# 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**

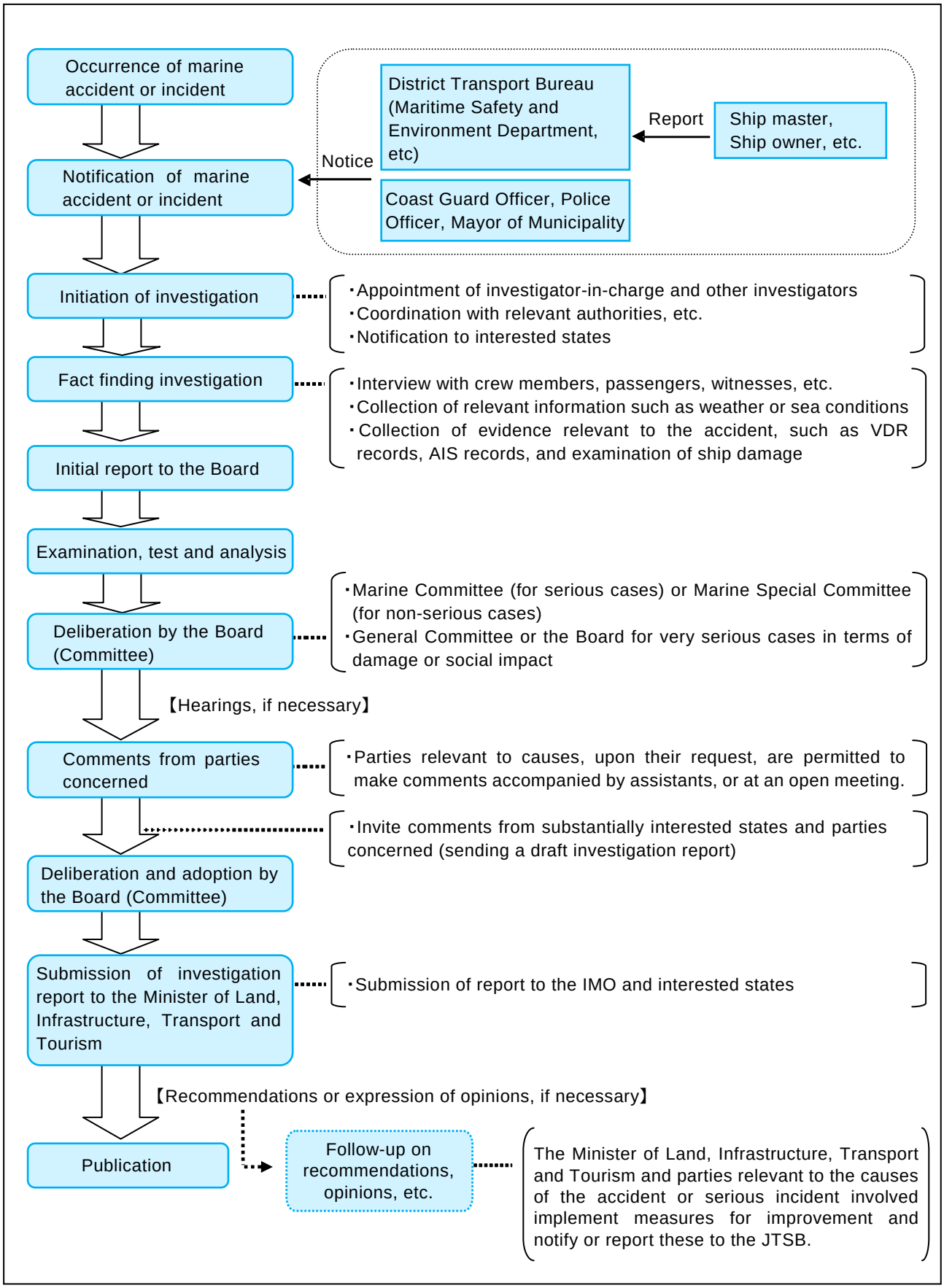
(A situation, prescribed by Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism, stipulated in item 2, paragraph 6, Article 2 of the Act for Establishment of the Japan Transport Safety Board)

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>**

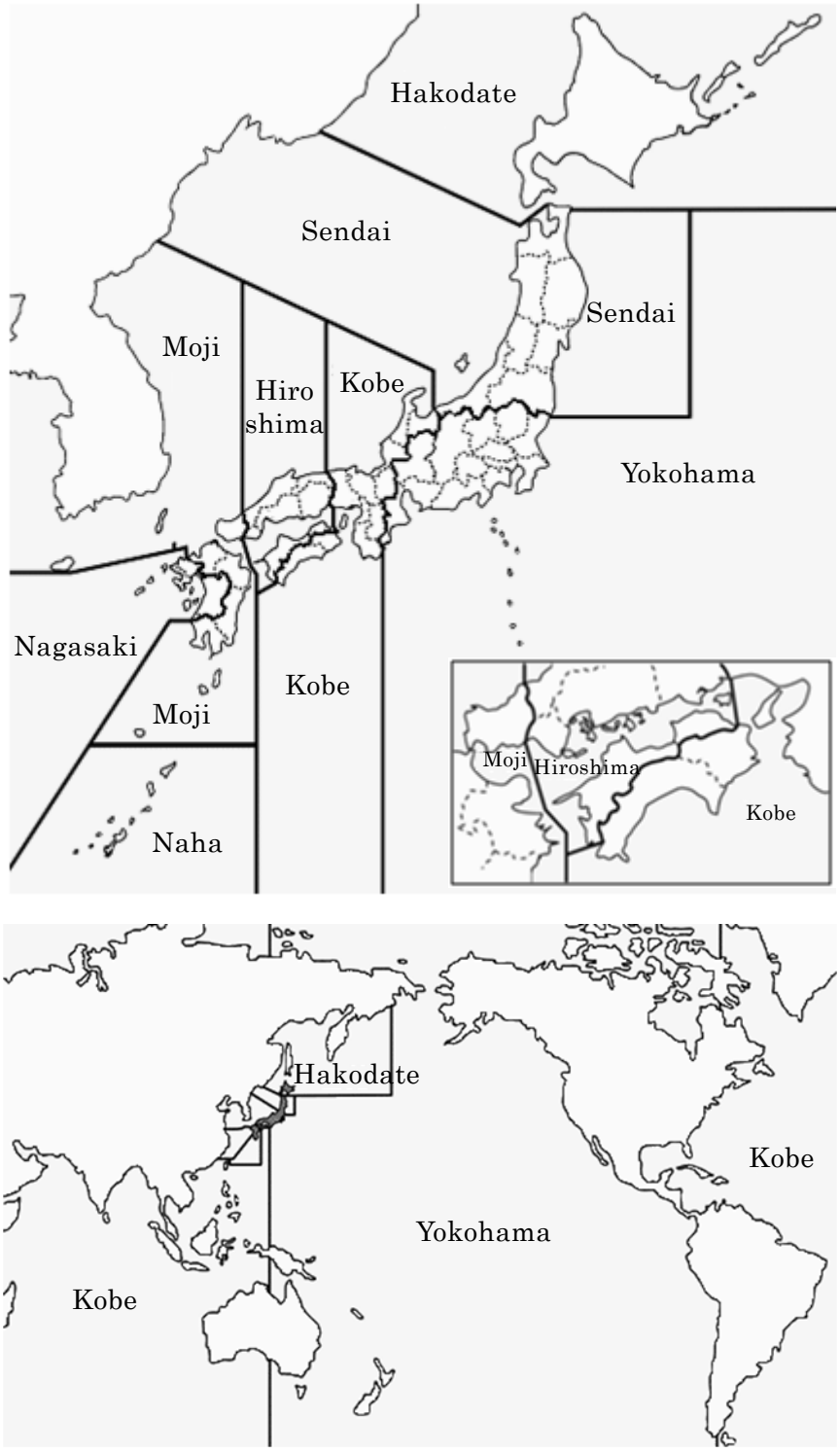
| Marine accident and incident to be investigated | | Type of marine accident and incident |
|---|---|---|
| Marine accident | Damage to ships or other facilities involved in ship operation | Collision, Grounding, Sinking, Flooding, Capsizing, Fire, Explosion, Missing, Damage to facilities |
| | Casualty 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



## 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.

<table>
<tr><td>Serious marine accidents and incidents</td><td>Office in charge of investigation: Marine accident investigators in the Headquarters<br>Committee in charge of deliberation and adoption: Marine Committee</td></tr>
<tr><td colspan="2">Definition of “serious marine accidents and incidents”<br>・Cases where a passenger died or went missing, or two or more passengers were severely injured.<br>・Cases where five or more persons died or went missing.<br>・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.<br>・Cases of spills of oil or other substances where the environment was severely damaged.<br>・Cases where unprecedented damage occurred following a marine accident or incident.<br>・Cases which made a significant social impact.<br>・Cases where identification of the causes is expected to be significantly difficult.<br>・Cases where essential lessons for the mitigation of damage are expected to be learned.</td></tr>
<tr><td>Non-serious marine accidents and incidents</td><td>Office in charge of investigation: Regional investigators in the regional offices<br>Committee in charge of deliberation and adoption: Marine Special Committee</td></tr>
</table>

## 5. Statistics of investigations of marine accidents and incidents

The JTSB carried out investigations of marine accidents and incidents in 2012 as follows:

Investigations into 790 accidents had been carried over from 2011, and 981 accident investigations newly launched in 2012. Investigation reports on 978 accidents and four interim reports were published in 2012, and thereby 789 accident investigations were carried over to 2013.

Investigations into 103 incidents had been carried over from 2011, and 165 incident investigations newly launched in 2012. Investigation reports on 158 incidents were published, and thereby 109 incident investigations were carried over to 2013.

Among the 1,136 reports published in 2012, six were issued with recommendations, two with safety recommendations, four with opinions, and 33 with remarks.



Investigations of marine accidents and incidents in 2012

(cases)

| Category | Carried over from 2011 | Launched in 2012 | Not applicable | Transferred to Tokyo Office | Total | Publication of investigation report | Recommendations | Safety recommendations | Opinions | Remarks | Carried over to 2013 | Interim report |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Marine accident | 790 | 981 | -4 | 0 | 1767 | 978 | 6 | 2 | 4 | 33 | 789 | 4 |
| Tokyo Office (Serious cases) | 24 | 22 | | 28 | 74 | 42 | 6 | 2 | 4 | 32 | 32 | 4 |
| Regional Offices (Non-serious cases) | 766 | 959 | -4 | -28 | 1693 | 936 | | | | 1 | 757 | |
| Marine incident | 103 | 165 | -1 | 0 | 267 | 158 | 0 | 0 | 0 | 0 | 109 | 0 |
| Tokyo Office (Serious cases) | 0 | 0 | | | 0 | 0 | | | | | 0 | |
| Regional Offices (Non-serious cases) | 103 | 165 | -1 | | 267 | 158 | | | | | 109 | |
| Total | 893 | 1146 | -5 | 0 | 2034 | 1136 | 6 | 2 | 4 | 33 | 898 | 4 |

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.

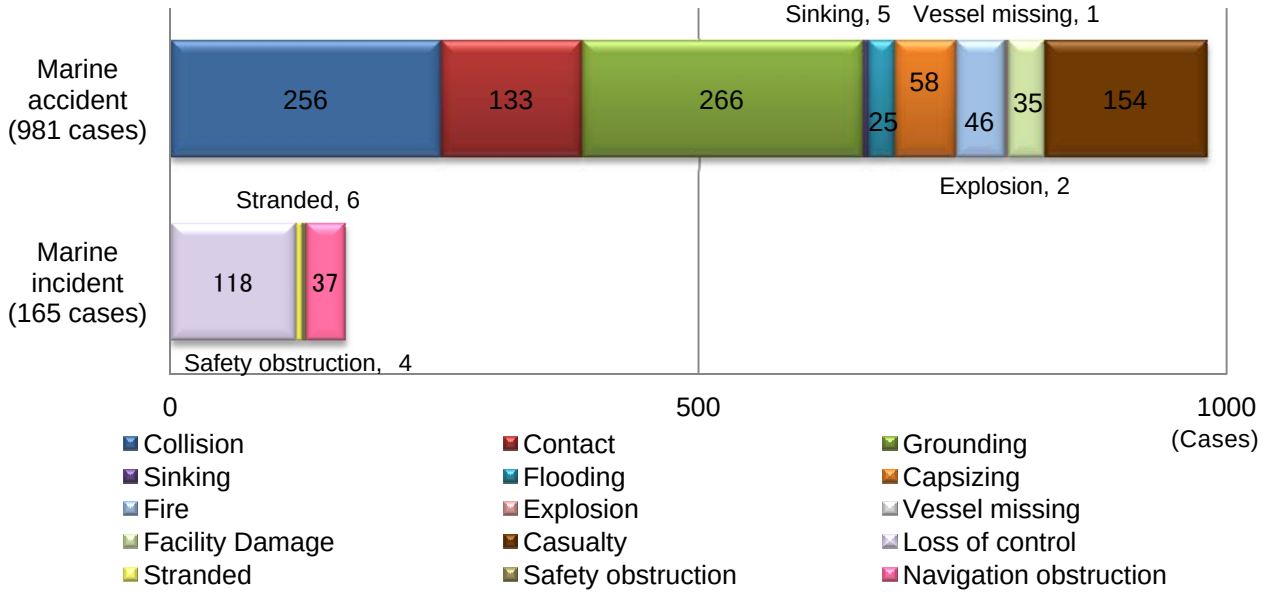
## 6. Statistics of investigations launched in 2012

(As of the end of April, 2013)

(1) Types of accidents and incidents

The 1,146 investigations launched in 2012 are classified by types as follows: With regard to marine accidents, there were 266 cases of grounding, 256 cases of collision, 154 cases of casualty, and 133 cases of contact. With regard to marine incidents, there were 118 cases of loss of control (including 76 cases of machinery failure, 10 cases of rope entangling, etc.), 37 cases of navigation obstruction, and 6 cases of stranded. The objects of contact were quays in 44 cases, breakwaters and breakwater blocks in 15 cases.

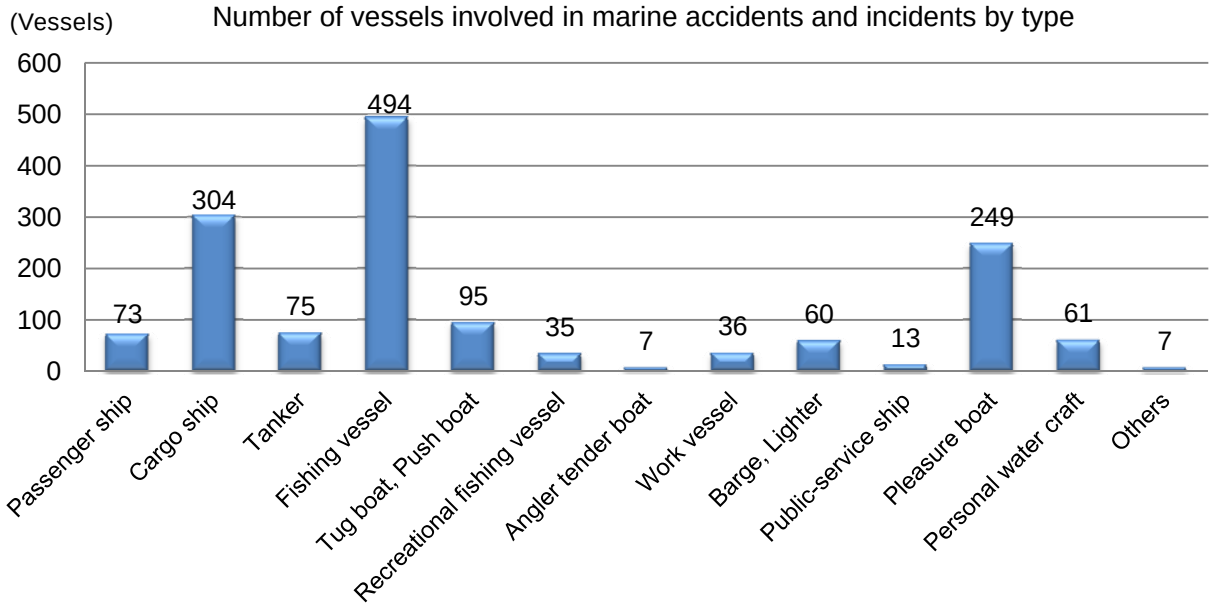
Number of marine accidents and incidents by type




(2) Types of vessels

The number of vessels involved in marine accidents and incidents is 1,509. Those vessels are classified by type as follows: 494 fishing vessels, 304 cargo ships, 249 pleasure boats, 95 tug boats, push boats, 75 tankers, and 73 passenger ships. The total of the three categories of fishing vessels, cargo ships, and pleasure boats is 1,047, accounting for nearly 70 % of all the accidents and incidents.

Number of vessels involved in marine accidents and incidents by type






The number of foreign-registered vessels involved in marine accidents and incidents was 121, and they were classified by accident type as follows: 64 vessels in collision, 19 vessels in grounding, and 10 vessels in contact. As for the nationality of vessels, 30 vessels were registered in Panama, 19 vessels in Cambodia, 18 vessels in South Korea. The number of vessels registered in Asian countries or regions was accounting for about 50% of the accidents and incidents.

Number of foreign-registered vessels by nationality

(Vessels)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Panama | 30 | Singapore | 6 | Cyprus | 3 | Kiribati | 2 |
| Cambodia | 19 | Russia | 4 | Philippines | 3 | Mongolia | 2 |
| South Korea | 18 | Liberia | 4 | China | 3 | Bahamas | 2 |
| Belize | 6 | Marshall Islands | 3 | United States of America | 3 | Others | 13 |

(3) Number of casualties

The number of casualties was 429, consisting of 112 deaths, 29 missing persons, and 288 injured persons. By type of vessel, 173 persons in fishing vessels and 101 persons in pleasure boats. By type of accident, 175 persons in casualties (not involved in other types of accidents), 112 persons in collision, 65 persons in contact, and 34 persons in sinking or capsizing.

With regard to persons dead or missing, 88 persons were involved in fishing vessel accidents, 30 persons in pleasure-boat accidents, indicating dead or missing cases occurred frequently in fishing vessels.

In September 2012, a foreign-registered cargo ship collided with a bonito pole-and-line fishing boat on the high seas at the east offshore of Kinkazan, Miyagi Prefecture, causing 13 fishing boat crew members to go missing.

