shueisha Productions Co., Ltd. did not establish a risk management manual on a rescue system assuming cutter accidents including guidelines for towing the cutter or conduct cutter towing training for the staff at the Mikkabi Youth Center was related to the occurrence of this accident.
- (8) It is probable that the fact that the Shizuoka Prefectural Board of Education did not have Shogakukan-Shueisha Productions Co., Ltd. establish a risk management manual on a rescue system assuming cutter accidents including guidelines for towing the cutter or conduct cutter towing training for Shogakukan-Shueisha Productions Co., Ltd. including at the time of the preliminary transfer concerning Mikkabi Youth Center was related to the occurrence of this accident.

Description of the recommendations to Shogakukan-Shueisha Productions Co., Ltd.

The criteria for cutter training suspension and the cutter training methods used at the Mikkabi Youth Center should be reviewed taking the experience of the trainees into consideration, and the following provisions should be included in the instruction manual:

- a The criteria for suspending training when weather advisories are broadcast.

- b The criteria for suspending training under bad weather other than when weather warnings or advisories are broadcast.
- c Training methods under bad weather.
- d The time for deciding whether to give permission or not for training and the time (including a time during training) for deciding a training method.
- e Treatment of training if suspended on its way.
- f Provisions for safety in training (including the arrangement and duty of a guard boat, constant contact with weather information, and preparations for the tow of cutter).

A rescue system, supposing cutter accidents and including procedures for towing and rescuing a cutter, should be established, and the Mikkabi Youth Center personnel should be periodically trained. Effort should be made to strengthen cooperation with rescuing agencies.

Effort should also be made to improve the knowledge of the Mikkabi Youth Center personnel with respect to cutter and weather, and to increase their awareness of securing training safety.

Completion report of the implementation of recommendation-based measures by Shogakukan-Shueisha Productions Co., Ltd.

Implantation results based on recommendation

The criteria for cutter training suspension and the cutter training methods used at the Mikkabi Youth Center were reviewed taking the experience of the trainees into consideration, and manuals were established including the following provisions in consideration of objective opinions from experts and other specialists in the prefectural Safety Measures Committee and the review meetings concerning the Mikkabi Youth Center's marine activities safety measures manual and verification through mock training of staff members.

It was decided that the manuals would be inspected and reviewed at least once a year and be revised as necessary.

(Manuals developed)

- I. Marine activities safety measures manual
- II. Marine activities emergency response manual
- III. Marine activities rescue manual (including cutter towing guidelines)

(Items stipulated)

- I. Judgment criteria for implementation and suspension (marine activities safety measures manual)
 - Stipulates the suspension criteria when weather warnings or advisories are broadcast and when weather is bad.
- II. Training plan assuming sudden weather changes (marine activities safety measures manual, marine activities emergency response manual)

It was decided that while cutter training is conducted administrative staff would confirm

weather information every 30 minutes and that criteria are established and training would be conducted on matters including how to contact people and the response that should be conducted by staff members in cases such as when weather warnings or advisories are broadcast.

III. The time for deciding whether to give permission or not for training and the time (including a time during training) for deciding a training method (marine activities safety measures manual)

It was decided that the decision on whether or not to hold training and the scope of activities would be made on meetings held by training leaders on the day of marine activities and advance joint meetings.

IV. Treatment of training if suspended on its way (marine activities safety measures manual, marine activities rescue manual)

Stipulates matters such as how to contact people if the activity suspension activities apply, returning to harbors, and how to make landings at the nearest point.

V. Provisions for safety measures in training (marine activities safety measures manual, marine activities emergency response manual, marine activities rescue manual)

- Stipulates the positioning and duties of safety boats.
- Stipulates the response when emergencies occur.
- Stipulates the relief supplies to be loaded on all boats.

VI. Preparations for the tow of cutter (marine activities rescue manual)

Stipulates the towing procedures in consideration of factors such as the opinions of the Safety Measures Committee and towing experts, and the result of towing training.

VII. Cutter boarding conditions (marine activities safety measures manual)

Stipulates the criteria for which school years can board the cutter.

Implementation results based on recommendation

I. Measures concerning rescues (improving knowledge of rescue methods, improving skills and knowledge concerning towing)

- All members participated and completed the advanced lifesaving course offered by the Hamamatsu City Fire Department.
- Implemented overboard rescue drills and towing training one to two times per month.
- Participated in courses and training programs held by similar facilities.

II. System for emergencies

a Initiatives for considering rescue methods and measures assuming emergencies such as capsizing

- Methods for injecting air using gas tanks into a vessel that has capsized and restoring the vessel were verified and implemented.
- Joint water rescue training was conducted with the Shizuoka Prefecture Marina

Association and the Hamamatsu City Fire Department near the Mikkabi Youth Center's harbor.

- b Initiatives to regularly conduct emergency rescue training and towing training
 - Implemented overboard rescue drills and towing training one to two times per month.
 - Trial training was conducted during a set period of time established in advance of the implementation of full-scale training including Safety Measures Committee and training workshop joint training.
- c Initiatives to establish organizational structures and supervising command systems for emergencies
 - In preparation for emergencies, a contact system with the Shizuoka Prefecture Marina Association and the Hamamatsu City Fire Department was established through the implementation of joint water rescue training.
 - A system was established for emergencies in which the parties responsible for the facility would be on standby in the office, a countermeasures headquarters would be established at the marina, and the directors and deputy directors of each facility would provide response and supervision.
- d Initiatives to strengthen coordination with relevant organizations in rescue efforts
 - In preparation for emergencies, a contact system with the Shizuoka Prefecture Marina Association and the Hamamatsu City Fire Department was established.
 - Joint water rescue training was conducted with the Shizuoka Prefecture Marina Association and the Hamamatsu City Fire Department near the Mikkabi Youth Center's harbor.
- e Initiatives to ensure the thorough preparation of passenger logs required for safety checks
 - Made the submission of passenger logs obligatory.
 - Established a system for sharing the passenger log after confirmation before training with the captain, supervisor, harbor representative, and headquarters.
 - Adopted a system in which students wear a wrist band stating their seat number and this is compared with the passenger log before training.

Implementation results based on recommendation

- I. Measures to improve knowledge of cutters
 - Implemented overboard rescue drills and towing training one to two times per month.
 - When conducting the training above, a similar facility called Shibukawa Youth Center of Okayama Prefecture that mainly conducts cutter training was invited and guidance was received.
 - A safety activities course by the National Institution for Youth Education was held at the Mikkabi Youth Center, in which experts were invited to share opinions and guidance and information was exchanged with similar facilities.

II. Measures to improve knowledge of weather conditions

- Two staff members from the instruction department were selected as weather condition representatives, they participated in a correspondence course for becoming a certified meteorologist, and collected information on weather conditions based on this knowledge.
- It was decided that the weather condition representative would collect weather condition data including weather condition and wind vane and anemometer values four times a day at 9:00, 11:00, 14:00, and 17:00.
- Efforts were made to strengthen cooperation with marinas and boaters in the area and gather information concerning weather predictions based on wind direction and the shape of the clouds.

III. Initiatives to increase awareness towards ensuring safe training

- Safety training and matters concerning accidents that could be assumed were incorporated in the annual training implementation plan and the training was implemented.
- Two safety management representatives were assigned in efforts to collect information on near-miss cases, consider countermeasures, and share information among staff at the staff meetings held every month and the instructor meetings held once a week led by the safety management representatives.
- Manuals were established and improved through staff meetings and instructor meetings in consideration of objective opinions from experts and other specialists in prefectural Safety Measures Committee and the review meetings concerning the Mikkabi Youth Center's marine activities safety measures manual and verification through mock training of staff members.
- Participated in safety measures training held by the National Awaji Youth Friendship Center, the Shibukawa Youth Center, and the Mikkabi Youth Center.

Description of the recommendations to the Shizuoka Prefectural Board of Education

The Board should review the criteria for cutter training suspension, the training methods, and the emergency management manual of the Youth Center; should give them necessary corrections, if found any; and should have tow training practiced.

Completion report of the implementation of recommendation-based measures by the Shizuoka Prefectural Board of Education

The following measures were implemented based on the recommendation.

I. Manuals developed

After the main points of safety measures required by the Shizuoka Prefectural Board of Education were presented, the designated manager of the Mikkabi Youth Center,

Shogakukan-Shueisha Productions Co., Ltd. (hereinafter “the designated manager”) was made to develop the criteria for cutter training suspension, the training methods, and the emergency management manual (hereinafter “the manuals”) in accordance with the following procedure, and the manuals were confirmed at the FY 2012 4th Safety Measures Committee.

a Manuals developed

At the FY 2011 3rd Safety Measures Committee, causes of accidents were brainstormed and the main points of safety measures were reviewed based on the investigation reports of marine accidents, and this was incorporated in manuals by the designated manager.

At the FY 2011 4th Safety Measures Committee, the status of incorporation of main points was confirmed in the manuals submitted by the designated manager.

b Manuals verified

The FY 2012 1st Safety Measures Committee was held at Mikkabi Youth Center, during which the manual amendments were reconfirmed and cutter mock training was held with staff members based on the manuals. The status of the training was made open to external experts.

In addition, the manuals were sent to external experts to gain their opinions, and at the FY 2012 1st Review Meeting Concerning the Mikkabi Youth Center’s Marine Activities Safety Measures Manual (hereinafter the “Manual Review Meeting”) measures incorporating these opinions were considered.

Furthermore, the FY 2012 2nd Manual Review Meeting and FY 2012 3rd Safety Measures Committee were also held, and similar studies were conducted.

II. Developing a system for inspecting and correcting the manuals after establishment

A system conducting regular inspections of manuals that have been established in the future to ensure that their contents are appropriate and make corrections accordingly was considered. The system was developed as follows in consideration of the studies conducted at the FY 2012 2nd Manual Review Meeting.

(Frequency and method of inspections and corrections in the future)

a The designated manager shall review the manuals every year and report the results to the Shizuoka Prefectural Board of Education. Manual Review Meeting shall be held and the guidance and advice of external experts received as necessary.

b On-site checks shall be conducted four times a year (two times accompanied by external experts), and the manuals shall be reviewed by the designated manager as necessary and the results reported to the Shizuoka Prefectural Board of Education.

c The annual training plans and results reports for rescues including towing training and monthly reports concerning the regular management of the facility shall be confirmed, and the manuals shall be reviewed by the designated manager as necessary and the results reported to the Shizuoka Prefectural Board of Education.

The following matters were considered in order to conduct cutter towing training

I. Studies concerning towing training

The designated manager was made to prepare a towing manual that incorporates matters such as towing methods, the towing training implementation guidelines, and the submission of the towing training implementation plan, and the manual was confirmed at the FY 2012 4th Safety Measures Committee .

a Towing methods

The designated manager was made to document the implementation methods in the event of a cutter having an accident and needing to be rescued by towing. The Shizuoka Prefectural Board of Education amended the designated manager's draft in consideration of implementation methods by similar facilities and the opinions of experts concerning ship structures and ship rescues. Based on this, studies were conducted at the FY 2012 2nd Manual Review Meeting and the designated manager was provided with guidance and advice concerning towing methods. After this, at the FY 2012 3rd Safety Measures Committee, towing training was conducted at the Mikkabi Youth Center with the participation of external experts, local marinas, local rescue organizations, and the staff members of similar facilities.

b Towing training implementation guidelines

The designated manager was made to establish cutter towing training implementation guidelines for the staff members of the Mikkabi Youth Center based on the opinions in the FY 2012 2nd Manual Review Meeting and those concerning the towing training in the FY 2012 3rd Safety Measures Committee, and the implementation guidelines were confirmed at the FY 2012 4th Safety Measures Committee.

Note that consideration was given to the fact that implementing towing training jointly with other organizations involved in marine activities would improve the knowledge and skills of staff members.

c Towing training implementation plan

The designated manager was made to submit a towing training implementation plan at the beginning of every year in consideration of opinions in the FY 2012 2nd Manual Review Meeting concerning a system to ensure that towing training is properly implemented.

II. Studies concerning towing training inspections and guidance

The system was developed as follows in consideration of the studies conducted at the FY 2012 2nd Manual Review Meeting as the system for conducting regular inspections and corrections to ensure that towing methods and the towing training implementation system and implementation plans are appropriate.

Note that towing training shall be conducted in the presence of an expert to provide instructions and guidance as necessary.

(Frequency and method of inspections and corrections in the future)

- a Have the designated manager submit plans stipulating towing training at the beginning of every year, and confirm these plans. In addition, have implementation reports submitted after implementation, and confirm these reports.
- b Have an external expert present at least once a year to conduct on-site confirmation at the towing training conducted by the designated manger.

The implementation of recommendation-based measures was led by the Safety Measures Committee and with the cooperation of external experts, local marinas, local rescue organizations, etc.

* The completion report is shown on the Board's website.

http://www.mlit.go.jp/jtsb/shiphoukoku/ship-kankoku8re-2_20130220.pdf

Marine accident involving the capsizing of tug boat KITA MARU No. 12

(Recommendation on November 30, 2012)

Concerning the marine accident involving the capsizing of tug boat KITA MARU No. 12 that occurred in Wajima Port, Wajima City, Ishikawa Prefecture on September 19, 2011, the Japan Transport Safety Board published a report on the investigation results of the accident and concurrently gave recommendations to the Japan Coast Guard School and Kita-Gumi Co., Ltd. who were relevant to the cause of the accident, on November 30, 2012 and received a report on the completion (completion report) of the implementation of recommendation-based measures as follows.