Number of casualties (marine accident)

(Persons)

| 2012 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Vessel Type | Dead | | | Missing | | | Injured | | | Total |
| | Crew | Passenger | Others | Crew | Passenger | Others | Crew | Passenger | Others | |
| Passenger ship | 2 | 1 | 1 | 0 | 0 | 0 | 6 | 16 | 1 | 27 |
| Cargo ship | 6 | 0 | 1 | 0 | 0 | 0 | 7 | 0 | 1 | 15 |
| Tanker | 3 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 9 |
| Fishing vessel | 58 | 0 | 2 | 27 | 0 | 1 | 79 | 0 | 6 | 173 |
| Tug boat, push boat | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 9 |
| Recreational fishing vessel | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 17 | 0 | 19 |
| Angler tender boat | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 10 | 0 | 13 |
| Work vessel | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 |
| Barge, Lighter | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Public-service ship | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Pleasure boat | 20 | 0 | 9 | 0 | 0 | 1 | 29 | 0 | 42 | 101 |
| Personal water craft | 1 | 0 | 1 | 0 | 0 | 0 | 11 | 0 | 40 | 53 |
| Others | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 5 |
| Total | 95 | 2 | 15 | 27 | 0 | 2 | 150 | 43 | 95 | 429 |
| | 112 | | | 29 | | | 288 | | | |

## 7. Summaries of serious marine accidents and incidents which occurred in 2012

The serious marine accidents which occurred in 2012 are summarized as follows: The summaries are based on information available at the start 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<br>Accident type | Summary |
|---|---|---|---|
| 1 | Jan. 11, 2012<br>Keiyo Foods Complex South Berth, Funabashi City, Chiba Prefecture | Cargo ship GUANG DA (Panama)<br>Fatality to a crew member | While mooring the ship at the berth referenced in the left column, a stand roller to secure a mooring line on the bow deck was broken and blown. One Chinese crew member working in the vicinity of the stand roller was found unconscious and confirmed dead later on. |
| 2 | Jan. 24, 2012<br>Around 229.4° true, 3.73 nautical miles from the lighthouse on Zenigame South Breakwater in Shinori Port, Hakodate City, Hokkaido Prefecture | Cargo ship RYUEI<br>Facility damage | The starboard anchor of the ship leaving Tomakomai Port for Hakodate Port was dropped while underway, damaging the submarine cable. |
| 3 | Feb. 7, 2012<br>East Section of Niigata Port, Niigata City, Niigata Prefecture | Container ship KOTA DUTA (Singapore)<br>Cargo ship TANYA KARPINSKAYA (Vladivostok)<br>Collision | In East Section of Niigata Port, the container ship, KOTA DUTA collided with the cargo ship, TANYA KARPINSKAYA causing the TANYA KARPINSKAYA sunken. |
| 4 | Feb. 7, 2012<br>Sakai Semboku Section 7 of Hanshin Port | Chemical tanker KYOKUHO MARU No. 2<br>Fatality to a crew member | While the tanker having the master, second officer, and other 3 members onboard was navigating northward for Umemachi Terminal in Osaka Section 1 of Hanshin Port after she departed from Komatsu Wharf of Izumiotsu Port, Izumiotsu City, Osaka Prefecture, the chief engineer found the second officer fallen in the port side No. 1 cargo tank. The second officer was rescued. Being unable to breathe air due to inhaling of chloroform gas, the officer was confirmed dead due to lack of oxygen. |
| 5 | Mar. 4, 2012<br>Around 4 km northwest of Sunosaki, Tateyama City, Chiba Prefecture | Fishing vessel OURA MARU<br>Recreational fishing vessel IKU MARU No. 5<br>Collision | The fishing vessel, OURA MARU, while underway, collided with the recreational fishing vessel, IKU MARU No. 5 having 6 passengers onboard and anchoring. One of the passengers onboard the IKU MARU No. 5 was killed and the skipper got injured. The structure of the IKU MARU No. 5 from its bow to stern was severely damaged. |

| No. | Date and Location | Vessel type and name<br>Accident type | Summary |
|---|---|---|---|
| 6 | Mar. 8, 2012<br>In the vicinity of the No. 1 light beacon in Iyonada Traffic Route offshore of Iwaishima Island, Kaminoseki Town, Yamaguchi Prefecture | Cargo ship JNS-2 (South Korea)<br>Fishing vessel CHOHO MARU<br>Collision (with fishing gear) | The fishing vessel CHOHO MARU while in operation collided with the cargo ship JNS-2 navigating from Fukuyama to South Korea and the fishing vessel was capsized. The skipper of the fishing vessel fell into the sea. He was lifted and recovered but died. |
| 7 | Mar. 23, 2012<br>On East China Sea at about 120 km west-northwest of Naze Port, Naze City, Kagoshima Prefecture (Found at this location) | Fishing vessel KASUGA MARU<br>Capsizing | The vessel navigating from Ibusuki Port to the fishing ground in Okinawa Prefecture was found capsized. 4 fishermen were rescued and 2 fishermen went missing. |
| 8 | Mar. 25, 2012<br>About 10 km southeast of Shiraoi Port, Shiraoi Town, Hokkaido Prefecture | Pleasure boat MIHO VII<br>Capsizing | The boat having the skipper and 4 persons onboard was capsized while she was returning to port after fishing.<br>Two persons were dead and one went missing. |
| 9 | Mar. 27, 2012<br>Rokko Island RC-5 Wharf, Kobe Section of Hanshin Port | Container ship ANNA MAERSK (Denmark)<br>Fatality and injury to crew members | In running the periodical inspection of such riggings as life boats of the container ship while she was mooring and loading at the Rokko Island, Kobe Section of Hanshin Port, a life boat overhung outboard fell, causing one able seaman and the chief officer, both on the life boat, fatally and seriously injured, respectively. |
| 10 | Apr. 15, 2012<br>Around 031.5° true, 3.5 nm from Rokkosaki Lighthouse located in Suzu City, Ishikawa Prefecture | Container ship YONG CAI (Saint Vincent and Grenadines)<br>Fishing vessel SHINYO MARU No. 2<br>Collision | The container ship YONG CAI navigating west-northwestward off the north of Noto Peninsula, Ishikawa Prefecture collided with the fishing vessel SHINYO MARU No. 2 navigating southwestward. The skipper of the vessel died and a crew member went missing. The YONG CAI sustained scratches on her starboard, and the bow section of SHINYO MARU No. 2 was crushed by pressure. |
| 11 | Apr. 20, 2012<br>Around 038° true, 1,360m from the lighthouse on the south breakwater of Osaka North Port located Osaka City, Osaka Prefecture | Container ship EVER UNISON (Singapore)<br>Contact (with berth) | The container ship, while her mooring operation, contacted with the berth, which resulted in a dent on her hull and damage to parking stoppers on the berth. |
| 12 | May 15, 2012<br>Bandai Jima Wharf of Niigata West Port, Niigata City, Niigata Prefecture | Passenger ferry OSADO MARU<br>Fatality to a passenger | On the ferry mooring at the wharf referenced in the left column, one passenger was found wounded on the head and dead on the car deck. |
| 13 | May 23, 2012<br>In the vicinity of the north end of West Breakwater, Section 4 of Rumoi Port, Rumoi City, Hokkaido Prefecture | Angler tender boat ARAKAZE<br>Contact (with breakwater) | The boat having three anglers onboard contacted with the vicinity of the tip of West Breakwater of Rumoi Port while she was taking them from Rumoi Port to the West Breakwater. The skipper and one of the anglers were injured and the bow section of the boat was damaged. |

| No. | Date and Location | Vessel type and name<br>Accident type | Summary |
|---|---|---|---|
| 14 | June 7, 2012<br>In the ship navigating in the vicinity of No.7 light beacon at JFE Steel Fukuyama Port, Fukuyama City, Hiroshima Prefecture | Cargo ship JUNIPER PIA (South Korea)<br>Fatality to a crew member | While the ship navigating from Incheon Port, South Korea to JFE Steel No. 2 Export Berth in JFE Steel West Japan Works, one of crew members fell into a cargo hold and was confirmed dead. |
| 15 | June 24, 2012<br>Off the south of Nakama Port, Taketomi Island, Okinawa Prefecture | Passenger ship ANEI GO No. 3<br>Injury to a passenger | The ship, navigating from Nakama Port of Iriomote Island, Taketomi Town to Hateruma Fishery Harbor of Taketomi Town, was shaken up and down at the area referenced in the left column and one passenger was injured. |
| 16 | June 26, 2012<br>Off the south-southwest of Nakama Port, Taketomi Island, Okinawa Prefecture | Passenger ship ANEI GO No. 38<br>Injury to a passenger | The ship navigating from Ishigaki Port of Ishigaki City to Hateruma Fishery Harbor of Taketomi Town was shaken up and down at the area referenced in the left column and one passenger was injured. |
| 17 | July 3. 2012<br>In Mizushima Port, Kurashiki City, Okayama Prefecture | Container ship TIAN FU (China)<br>Chemical tanker SENTAI MARU<br>Collision | The container ship TIAN FU navigating from Komatsu Jima Port in Tokushima Prefecture to Mizushima Port collided with the chemical tanker SENTAI MARU navigating from Sodegaura Port in Chiba Prefecture to Mizushima Port. The port side of TIAN FU collided with the bow section of SENTAI MARU. |
| 18 | July 3. 2012<br>Off the north of Heigun Island, Yanai City, Yamaguchi Prefecture | Chemical tanker CHEM HANA (South Korea)<br>Fatality to crew members | Two crew members of the tanker navigating the area referenced in the left column inhaled gas and were in the critical condition. These members were transported to the hospital by the patrol craft of the Japan Coast Guard and ambulance dispatched in response to the emergency call but they were confirmed dead. |
| 19 | Sep. 24, 2012<br>About 900 km east of Kinkasan Island, Miyagi Prefecture | Cargo ship NIKKEI TIGER (Panama)<br>Fishing vessel HORIEI MARU<br>Collision | In the area referenced in the left column, the cargo ship NIKKEI TIGER navigating from Shibushi Bay of Kagoshima Prefecture to Vancouver (Canada) collided with the fishing vessel HORIEI MARU navigating south to evade from the low pressure and 13 crew members of the vessel went missing. |
| 20 | Oct. 6, 2012<br>Tokuyama-Kudamatsu Port, Yamaguchi Prefecture | Cargo ship SAGE SAGITTARIUS (Panama)<br>Fatality to a superintendent | While unloading the cargo on the ship moored at Kudamatsu Coal Relay Station of Tokuyama-Kudamatsu Port, a superintendent was found caught in the loading/unloading belt conveyor and confirmed dead by the rescue team. |

| No. | Date and Location | Vessel type and name<br>Accident type | Summary |
|---|---|---|---|
| 21 | Oct. 10, 2012<br>Around 2.5 nm east of Kawage, Tsu City, Mie Prefecture | Passenger ship PHENIX<br>Fire | The ship leaving Tsu and navigating to the Central Japan International Airport Station was on fire from her port engine when the said engine stopped running due to its failure. The fire was extinguished by the crew and 18 passengers changed to another ship operated by the Tsu Airport Line, and the ship entered in the Tsu Airport Line Terminal. |
| 22 | Oct. 12, 2012<br>Shore west of Hirose, Hirado Seto, Nagasaki Prefecture | Angler tender boat SHOEI MARU No. 18<br>Grounding | The boat drifted due to her engine failure and grounded on the shore. One of passengers fell in the sea and was drowned when the passenger was transferring to land. |
| 23 | Nov. 14, 2012<br>Shallowly submerged reef off the southeast of Suo-oshimacho Islands, Yamaguchi Prefecture | Passenger ship GINGA<br>Grounding | The ship having passengers onboard including high school students on their school trip and navigating from Matsuyama Port of Ehime Prefecture to Ihota Port of Suo-oshimacho, Yamaguchi Prefecture, grounded on the hidden reef referenced in the left column. |
| 24 | Dec. 3, 2012<br>Off the southeast of Toden Ogishima LNG Berth, Kawasaki Section 2 of Keihin Port | LNG tanker LNG ARIES (Marshall Islands)<br>Loss of control<br>(Machinery failure) | The electric power in the tanker having the master, chief engineer and other 32 crew members onboard was lost when she was approaching the location referenced in the left column to unload her cargo after loading the LNG at the State of Qatar. |
| 25 | Dec. 11, 2012<br>In the carrier mooring at the ship mooring facilities on the right bank of Okawa River at 3-2, Nagara-higashi, Kita Ward, Osaka City | Gravel carrier SEIWA MARU<br>Explosion | An explosion occurred within the boatswain's store while the carrier was mooring at the facilities referenced in the left column. One of the crew members died, another one in the boatswain's store was seriously injured and the master and one crew member of other ship who were in the facilities were slightly injured. The explosion damaged the bow deck seriously, scattered the shipping goods and part of hull, and damaged the ships mooring in the vicinity, buildings and cars in the neighborhood. |
| 26 | Dec. 26, 2012<br>Kurobe River, Tohnosho Town, Chiba Prefecture | Racing boat (unnamed)<br>Capsizing | While training for the time trial race of the single scull (i.e., a rowing boat rowed by single person), 18 of 34 boats capsized making the rowers (high school students) fallen in the water. All of them were rescued but 6 of them were taken to the hospital due to their symptom of hypothermia. |

## Column Voice Analysis of VDR Data (Encounter with Tagalog)

The Voyage Data Recorder (VDR), the installation of which has been enforced since July 2002 in pursuant with the International Convention for Safety of Life at Sea (SOLAS), is equipment similar to the cockpit voice recorder on the aircraft. It records such voice data as communications among the crew members in the bridge and is now the major tool to help clearing up the causes of the marine accidents.

Today, it is alleged that one or more of five crew members onboard the merchant vessels worldwide are the Pilipino (300 thousands or more). Speaking of the Pilipino crew members on Japanese ocean-going merchant fleet, it is accounting for 70% of the entire crew members, and it is not unusual that all the members on the bridge are Pilipino. In some occasions the voices (communications in the bridge) recorded in the VDR before and after an accident are almost all in Tagalog.

An investigation of an accident turns out to be a painstaking job if we have to understand the communications carried out with unfamiliar, rare-to-hear language. In the first and urgent task of an investigator in charge of the accident is to find an interpreter. As can be understood easily, the language is more rarely spoken the interpreter of that language is harder to find. On the top of this, there are a lot of other languages spoken in Philippine than its official language (Tagalog), and crew members may sometimes speak their own individual dialect, which make us to find an interpreter widely acknowledgeable to languages spoken in Philippine as well as Tagalog.

The voice data can be analyzed only after the reliable interpreter becomes available, and in most of the cases the investigator together with the interpreter keep investigating the accident by carefully listening to the voice communications and by trying to catch the real meanings conveyed with the communications, because communications among the bridge team members can be heard intermittently more often (in spite of the noise elimination to the maximum level of efforts). This difficulty of comprehending the communications is because that the microphone mounted on the ceiling of the bridge will pick up such noises as winds and rains outside in the case of the bad weather conditions (under which the marine accidents are susceptible to happen) in addition to a variety of voices and noises inside of the bridge, and because that there will be a lot of terms and wordings inherent to marine and shipping industries, to which the interpreter will be unfamiliar.

English will remain as the lingua franca of the sea in the world. On the other hand, the advent of the VDR in the investigation of causes of the marine accidents revealed the importance of understanding the mother tongue of individual crew member. We are going to encounter, in the course of our carrier of the marine accident investigations, a variety of languages worldwide since the crew on the vessels, coming from worldwide and navigating around Japan, have such nationalities as Turkey, Russia, and countries in the Eastern European needless to address such Asian countries as Philippine, China, South Korea, and Myanmar.

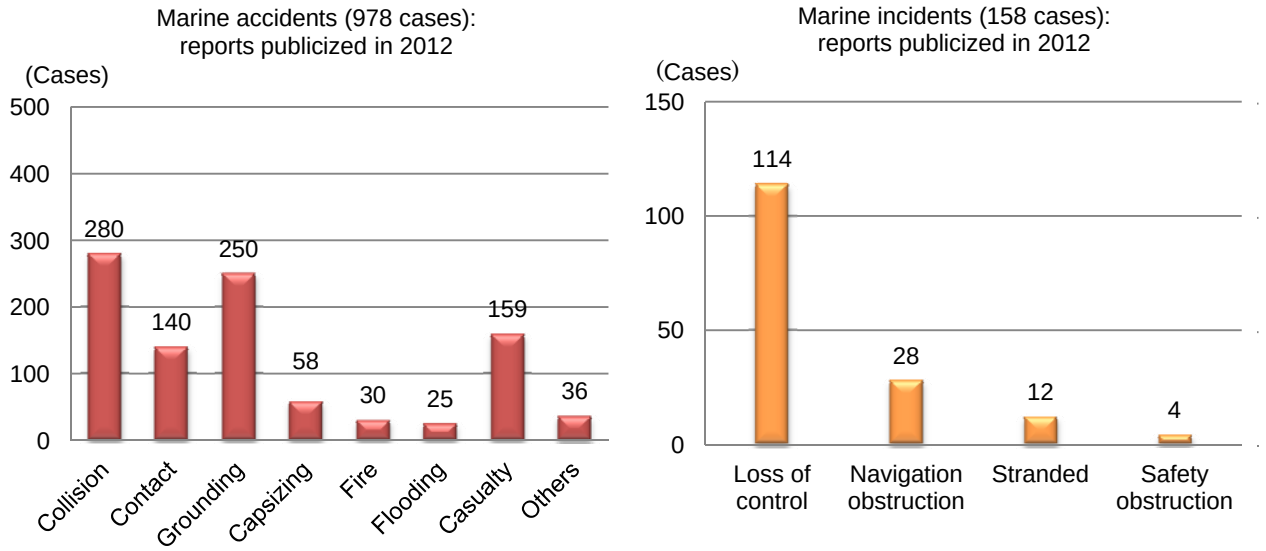
## 8. Publication of investigation reports

The number of investigation reports of marine accidents and incidents published in 2012 was 1,136 composed of 978 marine accidents (among them, 42 were serious) and 158 marine incidents.

Looking those accidents and incidents by type, there were 280 cases of collision, 250 cases of grounding, 159 cases of casualty, and 140 cases of contact in marine accidents. Whereas in marine incidents, there were 114 cases of losses of control, (including 59 cases of machinery failure, seven cases of propeller failure, and six cases of out-of-fuel), 28 cases of navigation obstruction, and 12 cases of stranded.