○ Summary of the accident

When towing the patrol boat MIURA to assist its departure, together with the tug boat KITA MARU No.8, the tug boat KITA MARU No.12 with the skipper and a crew member aboard it capsized at around 07:36:47-54 on Sept. 19, 2011.

All the crew members (2 crewmen) of KITA MARU No.12 were taken out of the water but died. On a later day, the boat was salvaged but was declared a total loss.

○ Probable causes

It is probable that when KITA MARU No.12, along with KITA MARU No.8, was towing MIURA to assist the departure of MIURA from Wajima Port, with the towing rope tied at the bow of MIURA, under north-northeast to northeast wind velocity of approx. 10 m/s and wave-height of approx. 3 m, KITA MARU No.12 capsized because the tension of her towing rope exceeded her stability.

It is probable that the reasons the tension of the towing rope of KITA MARU No.12 exceeded

stability are as follows.

- (1) After the MIURA was parallel away from the quay, MIURA advised KITA MARU No.12 to tug even more parallel towards 3 o'clock (approximately 016°). However, the KITA MARU No.12 interpreted this as the direction of Sosogi (approximately 066°), and tugged in the direction of Sosogi together with KITA MARU No.8, which caused the MIURA to be tugged backwards and to come into close contact with the breakwater blocks.
- (2) To prevent from going backwards, MIURA advised the KITA MARU No.12 to tug toward 2 o'clock starboard and the KITA MARU No.12 and KITA MARU No.8 towed while turning left in order to tow westward. Afterwards, in order to stop backward movement and avoid the risk of the stern colliding with the quay, the MIURA moved ahead.
- (3) When the speed reached 2.3kn, the MIURA increased the speed turning hard to starboard toward the port entrance.
- (4) The length of the towing rope of KITA MARU No.12 was approximately 50m.

○ Description of the recommendations to the Japan Coast Guard School

In view of the fact that the Japan Coast Guard School has been accepting the MIURA every year as training ship, the School is recommended to define clear organization managed by the school principal to carry out safe onboard sea training on the MIURA, and to establish the comprehensive management system for ensuring: to prevent accidents and give safety guidance under normal circumstances; to share information required for the safe navigations/operations such as meteorological and navigational warning information; to understand the operational status of the MIURA when she is on the training mission; and to secure communications and support in case of emergency.

○ Completion report of the implementation of recommendation-based measures by the Japan Coast Guard School

- (1) The Japan Coast Guard School Onboard Sea Training Safety Management Promotion Division Regulations (February 19, 2013) were established and all staff members were notified of the establishment of a system for implementing safe onboard sea training throughout the school under the supervision of the principal.

(Main points of the regulations)

A safety management promotion organization headed by the principal was established.

The roles of each department and staff member within the school during normal operations and emergencies were clarified.

Implement safety guidance to prevent accidents under normal circumstances.

Share information required for the safe navigations and operations such as meteorological and navigational warning information with training ships and within the school.

Understand the operational status of training ships that are on training missions and share this

information.

Clarified announcement criteria and implementation measures for the support system for emergencies.

- (2) Dedicated communication methods (mobile phones, etc.) were developed that can be used by staff responsible for contacting training ships at any time.

○ Description of the recommendations to Kita-Gumi Co., Ltd.

Kita-Gumi Co., Ltd. is recommended to take the following actions to ensure the safety of towing operations with its tug boats:

- (1) To check and maintain towing hooks and to perform its operation training.
- (2) To instruct the crew members to wear outfits such as lifejacket properly during the towing operations.

○ Completion report of the implementation of recommendation-based measures by Kita-Gumi Co., Ltd.

To ensure the safety of towing operations with tug boats, checks and maintenance were conducted, operational training was conducted, and guidance on wearing outfits such as lifejackets was provided for crew members of tug boats and work boats.

- (1) Checks and maintenance for towing hooks

To ensure that the emergency breakaway handle functions as stipulated in advance of training, after removal of paint and rust attached to each hook, each moving part was lubricated with oil and grease, and these checks and operations were confirmed.

- (2) Operational training for towing hooks

After the completion of checks and maintenance, operational training was conducted with all employees from the process of tugging with hooked towing rope to proper removal. The procedure was as in 1. to 4. below.

Remove the safety pin from the towing hooks

Pull the emergency breakaway handle

Tug the towing rope

The towing rope comes off

- (3) Instructing the crew members to wear outfits such as lifejacket during the towing operations

All participants were instructed on how to properly wear lifejackets and how to use them during emergencies. At the same time, two lifebuoys were replaced.

- (4) Safety management initiatives going forward

With efforts led by the company's Safety Measures Office, in an aim to ensure safe towing operations, in the company-wide safety patrols that are conducted once a month, training will be conducted on attaching towing hooks and towing rope and aboardage, lifebuoys will be inspected, and instructions will be provided on wearing lifejackets. In addition, towing hook operations

training will be conducted at the regular operational training twice a year.

* The completion report is shown on the Board's website.

http://www.mlit.go.jp/jtsb/shiphoukoku/ship-kankoku11re-1_20130327.pdf

Marine accident involving passenger injury on the passenger ship ANEI GO No. 3 and on the passenger ship ANEI GO No. 38

(Recommendation on March 29, 2013)

Concerning the marine accident involving passenger injury on the passenger ship ANEI GO No. 3 and on the passenger ship ANEI GO No. 38 that occurred off the Nakama Port, Taketomi Town, Okinawa Prefecture on June 24 and 26, 2012, the Japan Transport Safety Board published a report on the investigation results of the accident and concurrently gave recommendations to the Minister of Land, Infrastructure, Transport and Tourism and Anei Kanko Co., Ltd. (who was relevant to the cause of the accident), on March 29, 2013 and received a report on the completion (completion report) of the implementation of recommendation-based measures as follows.

○ Summary of the accident, causes, and a description of recommendations

Refer to "9. Summaries of recommendations and opinions" (page 105-)

○ Measures implemented by the Minister of Land, Infrastructure, Transport and Tourism based on the recommendations

Issuing the Notice on Ensuring the Enforcement of Safety Measures of Small High-Speed Vessels, the Minister has instructed the relevant local transportation authorities to communicate and ensure that businesses engaged in regular passenger shipping operations using small high-speed vessels implement the following measures, and has decided to visit ships to provide guidance in the period from April 2013 until the busy summer season, taking opportunities such as overall safety inspections.

Details

Comply with safe operation manuals for adverse weather. Operators are instructed to particularly ensure implementation of the following accident prevention measures concerning the content of safe operation manuals for adverse weather.

Guide passengers to the back cabin where the pitching is relatively low.

For ships that are equipped with seat belts, ensure that passengers are properly wearing their seat belts by conducting patrols within the ship to confirm that passengers are properly wearing their seat belts.

* The notice including reference materials is shown on the Board's website.

http://www.mlit.go.jp/jtsb/shiphoukoku/ship-kankoku12-1re_20130724.pdf

○ Completion report of the implementation of recommendation-based measures by Anei Kanko Co., Ltd.

Measures were implemented for each of the following matters, and these measures will continue to be implemented going forward.

(1) Measures to prevent accidents

Guiding passengers to the back cabin where the pitching is relatively low

(Measures)

Use onboard announcement and patrols to guide senior citizens, handicapped people, and infants to the back cabin, and limit use of the front seats (first three rows) if significant pitching can be expected.

Increase priority seating for senior citizens from the current six seats to 12 seats, and make it easier to guide them to the back.

Providing information to passengers regarding matters such as properly wearing seat belts and ensuring that passengers properly wear their seat belts

a Appropriately provide information to passengers

(Measures)

Point of ticket sales: Provide voyage outlook information such as the level of ship pitching expected and the possibility of the voyage being canceled based on the weather and sea condition forecasts.

Display precautions concerning weather and sea conditions inside the ship.

In addition, provide explanations on the importance of properly wearing a seat belt and the proper way of wearing a seat belt.

Within the ship: Use onboard announcement and patrols to explain the proper way of wearing a seat belt, and post warning and cooperation requests for riding high-speed ships on the back of seats.

Post precautions (on properly wearing a seat belt) on the company's website.

b Ensuring that passengers properly wear their seat belt through onboard announcements and patrols

Use onboard announcements to provide explanations on properly wearing a seat belt, conduct onboard patrol at least two to three times per voyage, and review and increase the number of items on the onboard patrol record log.

Speed adjustments in response to waves

(Measures)

Add guidelines for adverse weather for each route in the safe operation manual for adverse weather, and in accordance with this manual, slow ships down to reduce pitching and carefully watch for waves.

Sharing sea condition information

(Measures)

Make efforts to share information in accordance with Article 11 (normal contacts) and Article 12 (contact methods) of the Operations Standards. State the methods for transmitting information in the safe operation manual for adverse weather.

State in the safe operation manual for adverse weather that the headquarters ship department should be contacted by mobile phone in the event of waves that fit the adverse weather guidelines when they occur (or after entering port).

Keeping seat belts maintained and in good order

(Measures)

Add the inspection item of keeping seat belts maintained and in good order to the pre-departure check form, always check and maintain seat belts, and place seat belts above the seat before passengers board so that they are easy for passengers to put on.

The positioning of seat belts was added to the safe operation manual for adverse weather entitled Passenger Safety Measure Guidelines for Adverse Weather.

If a seat belt inspection reveals that there are seat belts that are stuck, use silicon spray (has the effect of making zippers used on clothing move more smoothly) to improve sticking and make it easier to adjust seat belts.

Shock-absorbing materials such as cushion seats

(Measures)

Install cushion seats (Tempur Seat Cushion S) in the first three rows where there are many accidents by the end of April 2013.

In addition, give positive consideration to installing up to row five.

- (2) Implement safety training concerning matters including the safe operation manuals for adverse weather

(Measures)

In consideration of the implementation status of (1) 1. to 4. above, work to further enhance the safe operation manual for adverse weather and implement continual instructions and education concerning the compliance of safety management manuals and the safe operation manual for adverse weather at the safety workshops held every month and the morning meetings.

- (3) Improve communication

Improve communication and establish a safer operations system

(Measures)

Hold a Workplace Improvement Committee every month to discuss matters including requests,

suggestions, problems, and issues.

Members shall include representatives from each department, namely, office representatives (operations, sales, cargo), masters, deckhands, and maintenance representatives. In addition to implementing top-down decisions, create trust relationships by enabling people in the field to make proposal in order to mutually resolve problems and make improvements.

Establish an operations schedule that reduces the burden on crew members
(Measures)

From April 2013 arrival times were deleted from schedules for each route, statements were made that the required time could change depending on the vessel used and weather conditions, and efforts were made to inform customers of these adjustments.

Going forward, the necessity of operations schedule revisions will be considered, through means such as conducting surveys of actual operations time for ship navigation journal and using them as reference materials when preparing operations schedules.

* The completion report including reference materials is shown on the Board's website.

http://www.mlit.go.jp/jtsb/shiphokoku/ship-kankoku12re-1_20130809.pdf

Marine accident involving death of crew member on chemical tanker KYOKUHO MARU No. 2

(Recommendation on April 26, 2013)

Concerning the marine accident involving the death of crew member on chemical tanker KYOKUHO MARU No. 2 that occurred in Sakai Semboku Section 7 of Hanshin Port on February 7, 2012, the Japan Transport Safety Board published a report on the investigation results of the accident and concurrently gave recommendations to the Minister of Land, Infrastructure, Transport and Tourism and AST Inc. (who was relevant to the cause of the accident), on April 26, 2013 and received a report on measures that should be taken based on the recommendations as follows (implementation plan).

○ Summary of the accident, causes, and a description of recommendations

Refer to “9. Summaries of recommendations and opinions” (page 108-)

○ Measures that should be taken by AST Inc. based on the recommendations

(1) Implementation plan based on recommendation (1)

Instructing crew members and ensuring compliance

When conducting boarding education, dock safety education, and ship visit education that will be conducted based on a target of one to two times per month for each ship, add guidance on the necessity of oxygen and gas concentration measurements and the measurement methods to the

education programs and ensure compliance.

In particular, for toxic gases of chloroform, dichloromethane, and carbon tetrachloride that the company transports, before entering the tanks or pump room after washing, in addition to an oxygen concentration measurement, measure residual gas using a Kitagawa gas detector and the detector tubes for the applicable product for the near future.

Note that the toxic gas measurement method shall be revised as appropriate in consideration of the consideration results of the Coastal Chemical Safety Measures Working Group established in the Japan Coastal Tanker Association.

Confirmation of oxygen and gas concentration measurement

Add an oxygen and gas concentration measurement record and a record for the number of gas detector tubes purchased, used, and remaining to the ship health and safety quality control record checklist that is currently used during ship visits and confirm that these activities are being faithfully implemented when visiting each ship one to two times per month.

(2) Implementation plan based on recommendation (2)

Recording of the implementation status of oxygen and gas concentration measurement

For toxic gases including chloroform that the company transports, before entering the tanks or pump room after washing, in addition to an oxygen concentration measurement, measure gas concentration using a Kitagawa gas detector and the detector tubes for the applicable product.

Have the master record the measurement results on the oxygen concentration measurement and residual gas detection record table, and record the receipt date, number of tubes received, date used, number of tubes used, and number of tubes remaining on the gas detector tube management table.

Confirming of the implementation status, inspecting and confirming detector tube records

Inspect and confirm the above-mentioned oxygen concentration measurement and residual gas detection record table and gas detector tube management table, and enter this in the check list.