As for the objects of contact, 40 were quays, 22 were breakwaters, nine were light beacons, and so forth.






The number of vessels involved in marine accidents and incidents was 1,509. Looking those vessels by type, the vessels involved in marine accidents were 446 fishing vessels, 261 cargo ships, 231 pleasure boats, 84 tankers, and 77 tug boats, push boats. The vessels involved in marine incidents were 57 fishing vessels, 28 pleasure boats, 20 cargo ships, and 19 passenger ships. The sum of the number of fishing vessels, cargo ships, and pleasure boats involved in accidents or incidents is 1,043, accounting for about 70 % of all the vessels involved in accidents or incidents.

Number of vessels involved in marine accidents and incidents by type

(Vessels)

| Type | Passenger ship | Cargo ship | Tanker | Fishing vessel | Tug boat, push boat | Recreational fishing vessel | Angler tender boat | Work vessel | Barge, Lighter | Public-service ship | Pleasure boat | Personal water craft | Others | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Marine accident | 47 | 261 | 84 | 446 | 77 | 35 | 6 | 32 | 47 | 16 | 231 | 49 | 16 | 1,347 |
| Marine incident | 19 | 20 | 17 | 57 | 7 | 4 | 0 | 2 | 3 | 0 | 28 | 4 | 1 | 162 |
| Total | 66 | 281 | 101 | 503 | 84 | 39 | 6 | 34 | 50 | 16 | 259 | 53 | 17 | 1,509 |
| % | 4.4 % | 18.6 % | 6.7 % | 33.3 % | 5.6 % | 2.6 % | 0.4 % | 2.3 % | 3.3 % | 1.0 % | 17.2 % | 3.5 % | 1.1 % | 100.0 % |



## List of published investigation reports on serious marine accidents (2012)

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 1 | Jan. 27, 2012 | Dec. 31, 2009<br>Off the southwest of Kajitori-no-Hana , Imabari City, Ehime Prefecture | 1st accident:<br>Chemical tanker SAMHO HERON (Malta)<br>Cargo ship GOLDEN WING (South Korea)<br>Collision<br><br>2nd accident:<br>Chemical tanker SAMHO HERON (Malta)<br>Cargo ship CHIZURU MARU<br>Collision | 1st accident<br>The chemical tanker SAMHO HERON was navigating northeastward off the southwest of Kajitori-no-Hana and the cargo ship GOLDEN WING was navigating southeastward in the same area. Two vessels collided with each other. The port bow of the SAMHO HERON was breached and port stern was dented. The bow of the GOLDEN WING was cracked and dented and the starboard stern was dented. But no fatality or injury was caused on both vessels.<br><br>*** The report included Remarks**<br><br>2nd accident<br>The SAMHO HERON was navigating southeastward after colliding with the GOLDEN WING around the location of the 1st accident and the cargo ship CHIZURU MARU was navigating southwestward behind the port side of the GOLDEN WING. Two vessels collided with each other. The SAMHO HERON sustained damage in the bow, and the CHIZURU MARU sustained the dent damage in her starboard mid-section. But no fatality or injury was caused on both vessels. |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 2 | Jan. 27, 2012 | Feb. 13, 2010<br>Kanmon Passage of Kanmon Port, off west of Mojisaki, Moji Ward, Kitakyushu City, Fukuoka Prefecture | Cargo ship TY EVER (South Korea)<br>Cargo ship LOFTY HOPE (Cambodia)<br>Collision | The cargo ship TY EVER was navigating eastward in the Kanmon Passage of Kanmon Port and the cargo ship LOFTY HOPE was navigating westward in the same Passage. Two ships collided with each other. The bow of the TY EVER was breached, and the port stern of the hull of the LOFTY HOPE was breached. But no fatality or injury was caused on both ships.<br><br>*** The report included Remarks** |
| 3 | Jan. 27, 2012 | Mar. 23, 2010<br>Kanmon Passage of Kanmon Port, off Mojisaki, Kitakyushu City, Fukuoka Prefecture | Cargo ship WIEBKE (Antigua and Barbuda)<br>Cargo ship MARINE PEACE (Belize)<br>Collision | The cargo ship WIEBKE leaving Masan Port of South Korea for Kobe Section of Hanshin Port was navigating eastward in the Kanmon Passage of Kanmon Port, and the cargo ship MARINE PEACE leaving Pohang Port of South Korea for Imabari Port, Imabari City, Ehime Prefecture was navigating eastward in the Kanmon Passage. The starboard mid-section of the WIEBKE collided with the port bow of the MARINE PEACE off the Mojisaki, Kanmon Passage. The WIEBKE sustained scratches on her starboard side mid-section and stern, and the MARINE PEACE sustained scratches on her port bow and stern. But no fatality or injury was caused on both ships.<br><br>*** The report included Remarks** |
| 4 | Jan. 27, 2012 | May 17, 2010<br>Off the northwest of Otate Island, Saikai City, Nagasaki Prefecture | Cargo ship MIHARU MARU<br>Grounding | The ship navigating eastward off the northwest of Otate Island grounded on the Irose Reef located off the northwest of the Island. The chief engineer sustained minor injury on his fingers on the right hand and the hull of the ship's bottom sustained scratches and dent damage.<br><br>*** The report included Remarks** |
| 5 | Jan. 27, 2012 | June 2, 2010<br>Kawasaki Section 1 of Keihin Port | Motor boat QUEEN III<br>Contact (with revetment) | The boat contacted with the revetment of the construction area in the Kawasaki Section 1 when she was turning to starboard to enter the Kawasaki Passage in the Kawasaki Section 1 of Keihin Port after navigating southwestward off the southeast of the Tokyo International Airport. All of four passengers onboard the boat sustained injuries and the boat sustained breaches on her bow and the hull of starboard bow.<br><br>*** The report included Remarks** |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 6 | Jan. 27, 2012 | June 18, 2010<br>Northern part of Lake Hamana, Hamamatsu City, Shizuoka Prefecture | Cutter (unnamed)<br>Capsizing | During the rowing training of the cutter carried out as the outdoor activity of the junior high school students at Mikkabi Youth Center in Shizuoka Prefecture, the winds and waves became too rough to keep training and the cutter was towed by the motor boat of the Mikkabi Youth Center. The cutter being towed southwestward off the south of Sakume of Lake Hamana capsized portside. One of students confined within the capsized cutter was killed. One of oars was broken but the hull sustained no damage.<br><br>*** The report included Recommendations and Remarks** |
| 7 | Jan. 27, 2012 | Sept. 19, 2010<br>Around the pier of the inner harbor inside of Hojo Port, Matsuyama City, Ehime Prefecture | Passenger ship KASHIMA<br>Flooding | The flooding in the engine room was found while the ship was moored to the floating pier in the Hojo Port. In addition to the bilge water within the reverse and reduction gear box attached to the main engine of the ship, the generator, cell motor for the main engine, bilge pump, etc. were gotten wet and damaged.<br><br>*** The report included Remarks** |
| 8 | Jan. 27, 2012 | Nov. 17, 2010<br>Breakwater off the Naze Port, Amami City, Kagoshima Prefecture | Cargo ferry NANKAI MARU No. 3<br>Contact (with breakwater) | The ferry navigating southward in the Naze Port contacted with the breakwater referenced in the left column. One of the passengers and one of the crew members were slightly injured, the bow was severely damaged, and the breakwater off the Naze Port was damaged.<br><br>*** The report included Remarks** |
| 9 | Feb. 24, 2012 | May 21, 2010<br>Off the north of Himeshima Island, Himeshima Village, Oita Prefecture | Cargo ship HARMONY WISH (Cambodia)<br>Cargo ship SHINKAZURYU<br>Collision | The cargo ship HARMONY WISH was navigating westward towards Ningbo in the People's Republic of China and the cargo ship SHINKAZURYU was navigating eastward towards Fukuyama Port of Fukuyama City in Hiroshima Prefecture. Both ships were collided with each other in the area referenced in the left column, in which the visibility was restricted due to fog. The HARMONY WISH sustained a breach and a dent on her hull of starboard bow and the SHINKAZURYU sustained a bent-damage on the bulwark at her port bow and a dent on her hull. But no fatality or injury was caused on both ships.<br><br>*** The report included Remarks** |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 10 | Feb. 24, 2012 | July 24, 2010 Shikama Section 1 of Himeji Port, Himeji City, Hyogo Prefecture | Motor boat CAPRICORN Contact (with breakwater) | The boat running in the Shikama Section 1 of Himeji Port contacted with the Shikama East Breakwater. The master was injured and the bow was crushed.<br><br>*** The report included Remarks** |
| 11 | Feb. 24, 2012 | Aug. 18, 2010 Hattaro P Pier of Hachinohe Port, Hachinohe City, Aomori Prefecture | Cargo ship STAR KVARVEN (Norway) Fatality of a stevedore | While the ship mooring at the pier referenced in the left column was discharging its cargo, a stevedore fell from either a hatch cover on the cargo hold or the maintenance ladder at the foot of the gantry crane. The stevedore was taken to the hospital, but was later pronounced dead.<br><br>*** The report included Remarks** |
| 12 | Mar. 30, 2012 | Aug. 15, 2010 Kusuhama Seashore of Mitoyo City, Kagawa Prefecture | Personal water craft (unnamed) Injury to swimmers | An operator who did not have license for personal watercraft was wandering off the Kusuhama seashore on the watercraft, and the operator fell in the water but kept running the watercraft only with the left hand, resulting in the contact with two swimmers who were walking back to the sandy beach. They were injured.<br><br>*** The report included Remarks** |
| 13 | Mar. 30, 2012 | Aug. 28, 2010 Kanazawa Port, Kanazawa City, Ishikawa Prefecture | Motor boat SAN Contact (with sediment control groin) | The boat returning to her marina in Kanazawa Port contacted with the sediment control groin in the Port. The skipper and two co-passengers were injured and the starboard bow was breached.<br><br>*** The report included Remarks** |
| 14 | Mar. 30, 2012 | Apr. 5, 2011 Off the west-southwest of Hinomisaki, Mihama Town, Wakayama Prefecture | Recreational fishing vessel KAIRIN MARU Fatality to a crew member and a passenger | The skipper, while adjusting the anchoring position in the fishing spot in the area referenced in the left column, was caught on his right ankle by the anchor rope and fell in the sea. One passenger trying to prevent the skipper from falling also fell in the sea. Both of them were killed.<br><br>*** The report included Remarks** |
| 15 | Apr. 27, 2012 | June 13, 2009 Raw Material Acceptance Wharf (Hiroura A wharf), Nikko Smelting & Refining Co., Ltd., Saganoseki Smelter and Refinery, wharf of port of Saganoseki, Oita City, Oita Prefecture | Cargo ship SINGAPORE GRACE (Hong Kong) Fatality of workers | While the ship was berthed at the wharf referenced in the left column, one of the workers fell while descending a ladder in No. 3 cargo hold for cargo work. Two of the three other workers who went to rescue him also collapsed in the cargo hold. The all three workers were rescued from No. 3 cargo hold, but later they were confirmed dead.<br><br>*** The report included Recommendations, Opinions, Safety Recommendations and Remarks** |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 16 | May 25, 2012 | Nov. 15, 2010 Traffic Route in Kurushima Strait | Passenger ferry FERRY KITAKYUSHU Chemical Tanker KOKI MARU No. 78 Collision | The passenger ferry FERRY KITAKYUSHU and chemical Tanker KOKI MARU No. 78, both of which were navigating southeastward on the Traffic Route in the Kurushima Strait, collided with each other around the north exit of the West Suido Channel of the Route. The FERRY KITAKYUSHU sustained a dent on the starboard stern, and KOKI MARU No. 78 did on the port bow, but no fatality or injury was caused on both vessels.<br><br>*** The report included Remarks** |
| 17 | May 25, 2012 | June 12, 2011 Northwest of Oshima Island, Oshima Town, Tokyo | Cargo ship DAISENZAN MARU Recreational fishing vessel HISA MARU Collision | The cargo ship DAISENZAN MARU navigating southwestward from Keihin Port and the recreational fishing vessel HISA MARU drifting and angling in the area referenced in the left column collided with each other. One of the passengers on the HISA MARU was injured and her starboard was cracked. The DAISENZAN MARU sustained scratches on the bow.<br><br>*** The report included Remarks** |
| 18 | May 25, 2012 | July 2, 2011 East breakwater outside of Nakaminato Port located in Hitachinaka City, Ibaraki Prefecture | Recreational fishing vessel KAMOME MARU Contact (with breakwater) | While navigating toward Nakaminato Port under the restricted visibility condition due to dense fog, the vessel contacted with the breakwater referenced in the left column. Twelve passengers were injured and the bow and bulbous were damaged.<br><br>*** The report included Remarks** |
| 19 | June 29, 2012 | June 9, 2010 Uose Reef, off the northwest of Enoshima Island, Saikai City, Nagasaki Prefecture | Commuter boat FRESH ARIKAWA Grounding | The boat grounded on the Uose Reef northwest of Enoshima Island when she was navigating westward off the north of Kanagashirase Reef in Saikai City after leaving the Sasebo Port of Sasebo City for Arikawa Port of Shinkamigoto Town, both ports in Nagasaki Prefecture. The passenger and master of the boat were injured, she sustained a breach and a dent on her bottom and propeller shaft and blades were bent.<br><br>*** The report included Remarks** |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 20 | June 29, 2012 | July 1, 2010<br>Off the north of Naruto Strait | Cargo ship SHINKENWA MARU<br>Cargo ship SHOWA MARU No. 8<br>Collision | The cargo ship SHINKENWA MARU was navigating south-southeastward towards the Naruto Strait and the cargo ship SHOWA MARU No. 8 was navigating north-northwestward after passing through the Naruto Strait. Both ships collided with each other in the area referenced in the left column. One of crew members of the SHOWA MARU No. 8 was injured and the bow was breached and dented causing the flooding in the cargo hold. The bow of the SHINKENWA MARU was cracked and dented causing the flooding in the forepeak tank but no one was injured.<br><br>*** The report included Remarks** |
| 21 | June 29, 2012 | Aug. 28, 2010<br>Naruto Strait | Motor boat SUZU<br>Injuries to co-passengers | The five co-passengers onboard the boat were injured when the boat navigating southward in the vicinity of the Onarutokyo Bridge of the Naruto Strait was shaken up and down. The boat sustained cracks on the stern bulkhead and windshield.<br><br>*** The report included Remarks** |
| 22 | June 29, 2012 | Oct. 16, 2010<br>Seashore, Northeast of Kuji Port, Kuji City, Iwate Prefecture | Cargo ship DAIKO MARU<br>Grounding | The ship grounded on the rock reef of the seashore referenced in the left column, when she was navigating northwestward off the Kuji Port. The entire hull of her bottom was breached and cracked causing the flooding but no leakage of fuel oil and others was observed. There was no casualty to her crew.<br><br>*** The report included Remarks** |
| 23 | June 29, 2012 | Oct. 27, 2010<br>Off the southeast of Sensuijima Island, Fukuyama City, Hiroshima Prefecture | Fishing vessel DAIKO MARU<br>Fishing vessel MIYAJIMA MARU<br>Collision | The fishing vessel DAIKO MARU leaving Tomo Port of Fukuyama City in Hiroshima Prefecture for Hashirijima Port of the same city was navigating southeastward and the fishing vessel MIYAJIMA MARU was drifting. The both vessels collided with each other in the area referenced in the left column. One of crew members onboard the MIYAJIMA MARU fell in the sea and was drowned. The vessel sunk due to the damage on the port mid-section. The bow paint on the DAIKO MARU was scaled off but no one was injured.<br><br>*** The report included Remarks** |
| 24 | July 27, 2012 | Mar. 21, 2010<br>Off the Ichikawa Passage, Chiba Port, Chiba Prefecture | Cargo ship TSURUYOSHI MARU No. 3<br>Injury to a crew member | When weighing the anchor of the ship in the area referenced in the left column, the chief officer on the forecastle deck was hit, fell down and injured by the green water.<br><br>*** The report included Remarks** |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 25 | July 27, 2012 | June 20, 2010<br>Off the east of Aijima Island, Matsuyama City, Ehime Prefecture | Cargo ship SEIREI MARU<br>Cargo ship GYOREN 1<br>Collision | The cargo ship SEIREI MARU was navigating southwestward in the Akinada from the west entrance of the Kurushima Strait Traffic Route to the Kudako Channel west of Nakajima in Matsuyama City and the cargo ship GYOREN 1 was navigating northeastward from the Kudako Channel to the west entrance of the Kurushima Strait Traffic Route. Both ships collided with each other in the area referenced in the left column. The SEIREI MARU sustained the dent damage in her port bow and the GYOREN 1 did the damages on the hull and handrails on the port mid-section. But no fatality or injury was caused on both ships.<br><br>*** The report included Remarks** |
| 26 | July 27, 2012 | Jan. 11, 2011<br>Around South Berth A, Funabashi Chuo Wharf, Katsunan District, Chiba Port, Chiba Prefecture | Cargo ship EN KAI (China)<br>Fatality to crew members | While the ship was berthing at the berth referenced in the left column, a tensed mooring rope suddenly bounced and struck on the chest of a boatswain working on the forecastle deck. The boatswain, taken into the hospital, died despite medical treatment. |
| 27 | July 27, 2012 | Mar. 18, 2011<br>Katakami Port, Bizen City, Okayama Prefecture | Motor boat YOSHIOKA MARU<br>Racing boat (unnamed)<br>Collision | The motor boat YOSHIOKA MARU was running eastward from the Katakami Port to the fishing spot and the racing boat (unnamed) was being rowed westward. Tow boats were collided with each other in the Katakami Port. One of the oarsmen was injured and the boat was -broken on her stern and capsized. The YOSHIOKA MARU sustained scratches on the port bow and other places but no fatality or injury was caused on her.<br><br>*** The report included Remarks** |
| 28 | Aug. 31, 2012 | Jan. 4, 2011<br>Nakanose Traffic Route Light Beacon No. 1, Nakanose Traffic Route of Tokyo Bay | LNG bulk carrier RYOAN MARU<br>Contact (with a light beacon) | The carrier navigating northward in the Nakanose Traffic Route toward the Chiba Port in Chiba Prefecture, collided with No. 1 light beacon on the Traffic Route. The carrier sustained the dent and other damages on the hull of her starboard bow but no fatality or injury was caused. The No. 1 light beacon on the Nakanose Traffic Route was crushed on its platform.<br><br>*** The report included Remarks** |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 29 | Aug. 31, 2012 | Dec. 1, 2010<br>Nissan Motor Honmoku Wharf, Yokohama<br>Section 5 of Keihin Port | Pure car carrier VEGA LEADER (Panama)<br>Injuries to longshoremen | While car carrier loading cars at the wharf referenced in the left column, a deck panel of car deck No. 7 fell down onto car deck No. 6. Six stevedores in cargo operation on the deck panel and four stevedores on car deck No. 6 immediately below the panel, ten persons in total, were injured.<br><br>*** The report included Safety Recommendations and Remarks** |
| 30 | Aug. 31, 2012 | Nov. 24, 2010<br>Upstream side of Sumidagawa Bridge on Sumidagawa River, Toubu-Isesaki Line, Sumida Ward, Tokyo | Passenger ship RYOMA<br>Injury to a passenger | One of passengers on the upper deck passenger room were injured when the windows of the room were remotely opened while the ship was moving down the river in the vicinity of the bridge referenced in the left column.<br><br>*** The report included Remarks** |
| 31 | Sept. 28, 2012 | Mar. 18, 2010<br>Off the South Mouth of East Channel, Nagoya Port, Aichi Prefecture | Cargo ship MEDEA (Singapore)<br>Fishing vessel KOSEI MARU<br>Collision | The cargo ship MEDEA was navigating southwestward off the southwest of the East Channel of the Nagoya Port toward the vicinity of the Irago Channel North Entrance, and the fishing vessel KOSEI MARU was navigating westward off the west of Isewan Bay Light Beacon toward the fishing area north of the Isewan Bay. The ship and vessel collided with each other in the area referenced in the left column. The skipper and a crew member of the KOSEI MARU were injured and she capsized. The MEDEA sustained scratches on her bow.<br><br>*** The report included Remarks** |
| 32 | Sept. 28, 2012 | June 28, 2011<br>North Channel of Nagoya Port, Aichi Prefecture | Chemical tanker NISSHO MARU<br>Fatality and injury to crew members | On the tanker navigating in the North Channel of Nagoya Port, three (chief officer, second engineer, and junior chief officer) of four crew members cleaning the tank fell down on the starboard side of the forecastle deck, and the remaining one (chief engineer) was in the clouded consciousness at the stern. The chief officer and second engineer were confirmed dead. The junior chief officer and chief engineer were injured. |
| 33 | Sept. 28, 2012 | July 7, 2011<br>Around the mouth of Sodegaura channel, Chiba Section of Chiba Port, Chiba Prefecture | Chemical tanker HOTOKU MARU<br>Injury to a crew member | In the tanker navigating northward from Chiba Port to the anchorage in the vicinity of Umihotaru Parking area on the Tokyo Bay Aqua Line, the second engineer found an engine rating unconscious in the ballast pump room. The engine rating was rescued and recovered from unconsciousness. |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 34 | Oct. 26, 2012 | Sept. 7, 2011<br>Off the southeast of Cape Nosappu, Nemuro City, Hokkaido Prefecture | Fishing vessel KASHIMA MARU No. 18<br>Fishing vessel TAIKO MARU No. 58<br>Collision | The fishing vessel KASHIMA MARU No. 18 was drifting the area referenced in the left column and the fishing vessel TAIKO MARU No. 58 was navigating southward in the same area. Two vessels collided with each other. Two of deckhands in the fishing vessel TAIKO MARU No. 58 were injured and the vessel sustained the dent and other damages on her bow. The fishing vessel KASHIMA MARU No. 18 sustained a breach on her stern but no one was injured. |
| 35 | Nov. 30, 2012 | Aug. 25, 2010<br>Unknown (Offing of Tanomohama Shore, Inawashiro Lake, Aizuwakamatsu City, Fukushima Prefecture) | Personal watercraft IKARUGA<br>Missing of skipper | Both of the operator and co-passenger on the watercraft departing the Tanomohama Shore fell in the water between the east-northeast and east off the Shore, and the operator sunk in the water and went missing. The co-passenger was rescued by the personal watercraft coming for help, and the watercraft IKARUGA was not damaged. |
| 36 | Nov. 30, 2012 | Mar. 22, 2010<br>Off the west of Omaezaki, Omaezaki City, Shizuoka Prefecture | Fishing vessel KAISHO MARU<br>Fishing vessel FUKUJU MARU<br>Collision | When the fishing vessels KAISHO MARU and FUKUJU MARU collided with each other in the area referenced in the left column when the KAISHO MARU was heading at about 290° while searching a school of fish and the FUKUJU MARU was heading about 110° after completing the port turn to turn her around. Three crew members (one deckhand of the KAISHO MARU, skipper and deckhand of the FUKUJU MARU) were killed, and four members (skipper of the KAISHO MARU and three deckhands of the FUKUJU MARU) were injured. The KAISHO MARU was severely damaged and the FUKUJU MARU capsized. |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 37 | Nov. 30, 2012 | Apr. 9, 2010<br>Off the southwest of Nomozaki, Nagasaki City, Nagasaki Prefecture | Cargo ship RYUNAN II<br>Recreational fishing vessel KOYO MARU<br>Collision | The cargo ship RYUNAN II was navigating southward off the Nomozaki toward Naha Port in Okinawa Prefecture, and the recreational fishing vessel KOYO MARU was navigating south-southwestward toward Ajisone fishing spot off the Nomozaki. The port bow of the RYUNAN II and the starboard section of the KOYO MARU were collided with each other, causing the KOYO MARU capsized. The skipper and one of the passengers on the KOYO MARU went missing and two of the passengers were injured. Later on, the skipper and one passenger were removed from their family register per the posthumous recognition of their death. On the KOYO MARU, the wheel house and upper structure of the cabins were damaged and the starboard hull was bent. The RYUNAN II sustained scratches on her bow but no one was injured. |
| 38 | Nov. 30, 2012 | June 29, 2011<br>Off the northwest of Umabanasaki, Yonaguni Town, Okinawa Prefecture | Diving boat YDS VII<br>Injury to an instructor and diver | While helping out the surfaced instructor and divers get on the boat in the area referenced in the left column, the instructor and one of divers contacted with propeller blades and other fittings and the both of them were injured.<br><br>*** The report included Remarks** |
| 39 | Nov. 30, 2012 | Sept. 19, 2011<br>In Wajima Port, Wajima City, Ishikawa Prefecture | Tug boat KITA MARU No. 12<br>Capsizing | The boat capsized when she, together with the tugboat KITA MARU No. 8, was towing the patrol boat MIURA for her departure from the port. Two of the crew members on the boat were rescued but all of them were killed. Later on, the boat was salvaged but declared a total loss.<br><br>*** The report included Recommendations** |
| 40 | Dec. 21, 2012 | Oct. 24, 2010<br>No.1 Berth for Nansei Sekiyu K.K, Kin-nakagusuku Port, Okinawa Prefecture | Oil tanker PACIFIC POLARIS (Panama)<br>Contact (with a berth) | When the tanker was berthing at the berth referenced in the left column under the command of the master supported by the berth master, she contacted with the dolphin of the berth. The tanker sustained a breach on the port stern making the fuel oil leak out of No.2 port side fuel oil tank and making the dolphin structure deformed. But no one was injured.<br><br>*** The report included Remarks** |