(3) Implementation plan based on recommendation (3)

Display contents and location

Summarize and clarify the work procedures in a simplified format for confirmation of cleaning fluid, and removal through stripping, drying, and gas ventilation procedures if there is cleaning fluid, and display these procedures in the bridge and salon.

Confirmation of work procedures

When having meetings before cleaning, use the ship cleaning work guidelines document to confirm the tank cleaning work procedures including the confirmation of cleaning fluid, and removal through stripping, drying, and gas ventilation procedures if there is cleaning fluid.

(4) Implementation plan based on recommendation (4)

Measures concerning equipment

Following the occurrence of this accident, oxygen concentration and the non-existence of residual gas have been confirmed, and tiger-rope has been set on cargo tank manhole hatches in order to call attention until safety can be confirmed.

Implementation of education and training

Conduct regular training to educate the crew how to respond to emergencies including accidents by not acting impulsively or based on their own judgment, but to instead report immediately to the bridge and wait for support until the people required for rescue have gathered.

Provide this education when conducting boarding education, dock safety education, and ship visit education.

The training will be participated in by all crew members and held on the ship once a year.

* The implementation plan including reference materials is shown on the Board's website.

http://www.mlit.go.jp/jtsb/shiphoukoku/ship-kankoku13re-1_20130809.pdf

11 Information dissemination in the process of investigations in 2013

The JTSB disseminated information on the following three marine accidents in 2013. The information is summarized below.

Marine accident involving gravel carrier SEIWA MARU explosion

(Disseminated on January 23, 2013)

In regard to the gravel carrier SEIWA MARU explosion that occurred on December 11, 2012, the Japan Transport Safety Board supplied information to the Ministry of Land, Infrastructure, Transport and Tourism as follows.

(Factual information)

The facts found to date are as follows.

- (1) Location of the explosion
Within the bow store
- (2) Installation of gas stove, propane gas canisters, etc.

The vessel was carrying a gas canister (capacity 5kg) in the bow store that was connected to a gas stove using a rubber hose. Note that while the gas canister has been replaced the day before the accident, the gas canister was nearly empty after the explosion.

* The information disseminated is shown on the Board's website.

<http://www.mlit.go.jp/jtsb/iken-teikyo/seiwa20130123.pdf>

Marine accident involving passenger injury on the passenger ship KOUN MARU No. 3 and on the passenger ship LAKE FLOWER

(Disseminated on February 14, 2013)

In regard to the passenger injury on the passenger ship KOUN MARU No. 3 that occurred on December 24, 2012 and the passenger injury on the passenger ship LAKE FLOWER that occurred on January 3, 2013, the Japan Transport Safety Board supplied information to the Ministry of Land, Infrastructure, Transport and Tourism as follows.

(Factual information)

Although the facts will be confirmed in investigation going forward, the facts found to date are as follows.

Both ships had outboard motors with underwater exhaust at the stern and were equipped with a house above the catamaran hull. This house had a structure consisting of small openings to the lake surface called fishing holes in the surface of both sides of the house that allowed pond smelt fishing in a house that was heated even during the winter.

It was confirmed that passengers that had been transported to the hospital after complaining of a headache had carbon monoxide poisoning. In addition, according to an operations investigation on-site carbon monoxide was detected near the indoor fishing holes when the heating unit that could cause carbon monoxide indoors was stopped.

* The information disseminated is shown on the Board's website.

http://www.mlit.go.jp/jtsb/iken-teikyo/s-teikyo6_20130214.pdf

Marine accident involving the collision of push boat DAIEI MARU No. 11 and barge DAIEI MARU No. 12

(Disseminated on April 25, 2013)

In regard to the collision of push boat DAIEI MARU No. 11 and barge DAIEI MARU No. 12 that occurred on February 16, 2013, the Japan Transport Safety Board supplied information to the Ministry of Land, Infrastructure, Transport and Tourism as follows.

(Factual information)

Although the facts will be confirmed in investigation going forward, the facts found to date are as follows.

The accident occurred while the push boat was pushing the barge during bad weather in the sea off

Sodegaura City and the device coupling the push boat and barge became undone. The push boat and barge then collided, a breach was suffered in hull of the starboard side of the engine room, and the vessel flooded and foundered.

The push boat DAIEI MARU No. 11 and barge DAIEI MARU No. 12 are joined by a special coupling device in which the bow of the push boat is inserted into a notch in the stern of the barge. The barge is called a pusher barge and is navigated based on the thrust of the push boat, and the dimension ratios of the push boat's engine room are extremely high compared to a standard cargo ship.

* The information disseminated is shown on the Board's website.

http://www.mlit.go.jp/jtsb/iken-teikyo/s-teikyo7_20130425.pdf



Thoughts on fires onboard ships

Nagasaki Office

At the Board, including the era of the former Marine Accidents Inquiry Agency, incidents of fires onboard ships have mostly been handled by investigators that were formerly ship engineers. Limited to the cases we have been involved with, we have knowledge but have not had any experience of tracking fires caused by plugs inserted in outlets, and it seems that there are many fires caused by short circuits and electric leaks.

The level of difficulty for investigating fires can vary significantly depending on whether the vessel has sunk or whether or not there are still cinders.

If a ship sinks, especially for small FRP (reinforced plastic) ships, often the only evidence available was interviews with crew members who did all they could to escape, because these ships burn surprisingly fast and easily. If we are fortunate enough to have some cinders, we have to work with scorched black bilge mixed with small fibers and soot from the FRP cinders that irritate the skin and try to identify the cause in a manner that is very much a process of trial and error.

When putting out fires, while the key principle is to reduce the temperature in the same manner as fires on land, because it is not possible to keep on throwing water to lower the temperature which would result in the ship losing buoyancy, initial fire fighting with portable dry chemical fire extinguisher is important. For engine rooms that are often the source of fires, it is necessary to install fire detectors and automatic dry chemical fire extinguisher and to cut off oxygen in order to extinguish fires.

First and foremost, so that fires are not allowed to occur it is important to conduct regular checks to mitigate and eliminate risks, such as by eliminating causes of electric leaks through means including the appropriate measurement and replacement of insulation resistance for electric machinery and electric wires, conducting checks as appropriate for fuel and lubricants in pipe joints that can cause fires if they leak into the exhaust pipes for the main engine, and taking precautions with battery charging, which is important, but can also lead to the electrolysis of water within batteries if they are overcharged and generate hydrogen which is ignitable.