| No. | Date of publication | Date and Location | Name of Accident | Summary |
|---|---|---|---|---|
| 41 | Dec. 21, 2012 | Jan. 9, 2011<br>Off the southwest of Sadogashima Island, Sado City, Niigata Prefecture | Chemical tanker<br>SEIYO<br>Foundering | The tanker capsized and sank in the sea when it was navigating east-northeastward from an anchorage off the Oita Airport in Oita Prefecture to the Akadomari Port in Sado City (Sado Island), Niigata Prefecture by way of off the Rokkosaki in Suzu City (Noto Peninsula), Ishikawa Prefecture. The chief engineer was killed and the master went missing. |
| 42 | Dec. 21, 2012 | Aug. 17, 2011<br>Tenryugawa River, Futamata, Tenryu Ward, Hamamatsu City, Shizuoka Prefecture | Passenger boat<br>TENRYU MARU No. 11<br>Capsizing | The boat cruising down the Tenryugawa River grounded on the rocks on the left bank of the River and capsized, leaving four passengers and a skipper dead and five passengers injured. |

## 9. Summaries of recommendations and opinions

There were six recommendations, four opinions, and two safety recommendations in 2012, which are summarized below:

(1) Recommendations (Six cases)

1) In view of the results of the accident investigation of fatality of workers on the cargo ship SINGAPORE GRACE on April 27, 2012 the Japan Transport Safety Board (the JTSB) recommended the Saganoseki Smelter & Refinery, Pan Pacific Copper Co., Ltd. to take the following measures for the purpose of prevention of accident caused by oxygen-deficient in cargo hold.

(1) To train all employees who have the possibility of being engaged in cargo work to understand the properties and risks of copper sulfide concentrate.
(2) To train all employees, who have the possibility of being engaged in cargo work, with the handling of $O_2$ meters in order to measure $O_2$ concentrations as necessary.
(3) To request the MSDS of floatation reagents from shippers.
(4) To inform employees who have the possibility of being engaged in cargo operation on the following:
 [1] Depending upon the properties of the floatation reagent adhered to copper sulfide concentrate, it may generate toxic gas.
 [2] Since the generated toxic gas is heavier than air, it stagnates in cargo hold; hence, there is a danger of not being replaced by air.
(5) To make the risks of oxygen-deficient conditions and anoxia known to all personnel who have the possibility of being engaged in cargo operation and to familiarize them with appropriate coping behavior in case of fatal accidents occurring in cargo holds loading copper sulfide concentrate.

2) In view of the results of the accident investigation of fatality of workers on the cargo ship SINGAPORE GRACE, on April 27, 2012 the JTSB recommended the Nissho Koun Co., Ltd., to take the following measures for the purpose of prevention of accident caused by oxygen-deficient in cargo hold.

(1) To train all employees who have the possibility of being engaged in cargo operation to understand the properties and risks of copper sulfide concentrate.
(2) To train all employees, who have the possibility of being engaged in cargo work, with the handling of $O_2$ meters in order to measure $O_2$ concentrations as necessary.
(3) To make the risks of oxygen-deficient conditions and anoxia known to all employees who have the possibility of being engaged in cargo operation and to familiarize them with appropriate coping behavior in case of fatal accidents occurring in cargo holds loading copper sulfide concentrate.

3) In view of the results of the accident investigation of the capsizing of the cutter (unnamed), the JTSB gave recommendations to the Shogakukan-Shueisha Productions Co., Ltd. for the safety of activities related to the cutter training at Shizuoka Prefectural Mikkabi Youth Center on January 27, 2012 as follows.

(1) The criteria for cutter training suspension and the cutter training methods used at the Shizuoka Prefectural Mikkabi Youth Center should be reviewed to ensure their adaptability based on the experience of the trainees, 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 the permission or no of training and the time (including a time during training) for deciding a training method.
  e. Treatment of training if suspended on its way
  f. Measures 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)
(2) A rescue system, supposing cutter accidents and including procedures for towing and rescuing a cutter, should be established, and the Youth Center personnel should be periodically trained. Effort should be made to strengthen cooperation with rescuing agencies.
(3) Effort should also be made to improve the knowledge of the Youth Center personnel with respect to cutter and weather, and to inspire their consciousness of ensuring safety of training.

4) In view of the results of the accident investigation of the capsizing of the cutter (unnamed), the JTSB gave recommendations to the Shizuoka Prefectural Board of Education for the safety of activities related to the cutter training at Shizuoka Prefectural Mikkabi Youth Center on January 27, 2012 as follows.

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

5) In view of the results of the accident investigation of capsizing of the tug boat KITA MARU No. 12 the JTSB recommended the Japan Coast Guard School to take the following measures for the purpose of ensuring the safety navigation of the MIURA on November 30, 2012.

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 such information required for the safe navigations/operations as metrological 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.

6) In view of the results of the accident investigation of capsizing of the tug boat KITA MARU No. 12 the JTSB recommended Kita-Gumi Co., Ltd. to take the following measures for the purpose of ensuring the safety of the towing the vessel with the tug boat on November 30, 2012.

The Kita-Gumi Co., Ltd. is recommended to take the following actions to ensure the safety of towing operations with its boat:
(1) To check and maintain towing hooks and to perform its operation training.
(2) To instruct the crew members to wear such outfits as lifejacket properly during the towing operations.



(2) Opinion (four cases)

1) In view of the results of the accident investigation of fatality of workers on the cargo ship SINGAPORE GRACE, on April 27, 2012, the JTSB expressed its opinions to the Minister of Land, Infrastructure, Transport and Tourism for the purpose of prevention of recurrence of similar accidents as follows.

The Board requests the Minister of Land, Infrastructure, Transport and Tourism to widely disseminate following information regarding the risks of the use of floatation reagents through the International Maritime Organization (IMO).
(1) Depending upon the properties of the floatation reagent adhered to copper sulfide concentrate, it may generate toxic gas.
(2) Since the generated toxic gas is heavier than air, it stagnates in cargo hold; hence, there is a danger of not being replaced by air.

2) In view of the facts of the foundering of the chemical tanker SEIYO, on June 29, 2012 the JTSB expressed its opinions to the Minister of Land, Infrastructure, Transport and Tourism for the purpose of prevention of recurrence of similar accidents as follows.

When the vessel with low freeboard is navigating under the condition where the green water hits onto the expansion trunk, the waves hit the upper deck and expansion trunk causing the sea water to remain on the ship. It may sometimes make the vessel to list and the sea water to flow into the ballast tank through the air pipes on the upper deck. It is necessary that the Minister is to instruct the vessel owner and operator to fully maintain the air pipe head.

3) In view of the facts of the capsizing of the passenger boat TENRYU MARU No. 11, on April 25, 2012 the JTSB expressed its opinions to the Minister of Land, Infrastructure, Transport and Tourism for the purpose of prevention of recurrence of similar accidents while going down a river as follows.

(1) Anticipation of risks hidden in route

Route of a boat (rafting boat) going down a river can become potentially dangerous when the river changes its condition such as the rising of the river. The rafting boat, if it is improperly steered against the condition of the river, can be in the serious condition such as grounding on rocks and the resultant capsizing.

The Tenryu Hamanako Railroad Co., Ltd. (hereinafter referred to as “the Corporation") had been making an effort to inform the skippers of such information as potentially dangerous points on the rafting route as well as cautions in steering the boat, however an system was not established to share the recognition of the situation in which an accident could occur in the route when the boat is turned.

It is desirable for the similar operators of the rafting boat (hereinafter referred to as “the Rafting boat operators") throughout the country to recognize the risks in the route they are operating in order to further increase the safety in operating the rafting boat; to establish the system to study proper steering method in case of situation that could trigger an accident; to do necessary studies; and to share among skippers and operation managers the results of the studies including the risk assessments in the route. In order to fulfill the above, the Minister of Land, Infrastructure, Transport and Tourism is to instruct the Rafting boat operators throughout the country to identify the risks in the route; to study proper steering method in case of situation that could trigger an accident, and to share among skippers and operation managers the results of the studies including the risk assessments.

(2) Provision and wearing of lifesaving outfits, and explanation of how to use them

The Corporation has equipped the boats with lifesaving cushions and lifejackets as the lifesaving outfits for the passengers but most of passengers and skippers could not grab the lifesaving cushions when they fell in the river, and the children including one infant did not wear the lifejacket. Also note that the Corporation did not equip the boats with the lifejacket suitable for the infant whose weight is 15 kg or less. It is probable that all of these matters were related with the worsening of the casualties.

Seven Rafting boat operators inspected last year was confirmed that they were equipped their boats with the appropriate lifesaving outfits and addressing to implement the proper use of the outfits in line with the guidance given by the MLIT Maritime Bureau after the occurrence of the accident. It is probable that other Rafting boat operators will also be observing the same guidance.

Thus, the Minister of Land, Infrastructure, Transport and Tourism is to keep providing the Rafting boat operators throughout the country with the guidance regarding the provision and wearing of lifesaving outfits, and explanation of proper use of the outfits in order to ensure the safety of the passengers and skippers.

4) In view of the results of the marine accident investigation and other activities of the personal watercraft, on March 30, 2012 the JTSB expressed its opinions to the Minister of Land, Infrastructure, Transport and Tourism for the purpose of prevention of marine accident caused by the personal watercraft as follows.

In view of the following occurrence situation of the marine accidents caused by the personal watercraft (hereinafter referred to as "the Personal watercraft accident"), the Minister is to make the importance of compliance to the maritime laws such as Act on Ships' Officers and Boats' Operators (hereinafter referred to as "the Act") well known to the operators and organizations related with the watercraft operation, as well as the occurrence situation of the Personal watercraft accident, and to give them guidance. Effort should continuously be made to penetrate this matter and give safety guidance to small craft operators and others.

(1) The total of 126 Personal watercraft accidents occurred in 175 personal watercrafts, leaving 21 persons dead and 142 persons injured.

(2) Among the Personal watercraft accidents, the most common accident was the collision, the number of which was 65, and the next common one was the injuries and others, the number of which was 54. The sum of these two types of accident counted for about nine tenths or more (about 94.4%) of the entire Personal watercraft accidents.

(3) In 17 Personal watercraft accidents in 20 watercrafts, the operator not having the License was maneuvering the watercraft and resulted in an accident. Four operators died and nine operators sustained such serious injuries as bone fracture.

(4) In 8 Personal watercraft accidents in 9 watercrafts, the operator did not observe the stipulations in the Act and two operators died and 12 operators sustained injuries. They violated such stipulations (i.e., matters to be observed) as Prohibition of drunken operation and Operation only by the holder of the Small Vessel Operator License.

(5) In 6 Personal watercraft accidents in 6 watercrafts, the operator did not notice the swimmer(s) swimming in the bathing beach or other place and hit the swimmer(s) with the watercraft injuring 7 swimmers (In 2 accidents in 2 watercrafts the operator was not a holder of the License).

(6) In 22 Personal watercraft accidents in 22 watercrafts, the person(s) on the floating body such as rubber raft was killed or seriously injured while the watercraft was towing the floating body. Two of the persons died and 11 of them sustained such serious injury as bone fracture.

The above-cited situations in which the Personal watercraft accident occurred are derived from the Investigation Reports of marine accidents and incidents published from Oct. 2008 and the end of March 2012.

(3) Safety Recommendations (two cases)

1) In view of the results of the accident investigation of fatality of workers on the cargo ship SINGAPORE GRACE, on April 27, 2012 the JTSB recommended the Ok Tedi Mining Limited to take the following measures for the purpose of safe transportation and cargo operation by making the properties of floatation reagents adhering to copper sulfide concentrate known to the persons involved.

In case of the possibility of the existence of floatation reagents adhering to copper sulfide concentrate, it is recommended to the Ok Tedi Mining Limited as the shipper to submit information (Material Safety Data Sheet, etc.) on floatation reagents in addition to information of copper sulfide concentrate (Material Safety Data Sheet, etc.) to ships and consignees in order to make the properties and the risks of copper sulfide concentrate and floatation reagents known to ships and consignees.

2) In view of the results of the accident investigation of Injuries to longshoremen of the pure car carrier VEGA LEADER, on August 31, 2012 the JTSB recommended the owners and operators of car carriers to take the following measures for the purpose of prevention of recurrence of similar accidents.

It is somewhat likely that the accident occurred because, while VEGA LEADER (hereinafter referred to as "the Ship") was loading cars at Nissan Motor Honmoku Wharf, Yokohama Section 5, Keihin Port, car deck No. 7, not supported by the deck support at the starboard bow end, while the loading of cars on the deck panel of cargo deck No. 7 (hereinafter referred to as "the Deck Panel") progressed, fell onto car deck No. 6, and the ten longshoremen working on the Deck Panel or car deck No. 6 immediately below the Deck Panel were injured.

It is somewhat likely that the height of the Deck Panel, while the Ship was navigating to Kanda Port, was readjusted from the middle position to the normal position, the Deck Panel was lowered without anyone being aware that the deck support on its starboard bow end was neither fully open nor in a state to support the Deck Panel, and the deck support on the starboard bow end moved outward from the Deck Panel.

It is somewhat likely that the absence of stipulation by the management company in their safety management manuals of work-procedures specifically describing the work for readjusting the height of a deck panel and the Ship's lack of systems for confirming the state of deck supports by, for example, using a check list prior to lowering deck panels contributed to the occurrence of the accident.

Therefore, it is necessary for owners and management companies of pure car carriers to reconsider and work out measures for ensuring confirmation that deck supports are in a state to correctly support a deck panel prior to lowering the deck panel and putting it on the deck support, and in addition, instruct their crew members regarding such measures.

Based on the experiences of the accident, a measure for preventing a fall of a deck panel by employing fixed-type deck supports was applied. Since ships are equipped with facilities and other things that may cause a severe accident, involving injury, due to a crew member's absence of confirmation, ship owners in general and others should consider hardware-based safety

measures for facilities as a lesson learned from the accident.

Therefore, it is most likely necessary for owners of car carriers to consider and employ safer systems, such as fixed-type deck supports at the lowest level to prevent a panel-falling accident.

## 10. Remarks

The JTSB made remarks on the following 33 marine accidents in 2012.

1) Marine accident of grounding of cargo ship MIHARU MARU

(Published on January 27, 2012)

It is probable that this accident occurred as the result of the following series of events. When this ship was navigating south southeastward off the northwest of Otate Island in the nighttime, the first officer on the bridge watch turned the heading about 070° to make the ship pass the north of the Island and then the officer turned the heading in clockwise for three times to make the heading be between 092° and 107°. During these three maneuvers, the officer did not check the ship position against the chart or with any other tools or means, and the officer did not foresee the ship's approach to the Irose Reef after these maneuvers. Thus, the officer kept the ship staying on the course without noticing that the ship was on the course approaching the Reef finally making the ship grounded on the Reef.

The following measures to avoid the recurrence of this accident are conceivable:

(1) The relieving officer on bridge watch, prior to his duty, is to check such conditions as shallow waters near the planned course in addition to the ship's position, heading, and speed.

(2) The officer on bridge watch is to follow the planned course instructed by the master. If the officer is going to change the planned course to new course, the approval from the master is required.

(3) The officer on bridge watch, prior to heading change, is to check the ship's position as well as such conditions as shallow waters near the new course.

(4) The officer on bridge watch is to be always and properly watchful by making full use of all the tools suitable for the situation such as the radar and GPS plotter in addition to visual lookout.

(5) The master and crew member(s) on duty on the bridge is expected to be daily aware of keeping good communications among themselves on the bridge by making use of the technique used in the BRM so that the shearing of such important navigational information as the course can become common practice.

2) Marine accident of contact (with breakwater) of cargo ferry NANKAI MARU No. 3

(Published on January 27, 2012)

It is probable that this accident occurred as the result of the following series of events. The master did not check the ship's position with the radar while the ship was navigating southward in the Naze Port in the nighttime, and kept navigating the ship without noticing that the ship was heading toward the breakwater off the Port, resulting in the collision with the breakwater.

It is probable that since the master was keeping an eye on a fishing boat navigating oppositely on the portside, the master failed to check the position with the radar.

The following measures to avoid the future recurrence of the similar accident are conceivable:

(1) Make sure to locate the ship's position with the radar and to understand the position relative to the breakwater.
(2) When navigating in the port, reduce the ship speed early enough to be able to have sufficient lead time to change the course near the breakwater and in preparation for the case where the ship cannot keep the planned course due to an encounter with other ship.

### 3) Marine accident of collision between chemical tanker SAMHO HERON and cargo ship GOLDEN WING

(Published on January 27, 2012)

It is probable that the chemical tanker SAMHO HERON and cargo ship GOLDEN WING collided with each other because the crew on both vessels did not conduct lookout off the southwest of Kajitori-no-Hana in the nighttime while SAMHO HERON was navigating northeastward on the left side of Akinada South Traffic Route centerline and GOLDEN WING was navigating southwestward on the right side of the same centerline.

In the Seto Inland Sea, the recommended routes are designated in major Traffic Routes even though the law does not designate them. At the center of the recommended routes there are light beacons installed and it has been penetrated among the vessels navigating on the recommended route to use the right side of the route centerline.

In this accident, the SAMHO HERON resulted in facing with multiple vessels including GOLDEN WING that were navigating the right side of the centerline because the SAMHO HERON was navigating the left side of the centerline, which caused the collision with the GOLDEN WING. In order to avoid the recurrence of the accident, it is expected for the vessels navigating on the recommended route to use the right side of the centerline.

### 4) Marine accident of flooding of passenger ship KASHIMA

(Published on January 27, 2012)

It is somewhat likely that this accident occurred as the result of the following series of events. Those who were involved in repairing the leak from the shaft seal device did not push back the wedge ring evenly, and in addition they did not retighten the locking bolts of the device after the test run of the engine. Vibrations caused by engine operations after the test displaced the wedge ring; loosened the locking bolt(s); made the shaft seal device leak water; and finally made water flooded in the engine room.

Those who inspect and maintain the shaft seal device is to follow such prescribed procedures as the use of the positioning gauge in maintaining the device and retightening of the locking bolts of this device after the engine test run. The crew members who inspect the engine section are to observe the maintenance and inspection manual; to periodically inspect the conditions of the locking bolts and shaft seal device for any leakage; and to visually inspect the bilge water level in the engine room.

The operation manager is to recognize the importance of properly inserting the packing materials in the emergency gland packing section in preparation for such serious situation as the flooding and foundering caused by a lot of water leaked out of the end-face seal of the shaft seal device.

5) Marine accident of collision between cargo ships TY EVER and LOFTY HOPE

(Published on January 27, 2012)

Around Kanmon-kyo Bridge above the Kanmon Passage, the cargo ship TY EVER navigating eastward was approaching another preceding vessel in the same direction when the cargo ship LOFTY HOPE was navigating against the TY EVER from the opposite direction. The TY EVER made an evasive left turn to avoid another vessel, which made her to collide with the LOFTY HOPE.

Since the Kanmon Strait becomes narrowest around the Kanmon-kyo Bridge, which is the position of this accident, the current gathers speed. If the eastbound preceding vessel is navigating near to the center of the route and the following vessel is navigating near to the sideline of the route, which is the Moji side of the Strait while the current is westbound, the preceding vessel loses its speed as it approaches nearer to the Bridge making the following vessel apt to approach near to the preceding vessel. This is because that in the center of the route west of the Bridge the current has faster speed than the speed along the sideline of the route in the Moji-side of the route.

Therefore, it is most likely necessary for a vessel, when navigating eastward in the west side of the Bridge against the westbound current, to be watchful for the speed change of and distance to the preceding vessel; to keep the safe distance to the preceding vessel as far as possible navigating the South (Dead astern) of the preceding vessel so that she will not be in parallel with or overtake the preceding vessel; and to navigate the right side of the Kanmon Passage along the route.

6) Marine accident of collision between cargo ships WIEBKE and MARINE PEACE

(Published on January 27, 2012)

It is probable that this accident occurred as the result of the following series of events. Off the Mojisaki at the Hayatomono-seto of the Kanmon Passage in the nighttime when the current was westbound at about 5 kn, the cargo ship WIEBKE was navigating north-eastward along the center of the Passage and cargo ship MARINE PEACE was navigating also north-eastward along Moji-side of the Passage. When the MARINE PEACE was going to take over the WIEBKE from the WIEBKE's starboard quarter, the bow of the MARINE PEACE encountered the current-rip across which the current speed changed significantly, and the strong current hit on the starboard bow that made the MARINE PEACE turn left, causing the MARINE PEACE proceed near to the WIEBKE navigating the portside. The both ships collided with each other.

The speed of westbound current along the Moji-side of the Passage is lower than the current speed at around the center of the Passage. Just like as this accident, a vessel navigating eastward at Hayatomono-seto off the Mojisaki in the Passage along the Moji-side of the Passage may sometimes approach another vessel navigating eastward along the center of the Passage; navigate in parallel with; and takeover another vessel.

When a vessel is navigating eastward off the Mojisaki in the Passage under this situation, the vessel encountering the current-rip is hit on her bow by the strong current and is made to turn her bow to the left. It should be noted that the more the speed difference across the rip is, the more severely the vessel is turned left, which poses the danger of approaching and colliding with another vessel navigating along the center of the Passage.

Since in the night time, it is hard for a vessel to identify the current-rip(s) off the Mojisaki, it

is most likely necessary for a vessel, to the maximum extent possible, to navigate dead astern of the preceding vessel while keeping the safe distance from the preceding vessel, and to be carefully controlled while properly watching the preceding vessel in preparation for the possible slowdown and/or course change of the preceding vessel that may encounter the current-rip.

7) Marine accident of contact (with revetment) of motor boat QUEEN III

(Published on January 27, 2012)

It is probable that this accident occurred as the result of the following series of events. When the skipper of this boat navigating southwestward off the southeast of the Tokyo International Airport in the nighttime stopped operating the radar and started changing the monitor window to display the GPS plotter image on the entire window, the skipper without knowing the signs indicating the construction area of the Airport runway D were flushing red concentrated on the window selection. Because of this concentration, he took the red flushing light from light beacon A of the south construction area observed to his starboard as the red flushing light of the No. 2 light beacon showing the entrance to the Kawasaki Passage, and he began to steer the boat to the right to enter the Passage. However he did not notice that the boat was running toward the revetment because he still kept manipulating the monitor to change the window, and finally the boat collided against the revetment.

It is most likely necessary for skippers navigating a small vessel in the nighttime within the port even if navigating in the familiar area to study and confirm the navigation aids on the planned route prior to departure and to concentrate on the watch and steering while navigating the boat.

8) Marine accident of capsizing of cutter (unnamed)

(Published on January 27, 2012)

It is probable that this accident occurred as the result of the following series of events. Under rainy weather of which heavy rain, thunder, gale, high-wave and flood advisories had been forecast, the cutter was used for an outdoor activity at the junior high school of the 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 waves grew stronger to render the rowing difficult, and the director of the Center went for rescuing on a motor boat, and towed the cutter in a portside-inclined state and also in a subsequent state of continuous inflow of lake water thereinto from the portside bow. When being towed in those states southwestward off the south of Sakume, the cutter's leftward inclination sharpened under increasing flowed-in water accumulation on her bottom and caused the portside oars to catch water and to turn her stem leftward. Sometime later, the students sitting on the starboard side lost balance and were shifted toward portside, to further increase the leftward inclination. Consequently, the portside gunwale submerged, lake water flooded into the cutter, and finally the cutter overturned portside.

It is most likely necessary for the local authorities having the facilities available for cutter training to review their rescue system, procedures, etc. against the cutter accident. The system should include a criteria to suspend the training when the weather warming/advisory is forecast; cutter training method; and procedure for towing a cutter. It is also necessary for the local authorities to take necessary actions if any problems found in the system; to enhance cooperation

with rescuing agencies; and to give the staff of the facilities trainings for cutter accidents, including a procedure for towing the cutter.

It is most likely necessary that when the local authorities entrust the management and operation of the cutter training facilities to the designated managers, they should make the said designated managers establish the rescue system, procedures, etc. against the possible cutter accidents including cutter towing procedure; run the cutter towing training; and establish cooperation with rescuing agencies.

9) Marine accident between cargo ships HARMONY WISH and SHINKAZURYU

(Published on February 24, 2012)

It is probable that this accident occurred as the result of the following series of events. When the cargo ships HARMONY WISH and SHINKAZURYU detected each other ahead the beam of the ship only with the radar while they were navigating off the north of Himeshima Island in the limited visibility condition due to fog, they did not properly judge that both of them could dangerously approach the other ship or that both of them could collide with each other. Because of this improper judgment, both ships collided.

In view of the results of this accident investigation, it is most likely necessary to observe the following items in order to avoid the recurrence of the accident similar to this accident:

1. Fundamental actions to be taken in limited visibility condition

   While navigating in the water area where the visibility is limited or around that area, the fundamental actions to be taken are to turn on lights required by law; blast the acoustic signal (fog signal); and navigate at the speed appropriately safe in such conditions as visibility and others.

2. Proper lookout

   In the limited visibility condition, the crew member(s) is to always keep lookout in an appropriate manner by making use of eyes, ears, AIS information, VHF communications, and any other means in addition to the radar. The crew member is to try to detect other vessels as early as possible by alternating the radar range between long and short ranges.

3. Proper judgment of other vessels

   The vessel, when she detects other vessel(s) only with the radar, is to properly judge if she could dangerously approach other vessel(s) or not, and if she could collide with other vessel or not by observing the image of the said other vessel(s) methodically.

4. Maneuver to avoid such events as dangerous approach

   When it is decided that the vessel could dangerously approach other vessel navigating ahead the beam of her or she could collide with other vessel, she is to take the evasive maneuver to avoid such events as above sufficiently earlier than the possible time of the event. In case of the evasive maneuver, the vessel is not to turn left unless it is absolutely necessary to make left turn.

5. Significant deceleration of vessel or bringing of vessel to stop

   If a vessel cannot avoid getting too close to other vessel navigating ahead the beam of her, the vessel should reduce her speed to the minimum that can keep the course or should stop if necessary. In this case, the vessel should very carefully navigate until there is no longer any fear of the collision.

10) Marine accident of contact (with breakwater) of motor boat CAPRICORN

(Published on February 24, 2012)

This accident was caused by the following series of events. While this boat was running back to her marina in Kobe City in the nighttime in the Shikama Section 1 of Himeji Port off the north of the lighthouse on the Shikama East Breakwater, the skipper did not confirm the boat's position when setting the course toward the entry of the Port. Therefore, he kept the boat running without noticing that the boat was heading to the East Breakwater and the boat contacted with the Breakwater.

On the GPS plotter on this boat, the East Breakwater was shown. It is desirable to utilize the GPS plotter effectively, because the plotter can give information effective to avoid an accident, when navigating in the nighttime in the area where the light from the target lighthouse cannot be visually identified due to confusable lights from a lot of other vessels.

The skipper, being required to make proper decision to cope with a variety of risks and dangerous situations which would occur while controlling the vessel, should refrain from drinking because the drinking brings about adverse influence on the decision making in controlling the vessel and may make the proper maneuvering impossible.

11) Marine accident of fatality of stevedore of cargo ship STAR KVARVEN

(Published on February 24, 2012)

It is somewhat likely that this accident was caused because the signal person used the maintenance ladder instead of the regular pathway for moving around the ship for loading and unloading of the cargo.

It is desirable that the Shinmaru Koun Co., Ltd. should make their foremen check the safety of the pathway on which workers move around during loading and unloading the cargo, and make their foremen let the safe pathway well known to the workers.

12) Marine accident of contact (with sediment control groin ) of motor boat SAN

(Published on March 30, 2012)

It is probable that this accident occurred as the result of the following series of events. On this boat running back to her marina in Kanazawa Port in the nighttime, the skipper was alone to control the boat and could not confirm the light from the light buoy due to improper lookout; he kept running the boat without noticing the boat was approaching the sediment control groin; and finally the boat contacted with the groin.

The skipper, even if navigating in the familiar area, is required to make an effort to navigate safely by carrying out the lookout conscientiously and by confirming the ship's position with a GPS plotter or others.

13) Marine accident of fatality to a crew member and fishing passenger of recreational fishing vessel KAIRIN MARU

(Published on March 30, 2012)

1. Cautions in handling ship's anchor rope

It is probable that this accident occurred as the result of the following series of events. The master of the recreational fishing vessel KAIRIN MARU was adjusting the anchoring position in

the fishing spot off the west-southwest of Hinomisaki; he was trying to unhook the anchor rope caught on the stern bottom of the vessel and tightened; he was caught on his right ankle with the anchor rope on the quarterdeck and pulled by the rope that was drifted away out of the deck under the pressure of wind blowing leeward of the vessel making him fallen in the sea; and a fishing passenger trying to prevent the master from falling also fell in the sea.

In view of this series of event leading to the accident, it is most likely necessary for every crew member to be very careful when he is handing such ropes as anchoring rope so that he won't be on the rope, step over the rope or put the leg in the loop of the rope in order to prevent the leg from getting caught by the rope.

2. Measures to ensure the safety of fishing passengers and the like

It is probable that the fishing passenger if he put on a lifejacket would have been saved after he fell in the water; however that he did not have time to put on it because he rushed out of the cabin trying to save the master.

On the other hand, it is somewhat likely that two of other fishing passengers did not know where the life ring buoys were stored; that only if they were well informed of the storage space, then they would have thrown the life ring buoys soon after the fishing passenger fell in the water; and that the fishing passenger fallen in the water would have been saved.

It is also probable that the master did not instruct the fishing passengers to put on the lifejacket or did not put it on by himself when he was engaging in anchor work in spite of the operational rules, in which it was stipulated that the master should try to ask the passengers to put on the lifejacket while they were onboard and that the master should put on the lifejacket when there was any risk of falling into the sea.