12 Summaries of major marine accident investigation reports

Explosion ignited by flammable gas remaining after use of a cleaning spray can Motor Boat KEN-YU explosion

Summary: The vessel (gross tonnage: less than 5 tons) was embarked by the skipper and three friends, who were preparing to depart from a basin for small crafts at Omuta River in Omuta City. When the main engine was started there was an explosion within the engine casing at around 10:10 on May 2, 2011. Two occupants of the vessel suffered broken bones and the side shell plating, bulwark, and cockpit instrument panel, etc. were damaged

Skipper

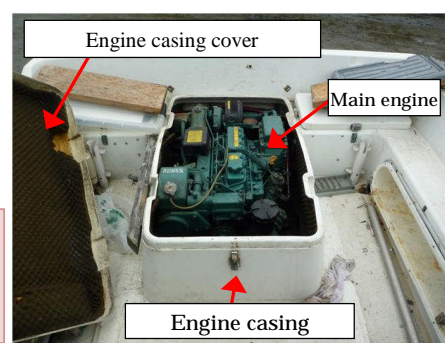
Five minutes before the accident occurred, while the vessel was mooring, an entire spray can containing oil-based cleaner was sprayed for approximately three minutes to clean the top of the main engine contained in the engine casing, and the engine casing cover was then immediately closed and locked.

⚠ Because the liquid cleaner evaporated once it adhered to the top of the main engine when it was sprayed, the skipper believed that the propellant liquefied petroleum gas (LPG) was diffused outside the engine casing together with the evaporated gas from the cleaner.

Inside the engine casing

Because the cleaner that was sprayed became vaporized and converted into a flammable gas together with the LPG heavier than the air, it remained inside the engine casing that had no ventilation.

⚠ There was no warning stated on the spray can itself that the gas evaporating from the cleaner is heavier than air and flammable, and that ventilation is necessary as it tends to accumulate in low areas if there is no wind or if used in an enclosed space.



Skipper

The main engine was started using the key switch by the cockpit.

⚠ The skipper did not think an electric spark from the starter motor occurred or that there was an ignition source inside the engine casing.

Inside the engine casing

Because flammable gas became retained in the engine casing, an electric spark from the starter motor **ignited and caused an explosion**

Probable causes: It is probable that this accident was caused by a chain of events in which the skipper used a spray can to clean the top of the main engine contained in the engine casing while the vessel was mooring at a basin for small crafts downstream at Omuta River and then immediately closed the engine casing cover. Because the flammable gas composed of a combination of the vaporized gas from the cleaner and propellant LPG remained in the engine casing, when the main engine was started an electric spark from the starter motor ignited the flammable gas and caused an explosion.

It is probable that the reason the flammable gas composed of a combination of the vaporized gas from the cleaner and propellant LPG remained in the engine casing is that in order to clean the top of the main engine contained in the engine casing the skipper sprayed the entire spray can for approximately three minutes on the top of the main engine from above the deck, immediately closed the engine casing after cleaning was completed, and as a result there was no ventilation.

For details, please refer to the investigation report. (Published in Japanese on January 25, 2013)
http://www.mlit.go.jp/jtsb/ship/rep-acci/2013/MA2013-1-1_2012tk0045.pdf

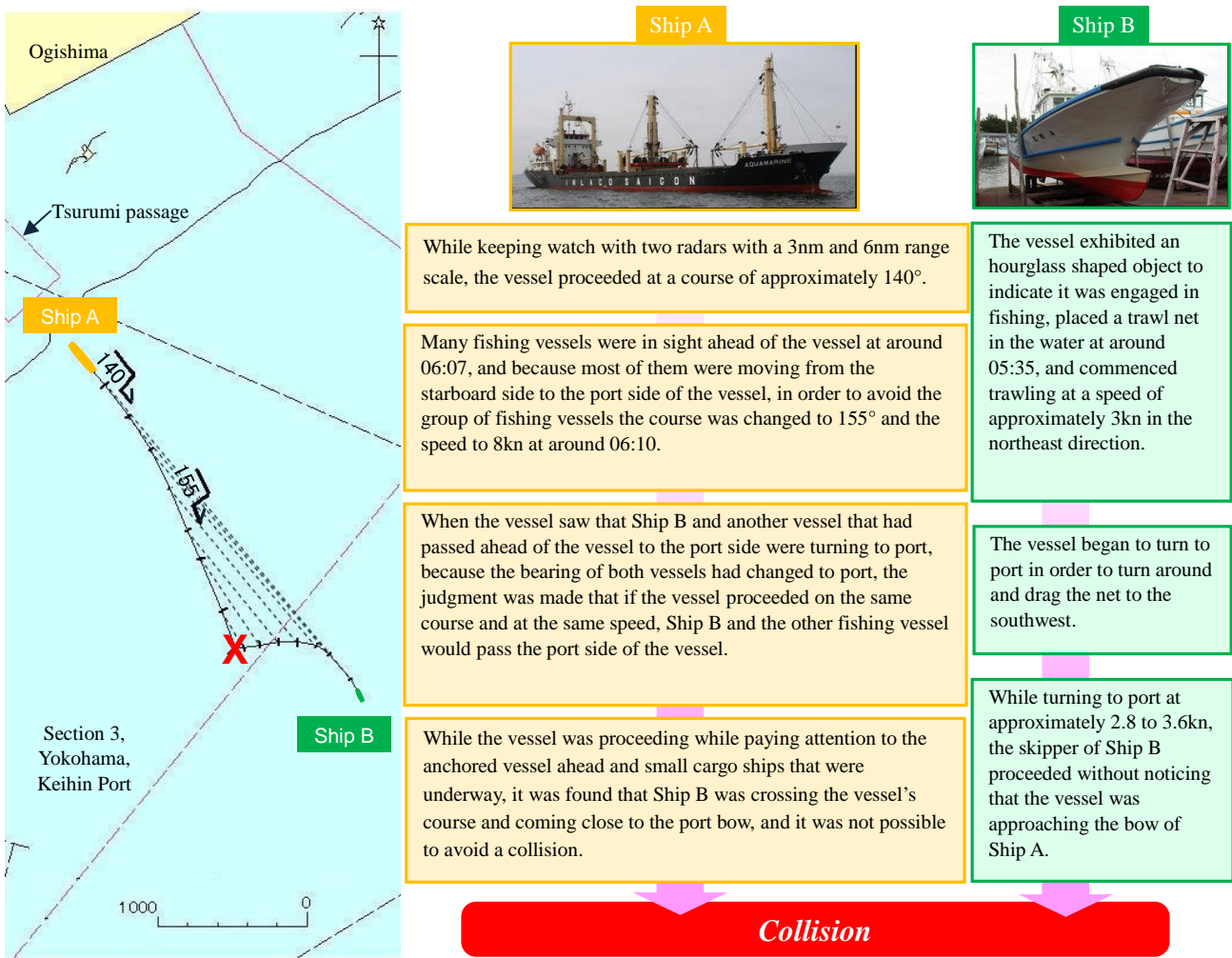
Collision of two vessels due to lack of a proper lookout by both vessels, causing the skipper of the fishing vessel to die

Collision of cargo ship AQUAMARINE with fishing vessel HIRASHIN MARU

Summary: Heading southeast on the Tsurumi passage established in Section 3, Yokohama, Keihin Port, the cargo ship AQUAMARINE (Ship A, gross tonnage: 4,095 tons) crewed by the master and 21 crew members collided with the fishing vessel HIRASHIN MARU (Ship B, gross tonnage: 4.9 tons) crewed by the skipper and one crew member while making a turn pulling a trawl net at around 06:14 on July 6, 2011 in the area southeast of the Daikoku Wharf in Section 3, Yokohama, Keihin Port.