In view of the above presumption, it is desirable to observe the followings in order to ensure the safety of the fishing passengers on the recreational fishing vessel:

(1) The recreational fishing vessel operators are to clearly stipulate in their operational rule that they let the passengers know where the life ring buoys are stored, and that to make sure to inform them of the storage space before departing the port. This is because of that the fishing vessel is operated with a few crew members; that the passengers are on the deck most of the time; and that the passenger(s) will have to take the lead in the rescue activities if, like this case of the accident, the master falls in the water or if someone falls in the water out of eyesight of crew members.

(2) The recreational fishing vessel operators are to, in accordance with their operational rule, try to make the fishing passengers put on lifejacket; as a matter of course the master shall put the lifejacket on whenever he or she is doing any works that have possible risk of falling into the sea; and in order to permeate the habit of wearing the lifejacket among the fishing passengers the crew members are to take the initiative and set a good example for the fishing passengers by putting on the lifejacket.

(3) The Fisheries Agency and every administrative divisions are to provide the operators of recreational fishing vessel with advices and/or guidance necessary for them to put the above (1) and (2) in action.

14) Marine accident related to swimmer injury by personal water craft (unnamed)
(Published on March 30, 2012)

It is probable that this accident occurred as follows: In the course of driving a personal water craft (PWC), the driver, without license for personal water crafts, decided to head the PWC along the sandy beach for the sunshade tent on the Kusuhama coast, and steered it accordingly while slowing down its speed. He thereupon lost his balance and narrowly escaped from falling into the sea. He struggled to hold himself stable but failed and was thrown out into the water. The PWC left his control and ran on to collide with two swimmers who were heading from the sea toward the sands.

For any PWC driver, it would be essential to previously obtain a driver's license for personal water crafts, to be fully careful of avoiding the act of approaching to or running around swimmers, and also the act of dangerous PWC operations such as high-speed running, sudden turning, and meandering, and to train himself for acquiring better knowledge and skills to ensure safe PWC maneuvering free of collision with swimmers, always with awareness that a PWC collision with a swimmer can give serious damage to the swimmer even when the PWC is running at a low speed.

It also seems likely to be important that a PWC driver, when driving it, should have a kill switch cord tied to his wrist or other body part in preparation for unexpected emergency including his own accidental fall into the sea.

While necessary information for the licensing and safe operation of PWC is published in the homepages of the Ministry of Land, Infrastructure, Transport and Tourism, the Japan Coast Guard, and marine organizations and institutions, or by their other means, more penetrating information is desirable in future.

15) Marine accident related to death of stevedores of cargo ship SINGAPORE GRACE
(Published on April 27, 2012)

This accident is likely to have occurred in the No.3 hold of this cargo ship moored to the private wharf of Saganoseki Smelter and Refinery of Nikko Smelting & Refining Co., Ltd. for discharging cargo work of copper sulfide concentrate when a stevedore entered the hold in which oxygen was deficient, and was stricken with anoxia, and subsequently when other workers entered the same hold to rescue the collapsed stevedore and suffered also from the same disease.

1 To personnel who are engaged in the transport and the cargo operation of copper concentrate

The Japan Transport Safety Board requests to the personnel who are engaged in the transport and the cargo operation of copper concentrate to pay further attention to the followings:

(1) In order to know the atmosphere of enclosed space, it is necessary that the $O_2$ concentration and gases to be measured properly.

(2) It is necessary that personnel should understand the atmosphere of enclosed space. No personnel should enter into enclosed space until the atmosphere becomes safe by forced draft, etc.

(3) It is necessary that personnel should keep in mind that it is not easy to enter the cargo hold and rescue quickly the injured, and that once anoxia developed, it is difficult to return from the cargo hold alive.

2 To the industry involved in the transport and the cargo operation of copper concentrate

Due to the risks in dealing with copper concentrates, the Japan Transport Safety Board

urges the Japan Mining Industry Association, the Japanese Ship Owners' Association, All Japan Seamen's Union, Japan Port Transport Industry Safety & Health Association, Japan Federation Dockworkers Unions and Japanese Confederation of Port and Transport Workers Unions to make this report known to those whom it may concern.

16) Marine accident related to passenger ferry ORANGE GRACE collision (against quay)

(Published on April 27, 2012)

This accident seems to have occurred as the advance inertia control by the starboard main engine of this ferry was lost owing to the total rupture of the elastic body for the starboard elastic shaft coupling when this ferry was maneuvering to come alongside the pier in the No.1 Section of Matsuyama Port.

The deterioration of rubber, of which the elastic body was made, develops on account of fluctuating torque caused by the main engine and also develops under environmental factors including heat, oxygen and ozone, to eventually entail cracks, creep, and hardening which, if left uncared, can lead to the rupture of the elastic body.

For the ship owner and the chief engineer who are responsible for the maintenance management of the elastic body, it should assumedly be necessary to understand that rubber deterioration in aging is unavoidable and therefore to conduct the maintenance implementation of the elastic body, planned with not only operating times but also the length of times of use taken into account.

17) Marine accident related to collision of passenger ferry FERRY KITAKYUSHU with the chemical tanker KOKI MARU No.78

(Published on May 25, 2012)

It is probable that this accident occurred as follows: When the passenger ferry FERRY KITAKYUSHU (FK) passed by the No.4 Buoy and took its course along the Kurushima Strait route, the master determined that the FK could overtake the chemical tanker KOKI MARU No.78 (KM78) to safely run into the West Channel, and started to pass the KM78. When being ahead of the KM78, the FK had already been at the point of course change to the West Channel, and then directed its course rightward to the West Channel, which obliged the FK to cross the forward traffic course of the KM78, to come into collision with it.

A consideration here is that the FK master was aware his ferry was 3 minutes behind the scheduled time for the entry in the Kurushima Strait route. Along with the "No-Overtaking" zone that had been newly established, Meimon Taiyo Ferry Co., Ltd. had revised its ferry operation timetable, reflecting the reduced ferry traffic speed through the Kurushima Strait route. This reduced traffic speed in the timetable reduced the significance of the delay of the FK. There had been no instructions given to relevant ships for preparations for possible delays in traffics at reduced speed through the Kurushima Strait route. It is therefore probable that the FK master reckoned that the FK would delay by about 20 minutes if it should navigate the Kurushima Strait route at the rear of the fleet and decided to overtake it.

It is therefore desirable for all ships navigating through the Kurushima Strait route and for all of their owners to prevent the recurrence of this kind of accidents with efforts as follows.

(1) If a ship heading through the West Channel toward its northern outlet should find ahead a fleet of ships navigating in the same direction, the ship should not easily attempt overtaking

them but should stick to safe navigation, considering the difficulty of navigation through the Channel route and reckoning of the location of the course change to the West Channel.

(2) A ship navigating through the Kurushima Strait route should maintain sufficient distances between ships traveling before and behind it in the same Channel, considering its own speed and tidal currents in the Channel.

(3) When a ship is going to change its course at a curved area, previously make a final backward check on the side toward which it is going to change, and then change the course while maintaining safe distances between ships traveling before and behind it.

(4) A ship-owner should provide thoroughgoing directions and instructions for the possible delay of its ships when navigating through the Kurushima Strait route, with emphasis placed on no-overtaking.



### 18) Marine accident related to collision between cargo ship DAISENZAN MARU and recreational fishing vessel HISA MARU

(Published on May 25, 2012)

It is probable that this accident occurred as follows: On waters off the northwest of Oshima, under hazy weather, the cargo ship DAISENZAN MARU (DM) was heading southwest, while the recreational fishing vessel HISA MARU (HM) was drifting about there. Both the master of DM and the skipper of HM used no radar but relied on visual lookout, assuming that there would be no other ships around there, to incur the collision.

Seeing that steerers are constantly required to measure the possibility of collision with other vessels, lookout not only by eyesight but by using furnished equipment such as radar as well is considered essential.

The skipper of a recreational fishing vessel, in particular, may be needed to do work other than the vessel steering, so as to meet fishing passengers' requests. In a case like this, it is considered necessary to accurately grasp the surrounding situation, to immediately stop doing such other work, and to ensure the safety of the fishing passengers.

### 19) Marine accident related to collision of recreational fishing vessel KAMOME MARU against breakwater

(Published on May 25, 2012)

It is probable that this accident occurred when this vessel collided against the breakwater in the Nakaminato Port, because the vessel skipper had started recording the location of floating items, without carefully watching around as the vessel had been navigating off the east of the Port toward the Port, under densely fogged view-obscured weather, and did not notice that the vessel was approaching the breakwater.

Seeing that a recreational fishing vessel skipper is required to ensure the safety of their fishing passengers, it will be necessary for the skipper to be always accurately conscious of surrounding circumstances even when working for other than vessel steering.

### 20) Marine accident of grounding of traffic boat FRESH ARIKAWA

(Published on June 29, 2012)

It is probable that this accident occurred when the skipper of this boat, who, seated in the

cockpit, had been manually steering alone the boat westward, off the north of the Kanagashirase situated to the north-northwest of Enoshima, fell asleep and allowed the steering wheel to be turned counterclockwise and, consequently, the boat, while curving leftward, moved toward and grounded on the rock.

It is considered necessary for the skipper, when steering a boat, to be always careful for preventing himself from falling asleep, particularly when monotonous steering continues or when drowsiness is likely to become overwhelming typically in circadian or semi-circadian rhythms, and, if should feel drowsiness is approaching, to try to take resisting actions including a change to standing steering. It is also considered necessary for the boat owner to be careful of the air condition in the steering chamber to reduce the possibility of the skipper's dozing and to take prompt action in the event of an air-conditioner failure.

If a bridge navigational watch alarm system were equipped, the warning buzzer might have awaken the dozing skipper to serve to avoid this accident. It is desired, therefore, that the boat owner equip his boat with such a system.



### 21) Marine accident related to injuries of passengers on motor boat SUZU

(Published on June 29, 2012)

It is probable that this accident occurred as follows: When this pleasure boat was heading south on waters between the eastern piers of the bridge and Tosaki at the Naruto Strait, where waves were rising on the south current flowing at a velocity of about 8 kn under the south wind of about 2.9 m/s, the skipper chose the course onto the rising waves, and the boat was upheaved and brought down, causing five of the passengers on the flying bridge to pop up off and down to their seats or the floor with bumping impacts to injure them.

It is desirable that small vessels including motorboats should avoid navigating the Naruto Strait, if not well informed of the tidal current and wave characteristics there, and that small vessels navigating there should, prior to departure, make sure of the times of changes and the directions of the current, and the time and velocity of the current at its highest, as well as wind directions and velocities there by referring to Sailing Directions for Seto Naikai and Internet information provided by the 5th Regional Coast Guard Headquarters, and should have meteorological and sea condition data in addition to the data of the topography and shoals there previously examined by Chart W112 (Naruto Kaikyo). When wind blows in the direction opposite to that of the tidal current in the Naruto Strait, navigation there should preferably be held back.

Passengers on a small vessel who are on its exposed deck such as a flying bridge should preferably wear a life jacket if there can be a danger of fall from the deck.

### 22) Marine accident related to collision between cargo ship SHINKENWA MARU and cargo ship SHOWA MARU No.8

(Published on June 29, 2012)

It is probable that this accident occurred when the cargo ship SHINKENWA MARU (SKM) was navigating south south-east off the north of Naruto Kaikyo and the cargo ship SHOWA MARU No.8 (SM8) was navigating north-northwest under foggy visibility-restricted weather, the master of SKM not watching out by radar, while the master of SM8 maintaining its course and speed unchanged, to come to collision with each other.

The Naruto Kaikyo in which this accident occurred is a strait where the navigable passage is narrow, tidal current is rapid, and fishing boats are operating sometimes, all these possibly being factors to restrict collision-avoiding actions, and it is considered therefore that the master of a cargo ship passing this strait under visibility-restricted conditions is required to pay careful attention to the early detection of other ships in the strait by appropriately using radar ranges and, on finding any other ship, to practice systematic observations, including radar plotting, of such other ship and to make sure of its navigation situations using VHF, so as to promptly determine the probability of the danger of a near miss or collision with the other ship in accordance with the requirements of Section 4, Article 19 of the Act on Preventing Collision at Sea, so that the master should take actions to avoid such danger if the probability is high.

23) Marine accident related to grounding of cargo ship DAIKO MARU (Published on June 29, 2012)

It is probable that this accident occurred as follows. When this ship was heading northwest off the east of Kuji Port at night, the second officer on duty alone on the bridge fell asleep, and his foot happened to hit the course control dial to turn the dial counterclockwise, which caused the ship to turn in the direction of the coast to the northeast of Kuji Port and to run aground a reef at the coast.

Since the time zone from midnight till early morning is a period for a bridge officer on duty to become liable to doze, it is considered probably necessary that the officer should take positive care for holding off sleepiness by, for instance, doing the duties in a standing pose, and that, if the ship is equipped with a bridge navigational watch alarm system, the system should be kept operative and a timer should be previously set appropriately.

24) Marine accident related to collision between fishing vessel DAIKO MARU and fishing vessel MIYAJIMA MARU

(Published on June 29, 2012)

It is probable that this accident occurred when the fishing vessel DAIKO MARU, which was running southeastward, and the fishing vessel MIYAJIMA MARU, which was drifting about, both at sea to the southeast of Sensui Island, collided with each other because both of the skippers of the vessels failed to keep watch appropriately.

Every fisherman operating or navigating on the sea, even when on familiar marine zones, will be required to bear in mind that navigation courses will always be varied and that the practice of careful navigation and constant appropriate lookout is always important to avoid collision.

25) Marine accident related to collision between motor boat YOSHIOKA MARU and racing boat (unnamed)

(Published on July 27, 2012)

It is probable that this accident occurred when the motorboat YOSHIOKA MARU, which was running eastward, and the racing boat, which was running westward, inside Katakami Port, collided with each other because both of the skipper of the motorboat and the rowers of the racing boat failed to keep watch appropriately.

A skipper when driving a motorboat is required to keep its windshield clear and to keep lookout appropriately so that no blind sector will intervene in his view of the bow, by changing his position, e.g. by standing up.

The rowers of a racing boat, when exercising alone, are required to pay careful attention to other boats or ships by alternately and evenly turning their heads forward.

For the prevention of collision with other ships, the rowers of a racing boat are also required to be versed in the basic marine traffic rules provided by the Act on Preventing Collision at Sea and the Act on Port Regulations as well as to abide by the water area safety rules for their rowing area.

In addition, it is desirable that the rowers wear life jackets for emergency, have simple air horns or so, capable of sounding signals to tell their presence to neighboring ships, and have portable waterproof phones or similar tools for communication.



### 26) Marine accident related to injury of crewman of cargo ship TSURUYOSHI MARU No.3

(Published on July 27, 2012)

It is probable that this accident occurred as follows: When this cargo ship was weighing her anchor at night off the Ichikawa Fairway of Chiba Port under such circumstances as storm, high-sea and drag anchor warnings had been issued for that district, the 1st officer was engaged alone in the anchor weighing work on the forecastle deck and was overturned by a surge of overriding waves as he had not noticed the surge, and was injured.

It seems likely that the master of this ship, without obtaining latest weather and sea condition information, cast anchor off the Ichikawa Fairway where laver farms were located, and that, had the master immediately informed the injury of the officer to the Japan Coast Guard, prompt makeshift treatment advices could have been given from medical facilities, to alleviate the injury.

Desirably, the operator of a ship should give directions to the master of a ship under the operator's ownership or management, to make it a practice to:

(1) obtain latest weather and sea-condition information prior to casting anchor;

(2) for the purpose of preventing net entangling and stranding by anchor dragging, choose an anchoring location free from obstructions and shoals in consideration of obtained information per (1) above as well as of wind direction in which wind velocity will be highest, and also choose an anchoring method with the extension capacity of the anchor cable in rough weather taken into account; and

(3) in the event of an injury accident, immediately contact the Japan Coast Guard and the operation manager to obtain first-aid treatment instructions.

### 27) Marine accident related to collision between cargo ship SEIREI MARU and cargo ship GYOREN 1

(Published on July 27, 2012)

It is probable that this accident occurred when the cargo ship SEIREI MARU (SEIREI) was heading southwest and the cargo ship GYOREN 1 (GYOREN) was heading northeast off the east of Aijima Island under a foggy visibility-restricted situation, and they collided with each other, because the officer of SEIREI kept on moving without changing her course and speed assuming

that GYOREN would change her course to avoid possible contact, and also because the boatswain of GYOREN was not duly watchful of the radar.

It is also probable that the officer of the watch were not complying with the provisions of the Operation Manual and that the operators of both of the two ships had not provided the ships with fog information in spite of the foggy season.

(1) Ship operators should obtain fog information from homepages or so of the Japan Meteorological Agency and provide ships under their ownership or management with such information.

(2) Ship operators should give the following directions to their ship crew:

i) Whenever the visibility has come to a level specified in Section 4, Article 3 of the Operation Manual, the officer of the watch must report it to the master without hesitation and the master must take appropriate actions, including a watch duty support, according to the provisions of the Manual.

ii) The navigation law applicable to visibility-restricted situations must be observed.

28) Marine accident related to injury of passengers on passenger ship RYOMA

(Published on August 31, 2012)

It is probable that this accident occurred relative to the fact that, although the master and crewmen of this ship of Tokyo Cruise Ship Co., Ltd. used to call passengers' attention, by broadcasting and passenger cabin safety check, to the danger of possible catch of passenger's hand or fingers in the passenger cabin windows on the second floor of this ship when the passengers should open or close the windows, this cruise ship Company had no recognition of such danger and had not provided procedures to safely open and close the windows as well as to previously check the safety.

In view of this fact and based on the investigation results of this accident, the Japan Transport Safety Board, with the intention of better contributing to the recurrence prevention of this kind of accidents, hereby expresses its comments as follows and requests the Japan Passengerboat Association to make this report known to, and to call greater attention of, all of the Association's concerned parties.

It is advisable that the owners of passenger boats that have windows in their passenger cabins whose opening/closing operations are remote-controlled should provide safety means to ensure the safety of passengers and crew, as follows.

(1) The windows should as far as possible have a construction that cannot hold the hands and fingers of passengers.

(2) For window construction that can hold hands or fingers, appropriate protective means should be provided.