In terms of Ship B, the skipper died and the deckhand was injured, the keel buckled, there were breaches, etc. In terms of Ship A, damage included dents to the bulbous bow.

Chapter 4



Probable causes: It is somewhat likely that this accident was caused by a chain of events in which Ship A was proceeding southeast in the area southeast of the Daikoku Wharf in Section 3, Yokohama, Keihin Port and Ship B began to turn to port in order to drag the net to the southwest. The master of Ship A navigated the vessel while paying attention to the anchored vessel ahead and small cargo ships that were underway and did not notice that Ship B was coming close to the port bow while the skipper of Ship B proceeded without noticing that the vessel was approaching the bow of Ship A, and for this reason both vessels collided.

It is probable that the reason the master of Ship A navigated the vessel while paying attention to the anchored vessel ahead and small cargo ships that were underway and did not notice that Ship B was coming close to the port bow is that Ship B had passed ahead of the vessel to the port side and the bearing of Ship B had changed to port, and for this reason the judgment was made that if Ship A proceeded on the same course and at the same speed, Ship B would pass the port side of Ship A.

For details, please refer to the investigation report. (Published in Japanese on January 25, 2013)

http://www.mlit.go.jp/jtsb/eng-mar_report/2013/2011tk0014e.pdf

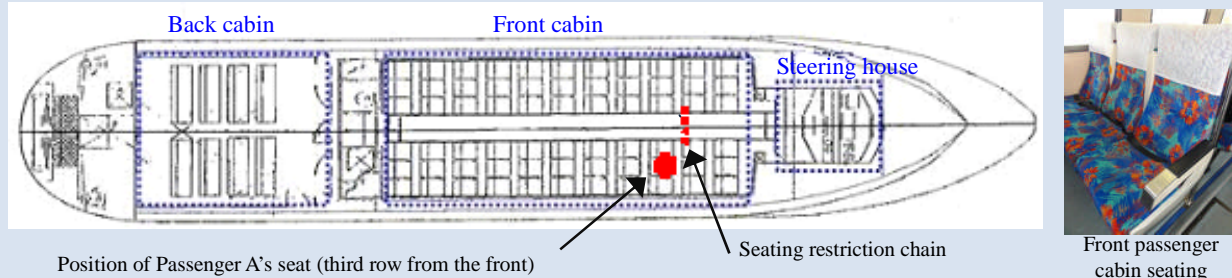
Compression fracture in passenger's lumbar spine from the impact of pitching

Passenger injury on the passenger ship ANEI GO No. 38

Summary: The vessel was crewed by the master and one deckhand, carrying 66 passengers. While sailing from Ishigaki Port, Ishigaki City, Okinawa Prefecture to Hateruma Fishery Harbor, Taketomi Town, the vessel pitched in the sea south-southwest of Nakama Port, Taketomi Town at around 09:20 on June 26, 2012, and one passenger (Passenger A) was injured.

Seating status of Passenger A at the time of the accident

Owner of the ship: Company A, gross tonnage: 19 tons, maximum number of persons: 90 passengers and 2 crew members



- While the master had intended to limit seating by passengers for the front seats of the front passenger cabin where the pitching is likely to be significant, the seating restriction chain was moved from the fifth row to the second row due to the number of passengers.
- The master and deckhand did not guide Passenger A to the back cabin where the pitching is relatively low

Events leading up to the accident

The vessel sailed towards Hateruma Fishery Harbor in the sea south-southwest of Nakama Port at a speed of 15 to 20kn while waves struck the hull from the port bow.

While discovering a high wave with a wave height of approximately 2.0m, the master was not able to change course or slow down, and the vessel's bow rode the high wave crest and fell down between the waves.

When the vessel's bow fell down between the waves, Passenger A's **body was lifted up from the seat and the impact on their posterior when falling back on the seat caused a compression fracture in her lumbar spine**

[Weather and sea conditions at the time of the accident]

Significant wave height: 1.52m, wave period: 6.5s, wave direction: south-southeast, wind direction: south wind velocity 7m/s



Probable causes: It is probable that this accident was caused by a chain of events in which the ship was sailing south-southwest at a speed of approximately 15 to 20kn in the sea south-southwest of Nakama Port when continuous waves from the south-southeast with a wave height of approximately 1.5m hit the port bow, and because Passenger A was not guided to the back cabin where the pitching is relatively low and Company A did not take measures to ensure that Passenger A properly wore their seat belt, when the vessel's bow rode the high wave crest with a wave height of approximately 2.0m and fell down between the waves, Passenger A's body was lifted up from the seat and the impact on her posterior when falling back on the seat caused a compression fracture in her lumbar spine.

It is probable that Passenger A was not guided to the back cabin where the pitching is relatively low and Company A did not take measures to ensure that Passenger A properly wore their seat belt because Company A did not thoroughly ensure that its crew complied with the safe operation manual for adverse weather.

For details, please refer to the investigation report. (Published in Japanese on March 29, 2013)

http://www.mlit.go.jp/jtsb/ship/report/MA2013-3-3_2012tk0031.pdf

Crew member dies from inhaling chloroform gas while checking the inside of a cargo tank

Death of crew member on chemical tanker KYOKUHO MARU No. 2

Summary: The vessel (gross tonnage: 388 tons, operator: Company A) was crewed by the master, the second officer, and three other crew members as it departed from Komatsu Wharf, Izumiotsu Port, Izumiotsu City, Osaka. As the vessel was sailing north towards Umemachi Terminal in Section 1, Osaka, Hanshin Port, at around 12:29 on February 7, 2012 the chief engineer discovered that the second officer collapsed in No.1 cargo tank on the port side. Although the second officer was rescued, he could not breathe because of gas inhalation, and died due to an oxygen deficiency.

State of work on the vessel until the day before the accident



On the day before the accident of February 6, after leaving a berth having completed discharging the cargo including chloroform, the inside of cargo tanks were cleaned and the vessel was berthed to Komatsu Wharf at around 16:55. A turbofan was operated to dry the inside of all cargo tanks No.1 through No.3 and ventilation was conducted for approximately 13 hours until noon on the 7th to ensure that the tanks were free of gas.

On the day before the accident the chief engineer confirmed that no chloroform washing water remained in the suction well (*1).

*1. A suction well is a hollow area on the stern side within the cargo tank so that cargo and washing water can be effectively suctioned, and it is equipped with suction pipes for cargo and washing water.