(3) For windows that may hold hands or fingers when such windows are operated, a window operation safety checking procedure and window operation-related procedures should be previously established and crewmen should be trained by the procedures. For passengers having access to such windows, accident preventive means should also be provided, such as warning notices posted near such windows.

29) Marine accident related to collision of liquefied gas bulk carrier RYOAN MARU against Light Beacon

(Published on August 31, 2012)

It is probable that this accident occurred when the master of this carrier, heading north along the Nakanose Traffic Route at night, directed her bow toward the No.1 light beacon as the carrier was overtaking another ship in the same Route, and kept on moving her toward the beacon until she collided with it, because the master had directed the able seaman to turn the bow rightward after overtaking the another ship, with the intention of avoiding the beacon following the overtaking but because this direction failed to be observed owing to the lack of communication, that is, the communication was not sufficiently shared with, within the bridge.

It is considered probably necessary that able seamen on duty on the bridge should share information with to have good understanding among themselves by utilizing available means including BRM, and that a master and officers of the watch should make it a practice to give steering commands clearly, to have given steering commands repeated by the steersman, and to have steering condition information reported to them.

It is desired that ship owners continuously implement effective BRM training in order to build up a system to ensure smooth communication and information sharing among bridge officers and seamen so that errors among them can be corrected by their interactions.

30) Marine accident related to injuries of workers on pure car carrier VEGA LEADER

(Published on August 31, 2012)

It is somewhat likely that the accident occurred because, while the ship was loading cars at Nissan Motor Honmoku Wharf, Yokohama Section 5, Keihin Port, the Deck Panel on the car deck No. 7, not supported by Deck Support 2, while the car loading on the Deck Panel progressed, fell-down onto car deck No. 6, and the ten longshoremen working on the Deck Panel or on car deck No. 6 immediately below the Deck Panel were injured.

It is somewhat likely that, while the ship was proceeding to Kanda Port, the Deck Panel, when readjusted from the middle position to the normal position, was lowered without anyone being aware that Deck Support 2 was neither fully open nor in a state to support the Deck Panel, and Deck Support 2 moved outward from the Deck Panel.

Port-transportation-service providers are recommended to regard deck supports on a liftable deck as dangerous parts and confirm that the deck panel, on which cars will be loaded, should be correctly supported by them before loading.

31) Marine accident related to collision between cargo ship MEDEA and fishing vessel KOSEI MARU

(Published on September 28, 2012)

It is probable that this accident occurred as follows: When the cargo ship MEDEA was moving southwestward under the guidance of a pilot, while the fishing vessel KOSEI MARU (KM) was moving westward, off the southwest of the East Route of Nagoya Port at night, the pilot directed to change her course leftward to lead her to pass by the east side of the No.6 light buoy, which brought her to approach KM, while the skipper of KM, unaware of the approaching MEDEA, continued to move on toward a forward part of the MEDEA's course, to result in

collision with each other.

There seems to be a possibility that the absence of appropriate lookout by both the master and the skipper and the lack of information sharing among the pilot, master and third officer of MEDEA about the movement of other boats including KM took part in this accident.

(1) It is desirable that WALLENIUS MARINE SINGAPORE PTE LTD. give the following directions to the masters of the ships under its ownership or management:

i) Every master, on his boarding a ship, should make sure of the location of her whistle so that he can immediately blow it in an emergency.

ii) Every master should positively utilize BRM techniques so that he can share other vessels' information with her pilot whenever she is under the guidance of the pilot.

(2) It is desirable that the Fisheries Cooperative Association to which KM belongs makes the followings thoroughly known to all of its member fishing vessels:

i) Every skipper, whenever preparing on a ship-crowded sea area, for fishing, should practice careful lookout using timely means including a radar so as to be able to find approaching vessels if any.

ii) It should be borne in mind that a visual lookout immediately after a work in a brightly illuminated place at night can hardly find other vessels because the vision may not be dark-adapted, and that working lights on the front of a steering house will be obstructive to lookout.

(3) It is desirable that the pilots' associations, of which the pilot of this accident was a member, considers giving BRM education and training to all its member pilots in order to effectively implement BRM techniques to ensure that every pilot on duty will keep the master informed of the steering condition of their ship and will be promptly and positively informed from the master of the movement of other approaching vessels, if any, thus, will share information among them so that they can perform safe navigation, and is also desirable that the society endeavor anew to improve their skills relative to the IMO standard marine communication terms.

(4) We request anew the Japan Federation of Pilots' Associations to make effort to improve the skills of its pilots relative to the IMO standard marine communication terms through its safety training programs implemented every 5 years.

### 32) Marine accident related to diver injuries of diving boat YDS VII

(Published on November 30, 2012)

It is probable that this accident occurred as follows: When this boat was drawing up a diver at its stern offshore the northwest of Umabana-saki, a diving instructor dived into beneath the stern bottom because the boat had a fast backward momentum, advanced while rolling along the bottom toward the bow, and accidently contacted the propeller blade. At the same time, the passenger diver accidently got both of his flippers caught between the lowered ladder and the outside plating of the stern, fell into the water headfirst and contacted the boat bottom.

For preventing the recurrence of this kind of accident, therefore, it is considered necessary for the diving-related marine pleasure providers to implement the preventive measures as follows.

Considering that the Okinawa Prefectural Public Safety Commission has been energetic in giving instructions for ensuring the safety of diving passengers, the Japan Transport Safety

Board requests the Commission to cooperate for giving directions to diving-related marine pleasure providers for the implementation of the safety measures as follows.

(1) Giving cautions and instructions and making them well known when drawing up divers from waters to a diving boat

Diving-related marine pleasure providers should make the following cautions well known to their boat skippers and should instruct the skippers to observe them:

i) The diving boat skipper, when approaching a diving passenger, should approach at an immediately stoppable speed and should stop the boat before the diver comes in the blind spot of the boat.

ii) If a diving boat is equipped with a means of communication with a sea-surface instructor or a diving passenger, such as an underwater speaker, the skipper should use such means and announce the boat approaching situation to the diving passenger.

iii) As far as practicable, the skipper should assign a watcher or an instructor to watch out abroad for diving passengers' access to the boat.

iv) The instructor should carry a communicating means such as a whistle and inform the skipper by using it in the event of the danger of a possible nearing of the boat.

v) When taking actions to stop the boat and to bring up a diving passengers from waters, the skipper should make sure of the standstill of the propeller and then advise the diving passenger-guiding instructor that the boat is ready for bringing up the passenger.

vi) Upon receiving the information per v) above, the instructor should confirm that the propeller is in stoppage and then guide the passenger up onto the boat.

(2) Posting cautions for diving boats

Diving-related marine pleasure providers should post the cautions per (1) above at noticeable places from a skipper and should provide means for communicating with the instructors, to ensure the implementation of the cautions

(3) Report of underwater current information from instructor to skipper at start of diving

With a view to assuring that a diving boat can stand by at an apposite water area upward, the instructor should check the underwater tidal current and inform it to the skipper.

(4) Consideration of diving boat and instructor equipment

i) Diving-related marine pleasure providers should consider installing a propeller guard in their diving boats for the purpose of preventing accidents at the time of drawing up diving passengers from waters.

ii) Diving-related marine pleasure providers should consider prearranging the instructors to carry a radar wave reactive float or so which can facilitate detecting diving passengers on sea surface.

### 33) Marine accident related to collision of oil tanker PACIFIC POLARIS against berth

(Published on December 21, 2012)

It is probable that this accident occurred as follows: When the oil tanker PACIFIC POLARIS was in the process of her port being moored alongside the No.1 Berth in Kin-Nakagusuku Port, her stern approached the No.1 Berth at a landing speed of 15 to 18 cm/s, with her stem away at about 7 to 8° from the Berth, because the berth master who was engaged in a quasi-pilot work had no idea of the approaching condition of the PACIFIC POLARIS stern toward the Berth, and the port stern collided against the H-steel beam of the dolphin of the

Berth.

Practicing the following, therefore, may be useful for the prevention of the recurrence of similar accidents:

1) The berth master will dutifully make sure of the operating condition of the engine and tag boat and of the approaching condition of the ship close to a pier, and to abide by the requirements for laying the ship alongside the pier.

2) The master will reasonably watch the steering operation by the berth master and will question the berth master if find the berth master's operation questionable.

For the purpose of preventing approaching ships for mooring from being damaged, it is desirable that the owner of the Berth will either modify the Berth to have no steel structural projection or attach suitable fender to the projection.

## 11. Actions taken in response to recommendations in 2012

Actions taken in response to recommendations were reported with regard to three marine accidents in 2012. Summaries of these reports are as follows.

### 1) Marine accident related to injury of passengers of passenger ship AN-EI GO No.98 (Recommended on March 25, 2011)

Concerning the passenger injury accident of Passenger Ship AN-EI GO No.98 occurred off the northeast of Iriomote Island at Taketomi-cho, Okinawa Prefecture, on April 30, 2009, the Japan Transport Safety Board published a report on the investigation results of the accident and concurrently gave recommendations to Anei Kanko Co., Ltd. who was responsible for the cause of the accident, on March 25, 2011, and received a report on April 23, 2012 on the completion of the implementation of recommendation-based measures as follows.

● Outline of the Accident

At about 09:40 hrs, Thursday, April 30, 2009, while the ship, boarded by a master with an ordinary seaman and 28 passengers, was underway from Iriomote Shima (Iriomote Island), Taketomi Town, to Ishigaki Shima (Ishigaki Island), Ishigaki City, Okinawa Prefecture, two passengers suffered injuries when the ship pitched (moved up and down).

● Description of Recommendations

1. Safety education on the safety management manual

The company should regularly provide its crew with proper safety education on the company's operation standards, putting emphasis on measures for safe operation while underway on rough seas, and ensure their compliance with the standards.

2. Development of and compliance with safety manual for navigation on rough seas taking into account actual operation

In order to ensure implementation of its safety management manual, the company should review its safety measures on rough seas in terms of route, speed, use of seatbelt, instruction for passengers to move to a place with less ship motion, and so forth, taking into account the size and the cabin arrangement of the ship in service, to develop a safety manual

for navigation on rough seas, provide education its crew about the manual, and ensure their compliance with it.

● Outline of Completion Report

1 Safety education relating to safety management regulations

・ We implemented safety education for safe navigation (including safety education in other fields).

・ Conducted information obtainment by means of questionnaire at short courses of lectures, for the purpose of sounding out the crewmen's understanding of the Safety Management Regulations. For crewmen whose understanding of the Regulations was found insufficient, we conducted course education again.

2 Preparation and observance of instruction manual for safe navigation on heavy sea, suited for actual situations for specific navigating passenger ships

・ We prepared “Instruction manual for safe navigation on heavy sea” which contains "Safety measures for passengers on heavy sea" and "Cautions for safe navigation on heavy sea" described in the navigation criteria charts for the specific navigation courses, in the form of attachment to the existing safety measures, and we gave education to the crewmen accordingly.

・ We made a survey about what the crewmen take care when weather is stormy at sea and informed the survey results to all of the crewmen.

2) Marine accident related to capsizing of cutter (unnamed)

(Recommended on January 27, 2012)

Concerning the investigation of the capsizing accident of the cutter (unnamed) occurred on June 18, 2010 in the north of Lake Hamana in Hamamatsu City, Shizuoka Prefecture, the Japan Transport Safety Board published its accident investigation report, placed recommendations with the accident-responsible party Shogakukan-Shueisha Productions Co. Ltd. and with the Shizuoka Prefectural Board of Education on January 27, 2012, and received reports from them on the measures taken (or planned measures) based on the recommendations on July 11, 2012 as follows.

● Outline of Accident

The cutter (unnamed), with 18 students and 2 teachers aboard it for rowing training as part of the outdoor class activities of the junior high school at Mikkabi Youth Center, was engaged in rowing for the training but, as the wind and waves became so high as disenabling the rowing, came to be tugged by a motor boat MikkabiYouthCenter of the Center. At around 15:25, June 18 (Friday) 2010, when moving southwestward off the south of Sakume at Lake Hamana, the cutter capsized portside.

One of students confined within the capsized cutter died. One of oars was broken, but the cutter body remained intact.

● Description of Recommendations

1. Shogakukan-Shueisha Productions Co. Ltd.

1) The criteria for cutter training suspension and the cutter training methods used at the Youth Center should be reviewed to ensure their adaptability based on the experience of

the trainees, 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 the permission or no of 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).

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

3) Effort should also be made to improve the knowledge of the Youth Center personnel with respect to cutter and weather, and to inspire their consciousness of securing training safety.

2. Shizuoka Prefectural Board of Education

The Board should review the criteria for 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.

● Outline of Implementation Plans

1. Shogakukan-Shueisha Productions Co. Ltd.

1) Implementation plan based on recommendations 1)

[Arrangement Policy]

(1) We will establish criteria for determining permissible safe and sound activities free of accidents in the course of "marine activity programs" at Mikkabi Youth Center.

(2) We will establish criteria for determining training suspension, not based on only the experience and preconceptions of the personnel at the Youth Center but using actual specific weather and other information and data, by which determinations by all concerned parties would lead to an identical or similar conclusion.

(3) We will prepare and maintain a manual according to which prompt and appropriate actions can be taken in an emergency.

[Specific Safety Measures]

(1) We will identify specific criteria for determining implementation or implementation suspension.

(2) We will prepare training plans for sudden weather change.

(3) We will define time limits for deciding training implementation or suspension and for deciding training method.

(4) We will specify treatment to be taken in the event of a training suspension during its implementation.

(5) We will establish safety measures in training.

(6) We will expressly include in our manual actions to be taken when a cutter is towed.

(7) We will specify in our manual requirements for boarding a cutter.

2) Implementation plan based on recommendations 2)

[Basic Concept]

(1) We will implement rescue and tow trainings under conditions simulated to conceivable conditions of accidents, and will keep record of noticed problems at the Center for common information sharing.

(2) We will make effort to develop better cooperation with local concerned parties (police, fire department, and private organizations) and will have joint trainings with them as far as practicable.

(3) In addition to joint training, we will make out our own annual training plan and will realize it without fail.

[Consideration of Specific Measures]

(1) Concerning rescue

Improvement in knowledge of rescuing methods and in skills and knowledge of towing

(2) Concerning systems for emergencies

Consideration of rescuing methods and countermeasures for supposed emergencies including capsizing, periodic practice of rescue and tow trainings in emergencies, establishment of an organizational system and a chain-of-command structure in an emergency, strengthening of tie-up with external concerned parties for rescuing, and preparation of passenger list necessary for checking personal safety.

3) Implementation plan based on recommendations 3)

[Basic Concept]

(1) We will prepare a system to set up minimum necessary training time and acquisition levels and to allow only those Center people who attained the set levels to participate in our programs.

(2) Our Center people will be not only trained and educated at the Center but will also be encouraged to positively attend education and training programs offered by outside organizations, and the information of such activities will be made available within the Center.

[Consideration of Specific Measures]

(1) For enriching cutter-related knowledge

Invitation of outside consultants, attendance at outside training, training at the Center, and information exchange with outside facilities

(2) For improving knowledge of weather

Attendance at weather forecaster qualifying lecture courses, selection of staff members specialized in weather, routine collection of daily weather data, and collection of areal data from marinas.

(3) For inspiring consciousness of safety in training

Submittal of annual safety management plan, implementation of training for supposed accidents, collection of actually occurred examples of terrifying but narrowly escaped incidents, improvement of manual, selection of safety management specialists, and attendance at safety-related training.

2. Shizuoka Prefectural Board of Education

・To designated managers, the Board will give directions, advices and guidance, with the

main points of safety requirements provided by Shizuoka Prefectural Board of Education shown to them, based on comments at manual review meetings to be newly held by the prefectural safety measure committee and outside knowledgeable people, and will require the managers to prepare cutter training manual accordingly.

・For cutter tow training, the Board will require designated managers to establish implementing procedures, taking into consideration actual towing methods being used at similar training facilities and based on comments of experts, and to also establish training procedures in which implementing methods and system capabilities are incorporated, with comments at manual review meetings taken into account, and to reflect them on their manuals. The Board will also require them to prepare an annual tow training implementation plan, to review its appropriateness, and to develop and maintain a system capable of appropriately carrying out tow training.

・A system will be developed to periodically check to see, and to correct where necessary, if manuals and tow training implementation methods and plans are appropriately practicable.



### 3) Marine accident related to death of stevedores working for cargo ship SINGAPORE GRACE (Recommended on April 27, 2012)

Concerning the marine accident related to the death of the cargo ship SINGAPORE GRACE stevedores which occurred on June 13, 2009 at Saganoseki Port, Oita City, Oita Prefecture, the Japan Transport Safety Board investigated the accident, published on April 27, 2012 its investigation report and concurrently gave recommendations to the concerned responsible parties, Saganoseki Smelter and Refinery of Pan Pacific Copper Co., Ltd. and Nissho Koun Co., Ltd., and received a report on September 26, 2012 about the completion of recommendations-based measures taken as follows.

● Outline of the Accident

At about 08:30 on 13th June 2009 when the cargo ship was berthing at the wharf of Saganoseki Port for discharging cargo work of copper sulfide concentrate, one of the stevedores collapsed on his way of going down on the ladder into the No.3 cargo hold for cargo work, and two of the three stevedores who came to rescue the collapsed also collapsed in the hold.

The three collapsed stevedores were carried out of the hold but were found dead later.

●Description of Recommendations

1. Saganoseki Smelter and Refinery of Pan Pacific Copper Co., Ltd.

(1) To train all employees who have the possibility of being engaged in cargo work to understand the properties and risks of copper sulfide concentrate.

(2) To train all employees, who have the possibility of being engaged in cargo work, with the handling of $O_2$ meters in order to measure $O_2$ concentrations as necessary

(3) To request the MSDS of floatation reagents from shippers.

(4) To inform employees who have the possibility of being engaged in cargo operation on the following:

[1] Depending upon the properties of the floatation reagent adhered to copper sulfide

concentrate, it may generate toxic gas.

[2] Since the generated toxic gas is heavier than air, it stagnates in cargo hold; hence, there is a danger of not being replaced by air.

(5) To make the risks of oxygen-deficient conditions and anoxia known to all personnel who have the possibility of being engaged in cargo operation and to familiarize them with appropriate coping behavior in case of fatal accidents occurring in cargo holds loading copper sulfide concentrate.