Events leading to the accident

While the vessel was heading to Umemachi Terminal at around 12:10 on February 7 after having departed from Komatsu Wharf, in order to check the state inside cargo tanks it was decided that the chief officer would check the starboard side cargo tanks and that the second officer would check the port side cargo tanks. The chief officer instructed the second officer to open the manhole hatch of No.1 cargo tank on the port side at around 12:25.



Manhole hatch of No.1 cargo tank on the port side

As the chief officer smelled chloroform from the manhole hatch of No.1 cargo tank on the port side, he instructed the second officer not to enter that cargo tank because there was chloroform gas and left the location.

When walking on the upper deck to check the state of work at around 12:29, the chief engineer noticed that the manhole hatch for No.1 cargo tank on the port side was opened. The chief engineer looked inside the cargo tank, and **discovered that the second officer collapsed leaning against the bulkhead close to the suction well**

When the second officer was discovered, No.1 cargo tank on the port side smelled strongly of gas and chloroform washing water remained in the suction well that had been empty the previous day.
→ It is somewhat likely that when ventilation was conducted with the turbofan on the previous day, this caused the washing water that had remained in the pipes to be pushed out and it then returned back to the tank.

Company A's guidelines for entering cargo tanks and pump rooms (excerpt)

- Confirm that there is no residual liquid or residual smell
- Measure and record oxygen and residual gas concentration as appropriate (tank or room entry if there is a dangerous atmosphere is strictly prohibited)
- Conduct work in groups of more than one person and in accordance with the instructions of the supervisor (working alone and acting based on your own decisions are strictly prohibited)

Probable causes: It is probable that this accident was caused by a chain of events in which Company A did not thoroughly instruct its crew members on guidelines for entering cargo tanks or measuring oxygen and gas concentration, nor did Company A clarify the work procedures for tank cleaning when there is residual washing water in a cargo tank. For these reasons, the second officer entered No.1 cargo tank on the port side that had residual washing water and a gas smell, and inhaled chloroform gas when checking the state of cargo tanks while heading north to the Umemachi Terminal.

For details, please refer to the investigation report. (Published in Japanese on April 26, 2013)
http://www.mlit.go.jp/jtsb/ship/rep-acci/2013/MA2013-4-2_2012tk0002.pdf

Seawater washed over the vessel causing her to list and capsize, leading to the death of two crew members

Capsizing of fishing vessel KASUGA MARU

Summary: The vessel (gross tonnage: 33.72 tons) was crewed by the skipper, the chief fisherman, and crew members A, B, C, and D and sailing to a fishing grounds in the sea northwest of main island of Okinawa. At around 15:15 on March 23, 2012 the vessel listed to port and capsized into the sea approximately 140km west-northwest of Naze Port, Amami City, Kagoshima Prefecture. Of the six crew members, two died and four were injured.



Around 11:30 on March 22
The vessel departed Yamagawa Port, Ibusuki City, Kagoshima Prefecture for a fishing ground in order to conduct long-line fishing

The center of gravity of the vessel became higher due to the loading of fishing equipment, and stability was reduced

Around 15:00 on March 23

While Crew Member A was on watch duty and the vessel was proceeding southwest on autopilot in the seas west-northwest of Naze Port, the vessel was heeling to port by wind from the west-northwest on the starboard side.

Due to waves from the west, seawater continuously washed over the “waist” (*1), but the vessel sailed maintaining its course and speed.

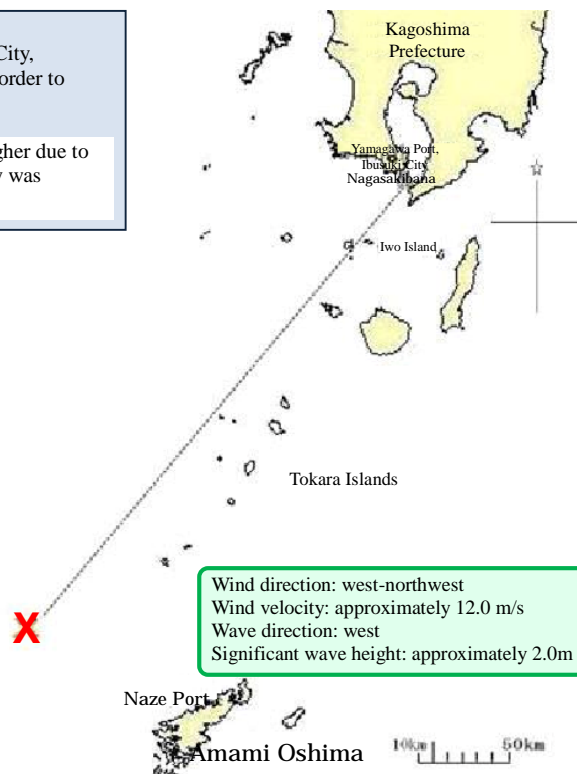
*1. In the case of this vessel, the term refers to the part of the upper deck between the back wall of the forecastle and the front of the bridge.

Although steering and speed changes were usually conducted by the skipper and chief fisherman for this vessel, both were taking a break at the time.

Around 15:15

The seawater that continuously washed over the waist became trapped on the port side of the upper deck, causing the port list to increase and the scuppers on the port side to become submerged and more seawater was trapped on the deck. When the trapped seawater flooded into the engine room and crew’s cabin, **the port list increased even further and capsized.**

- The vessel’s elevated wooden deck, the wooden deck’s stringer boards, the size of the scuppers, and the structure around the scuppers affected and prevented water from being drained.
- The doors to the engine room and crew’s cabin were open.



[Crew members (no crew members wore life jackets)]

- Skipper, chief fisherman, crew members A and B:
Rescued by the Japan Coast Guard
- Crew member C: missing (found on March 27, dead)
- Crew member D: missing (found on August 24, removed from family register)

[The vessel]

It is probable that the vessel foundered.

Probable causes : It is probable that this accident was caused by a chain of events in which the vessel was sailing southwest in the sea west-northwest of Naze Port while being subject to winds from the west-northwest and waves from the west, during which seawater that continuously washed over the waist became trapped on the port side of the upper deck, causing the port list to increase and the scuppers on the port side to become submerged and more seawater was trapped on the deck. When the trapped seawater flooded into the engine room and crew’s cabin, the port list increased even further and the vessel capsized.

It is probable that the reason trapped seawater flooded into the engine room and crew’s cabin is that the doors of the engine room and crew’s cabin had been opened to monitor the engine room and ventilate the crew’s cabin.

It is probable that the reason the seawater that washed over became trapped on the port side of the upper deck is that the vessel’s elevated wooden deck, the wooden deck’s stringer board, the size of the scuppers, and the structure around the scuppers affected and prevented water from being drained and because the vessel was listing towards port side due to the wind.

For details, please refer to the investigation report. (Published in Japanese on August 30, 2013)

http://www.mlit.go.jp/jtsb/ship/rep-acci/2013/MA2013-8-1_2012tk0016.pdf