2. Nissho Koun Co., Ltd.

(1) To train all employees who have the possibility of being engaged in cargo operation to understand the properties and risks of copper sulfide concentrate

(2) To train all employees, who have the possibility of being engaged in cargo work, with the handling of $O_2$ meters in order to measure $O_2$ concentrations as necessary

(3) To make the risks of oxygen-deficient conditions and anoxia known to all employees who have the possibility of being engaged in cargo operation and to familiarize them with appropriate coping behavior in case of fatal accidents occurring in cargo holds loading copper sulfide concentrate

● Outline of Completion Report

1 Saganoseki Smelter and Refinery of Pan Pacific Copper Co., Ltd.

[Implementation Plan Based on Recommendations 1)]

To the concerned people, including our production control section members in the main, we will conduct education in June (in the preparation period for the nationwide Safety Week) every year.

The points of the education will be as follows.

1) Copper concentrate is fine powder, has large surface area, and is therefore easily reactive with oxygen in the air in the cargo hold, to subsequently generate heat by oxidation. (Copper concentrates consumes oxygen.)

2) As copper concentrate is transported in a carrier from Chile (for about 35 days) , Indonesia (for about 14 days) or others, the oxygen concentration within the hold is often reduced to 18% or below (to a state of oxygen depletion).

3) Oxidative heat generation is often noticeable particularly when much dew is formed as the hatch is kept open. When such is a case, the oxygen concentration in the hold could be extremely low and should be taken care of.

[Implementation Results Based on Recommendations 1)]

For the concerned people (16 persons) including our production control section members in the main, we conducted education on June 18 with emphasis placed on the three points specified in our Implementation Plan.

We will continue our education in June (in the preparation period for the nationwide Safety Week) every year.

[Implementation Plan Based on Recommendations 2)]

For the purpose of achieving and maintain a level of the accurate usage of oxygen concentration meters, we will make our concerned people including the production control section members in the main join the education class to be opened in June (in the preparation period for the nationwide Safety Week) among the series of the classes

planned to be held 6 times a year by Nissho Koun Co., Ltd. for the handling of oxygen concentration meters.

[Implementation Results Based on Recommendations 2)]

Our concerned people (16 persons) including the production control section members in the main joined the education class held on June 20 by Nissho Koun Co., Ltd. for the education of the accurate handling of oxygen concentration meters and learned the accurate usage of the meters.

We will continue this education in June (in the preparation period for the nationwide Safety Week) every year to maintain a level assuring accurate usage.

[Implementation Plan Based on Recommendations 3)]

For copper concentrates we shall procure in and after June 2012 through our Raw Material Procurement Department, we will require the copper concentrate mines to furnish us with MSDS of the flotation reagents used for them.

Based on furnished MSDS, we will implement the education of the concerned people including our production control section members in the main in association with the implementation plan based on the Recommendations 1).

In addition, we will supply obtained MSDS to Nissho Koun Co., Ltd. and will direct MSDS-related education of all employees of Nissho Koun Co., Ltd. who will be engaged in cargo handling work.

[Implementation Results Based on Recommendations 3)]

On May 17, through our Raw Material Procurement Department, we requested copper concentrate mines to supply us MSDS of the flotation reagents. On August 28, regarding the MSDS of the 4 flotation reagents we could obtain, we carried out education of the concerned people (16 persons) including our production control section members in the main.

For other MSDS we may obtain in future, we will carry out similar education accordingly.

Meanwhile, we supplied our obtained MSDS to Nissho Koun Co., Ltd., which subsequently conducted education of all its employees who are likely to be engaged in the cargo handling during the period between 29th and 31st August. We will continue this MSDS education of obtained flotation reagents. Periodically, in particular, we will carry out it in June (in the preparation period for the nationwide Safety Week) every year.

[Implementation Plan Based on Recommendations 4)]

In June (in the preparation period for the nationwide Safety Week) every year, in association with our Implementation Plan based on the Recommendations 1), we will educate the concerned people including our production control section members in the main to make them understand that some of the flotation reagents used in the process of copper ore concentration can produce poisonous gases heavier than air and that such poisonous heavy gases can pose danger by staying in the cargo hold without being re-replaced with air.

[Implementation Results Based on Recommendations 4)]

We implemented education along with the implementation based on the Recommendations 1). In June (in the preparation period for the nationwide Safety Week) every year, we will conduct the education.

[Implementation Plan Based on Recommendations 5)]

To the concerned people including our production control section members in the main, we will give education as follows.

1) Implementation of education about the danger of oxygen-deficient conditions and anoxia in association with our implementation plan based on the Recommendations 1).

The points of the education will be as follows:

・The mechanism and cause of the onset of anoxia
・Symptoms of anoxia
・Properties and danger of copper concentrate
・Places where anoxia can occur and cautions

2) We will regularly join the training programs planned to be effectuated in March every year by Nissho Koun Co., Ltd. for the instruction, guidance, and mastering the treatment and rescuing in the supposed events of personal accidents in a cargo hold storing copper sulfide concentrates, and will learn appropriate treatment knowledge and skills.

[Implementation Results Based on Recommendations 5)]

For the concerned people (16 persons) including the production control section members in the main:

1) We made the danger of oxygen-deficient conditions and anoxia thoroughly known to them at the education implemented on June 18.

We will continue this education in June (in the preparation period for the nationwide Safety Week) every year.

2) We arranged and had their participation in the rescue training held by Nissho Koun Co., Ltd. on June 13.

We will continue to make them join the rescue training programs for the supposed events of personal accidents in a cargo hold planned to be effectuated in March every year by Nissho Koun Co., Ltd. and acquire necessary knowledge and skills of treatment. This year, they joined the rescue training conducted on March 3 by Nissho Koun Co., Ltd.

2. Nissho Koun Co., Ltd.

1) Concerning the properties and danger of copper sulfide concentrates, we gave education to 55 workers of the Cargo Handling Section on June 13, 2012 and to 54 workers of the same on 29th to 31st August 2012 with emphasis on the following points. We will continue similar education regularly.

[Points of Education]

(1) Copper ore is finely powdery, has therefore a large surface area, and is liable to react with oxygen in air in cargo holds to subsequently generate heat.

(2) When copper ore is transported from abroad in a cargo hold, the oxygen concentration in the cargo hold is often reduced to below 18%, i.e., to a state of oxygen insufficiency.

(3) It is known that when the hatch of a hold is kept open and much dew is formed, oxidative heat generation is active, denoting that the oxygen concentration in the hold may be extremely low.

(4) A flotation reagent contained in copper ores contains toxic gases heavier than air and can cause oxygen depletion.

(5) MSDS of flotation reagents contained in copper sulfide concentrates

2) In regard to the handling of oxygen concentration meters, we gave education to 55 workers of the Cargo Handling Section on June 20, 2012 and to 54 workers of the same on August 10, 2012 with emphasis on the following points. We will continue similar education regularly.

[Points of Education]

(1) Types of the meters
(2) Usage
(3) Meter maintenance procedure
(4) Locations to be measured at
(5) Recording procedure
(6) Protectors to be worn
(7) Evacuation in the event of danger

3) In regard to the danger of oxygen-deficient conditions and anoxia, we gave education to 55 workers of the Cargo Handling Section on condition that they should receive the education once on the three days from 27th till 29th of August 2012, with emphasis placed on the following points. We will continue similar education regularly.

[Points of Education]

(1) Mechanism and cause of occurrence
(2) Symptoms of anoxia
(3) Properties and danger of copper ore
(4) Places wherein the danger is liable to occur and cautions

4) On June 13, 2012, we conducted emergency training exercises and gave education and training to 47 workers of the Cargo Handling Section for the treatment of personal accidents in cargo holds containing copper sulfide concentrates, with emphasis placed on the following points. We will continue similar education regularly.

[Points of Education]

(1) Criteria for determining whether an oxygen deficiency accident or other accident
(2) Reporting on finding an accident victim
(3) Prevention of secondary accident
(4) Preparations for rescue
(5) Measurement of oxygen concentration
(6) Air supply to victims
(7) Situation comprehension and criteria for determining permissibility for entering the cargo hold to rescue victims
(8) Cooperation with rescue team

## 12. Actions taken in response to safety recommendations in 2012

Actions taken in response to the safety recommendations were reported with regard to one marine accident in 2012. A summary of it is as follows.

1) Marine accident related to collision between cargo ship MARINE STAR and container ship TAKASAGO

(Recommended on October 28, 2011)

The Japan Transport Safety Board investigated the collision accident which occurred on February 20, 2009 in the Bisan Seto East Traffic Route between the cargo ship MARINE STAR and the container ship TAKASAGO, issued an investigation report publicly and also safety recommendations to Blue Marine Management Corp. which is the management company of MARINE STAR on October 28, 2011, and received a responding report on the actions taken in reply to the safety recommendations on January 25, 2012 as follows.

● Summary of the Accident

The collision occurred at around 06:15 on February 20, 2009 between the cargo ship MARINE STAR which, with the master and 16 crew members abroad, was sailing northward off the north of Sakaide Port, and the container ship TAKASAGO which, with the master and 4 crewmen aboard, was moving eastward along the Bisan Seto East Traffic Route.

MARINE STAR suffered depressions in her stern port outer plating and TAKASAGO also suffered depressions in her bow, but the crew of both of the ships remained intact.

● Description of the Recommendations

The Panama Maritime Authority should guide the ASIA SHIPPING NAVIGATION S.A. to have the BLUE MARINE MANAGEMENT CORP. execute proper ship management to secure safe operation.

The ASIA SHIPPING NAVIGATION S.A. should instruct the BLUE MARINE MANAGEMENT CORP. to follow the navigation rules of the state where vessel call, prepare a proper watchkeeping arrangement and ensure the safety of navigation.

The BLUE MARINE MANAGEMENT CORP. should provide clear and specific instructions on the rules that must be obeyed to the ships that navigate in this sea area, and at the same time guide the ships to ensure safety by reinforcing watchkeeping arrangements on the bridge through the measures including the increase of the number of crew on bridge watchkeeping duty.

● Actions Taken in Response to the Safety Recommendations

1) BMMC disseminated “Instruction to Master” to all managed ships regarding this incident for crew further awareness of the accident stating its root cause and countermeasures to avoid recurrence.
2) BMMC provide onboard training for bridge personnel to ensure crew are competent to implement navigational procedures correctly and safety.
3) BMMC launched a year round “Campaign against Collision and Stranding "since the incident and constantly remind all vessels in the fleet especially passing narrow channels at Japanese ports, likewise to ensure the crew awareness of safe navigation.

4) BMMC monitor and ensure that the procedures of the safety management system has been followed and carrying out evaluation of the safety performance through reporting systems, by constant visiting of ships by Superintendent to check the safety operation of the vessel.

BMMC highly appreciate your authority for carrying out investigation with this accident and ensure to continue and keep monitor its managed ships to further enhance safety navigation and avoid recurrence of the incident.

★ The report (original) from BLUE MARINE MANAGEMENT CORP. is shown on the home page of the Board.
http://www.mlit.go.jp/jtsb/eng-mar_report/BMMC_20120125_Action.pdf



## 13. Information dissemination in the process of investigations

The JTSB disseminated information on the following four marine incidents in 2012. The information is summarized below.

### 1) Marine accident related to capsizing of fishing vessel KASUGA MARU

(Disseminated on April 5, 2012)

In regard to the capsizing accident of the fishing vessel KASUGA MARU that occurred on March 23, 2012, the Japan Transport Safety Board supplied information to the Ministry of Land, Infrastructure, Transport and Tourism and the Fisheries Agency as follows.

(Fact Information)

The facts found to date are as follows.

At the time of this accident, the engine room door on the portside upper deck, the crew space door at the stern, and the boatswain's store door at the bow of this vessel were open, and the seawater that came over to the upper deck flowed through the doors into the engine room, the crew space, and so forth.

### 2) Marine accident related to the death of personal watercraft LIB passenger

(Disseminated on June 27, 2012)

In regard to the fatality accident of the personal watercraft LIB pillion passenger that occurred on July 31, 2011 and the injury accident of the personal watercraft FAIRLADY pillion passenger that occurred on July 23, 2011, the Japan Transport Safety Board supplied information to the Ministry of Land, Infrastructure, Transport and Tourism as follows.

(Fact Information)

The facts found to date are as follows.

1) Process to death/injury

It is likely that the pillion passenger of the personal watercraft fell into the sea as the rider was starting or accelerating the watercraft, that sea water entered the body cavities of the passenger owing to the impacts of the fall and of the jet streams from the waterjet propulsion system, and that the entered water gave damage to the internal organs to death

of the passenger.

2) Warnings given in manual

The manual of the personal watercraft LIB contains the written warnings for possible danger of death or serious harm as stated below.

(1) The rider or passenger is required to wear body protective clothes.

(2) If you should fell into sea and exposed to strong water pressure on account of the impact of the fall or near the jet nozzle, there is a possibility of water inflow into your body cavities and subsequent damage to you. Ordinary bathing or swimming suit cannot fully protect your body. Always wear a wet suit and pants capable of protecting your body.

(3) Whenever somebody is behind the watercraft, do not open the throttle, but stop the engine or keep it idling. If the throttle should be opened, water and inclusions in it ejected from the jet nozzle may injure the person.



### 3) Marine accident related to the explosion of motorboat KEN-YU

(Disseminated on August 29, 2012)

In regard to the explosion accident of the motorboat KEN-YU that occurred on May 2, 2011, the Japan Transport Safety Board supplied information to the Ministry of Land, Infrastructure, Transport and Tourism and the Nuclear and Industrial Safety Agency of the Ministry of Economy, Trade and Industry as follows.

(Fact Information)

The facts found by our investigations so far are as follows, although our investigations in future will disclose more facts.

It is probable that this accident occurred as follows: When the motorboat was moored at a basin downstream of the river Ohmutagawa, the skipper cleaned the upper part of the main engine in the engine casing, by using and exhaustively consuming the contents of a cleaning agent spray can, and then soon closed the engine casing cover and started the main engine. Thereupon, the mixture of the flammable gases, consisting of gasified cleaning agent and LPG for jet propulsion and staying in the engine casing, caught electric sparks from the starter motor and exploded.

### 4) Marine Accident Related to Collision of Anchor-Dragging Foreign-Flag Ships by Typhoon

(Disseminated on September 6, 2012)

In view of the three collision accidents related to large foreign-flag ship anchor-draggings that were caused to occur serially in Tokyo Bay during at night of June 19, 2012 till dawn by violent wind and waves under the influence of the Typhoon No.4, the Yokohama Office of the Secretariat of the Japan Transport Safety Board supplied the following information to the Kanto District Transport Bureau, the Chubu District Transport Bureau, the 3rd Regional Coast Guard Headquarters of the Japan Coast Guard, the Ship's Agency Association of Kanagwa Prefecture, the Tokyo Bay Licensed PILOTS' Association, and the Yokohama Office of the Japan Foreign Steamship Association.

(Requisites for Recurrence Prevention)

- Obtain latest weather and sea condition information, and select a place for anchoring taking into consideration the direction of wind, the depth of water, bottom sediment, possible height of waves, and lee side distance.
- Previously calculate the anchor's maximum holding power of the ship and the maximum tolerable wind velocity, and previously determine countermeasures for possible wind at the maximum velocity.
- Keep the draught deeper, and keep the ship from swinging to and fro preferably by holding a trim by bow. On the other hand, support the holding power of anchor by fully extending its chain, and select an anchoring method best suited for the situation.
- Keep the main engine stand-by, ready for anchor relocation.
- Practice ship location check and lookout such that the drag anchor of own or other ship can be found early.
- Constantly listen to VHF to collect information.
- If the ship is found dragging its anchor, immediately take an anchor shifting or other appropriate action.
- If other ship is found dragging anchor, give a call to the ship by VHF with an advice for shifting the anchor or so.

Column

## Motorboat Explosion Accident

This accident arose from the start of the engine of a motorboat to leave a basin in Ohmuta City, Fukuoka Prefecture, went through an explosion in the engine casing and the blow-off of the casing cover, and resulted in the injury of two passengers and the fracture of the boat body.

Prior to the explosion, the skipper of the motorboat had cleaned the smeared upper part of the engines using up a spray can (containing 840 ml) of cleaning agent. The skipper knew that the spray cleaning agent contained propane gas as an propulsion agent, that propane gas was heavier than air and was explosive, and that propane gas must not be used where there is fire nearby, but, seeing that the moment cleaning agent solution was shot upon and wetted the engine's upper part, the liquid cleaning agent evaporated from there in the form of flammable gas, thought that the propane gas was also diffusing together with the cleaning agent gas.

It is probable that although both the cleaning agent, when turned to flammable gas, and the propane gas, were heavier than air, they did not descend to the bottom of the engine casing but were taken and suspended in the air in the engine casing, caught electric sparks from the cell motor and exploded.

The spray cleaning agent bore a written warning statement, meaning "Do not use this agent near fire or flame. Do not use this agent in large volume in a room where fire is used.", according to the enforcement ordinance notification of the High Pressure Gas Safety Act, but had no statement giving caution for its use in a narrow closed space where there is a danger of explosion.

For the purpose of drawing more careful attention of small boat operators to the safety indication of spray-type cleaning agents in view of the recurrence probability of this kind of accidents, the Board supplied information to the Ministry of Economy, Trade and Industry and the Ministry of Land, Infrastructure, Transport and Tourism. On receipt of the information, some of the District Transport Bureaus prepared recurrence preventive leaflets and distributed them to small boat drivers.

At the request of the Board, the spray cleaning agent sales company A took a prompt action of adding to the said statement a paragraph of caution for use, saying "Do not use this cleaning agent in a narrow closed space, because flammable gases will stay in such a space." A newspaper publishing company in Fukuoka Prefecture reported this topic on its newspaper to help make the recurrence preventive knowledge widely known.

Nevertheless, afterward, a fishing boat incurred a similar accident in Kagoshima Prefecture again. Considering that all the spray cleaning agent sales companies have not prepared such cautions for use as Company A provides, and that all the boat operators are not informed of the danger of explosion of spray-type cleaning agents when used in a narrow closed space, we deem it necessary, for the recurrence prevention of similar accidents, to make the cautions for use of the spray-type cleaning agents more thoroughly known.

## 14. Summaries of major marine accident investigation reports

### A cutter capsized when being towed homeward in bad weather by a motorboat

### Capsizing of a Cutter (unnamed)

**Summary**: On June 18, 2010, 18 students and 2 teachers were in the training of cutter rowing on a cutter (Boat A) of Prefectural 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. At around 15:25 when running southwestward off the south of Sakume in Lake Hamana, while being towed by a motorboat (Boat B) of the Youth Center, Boat A capsized.

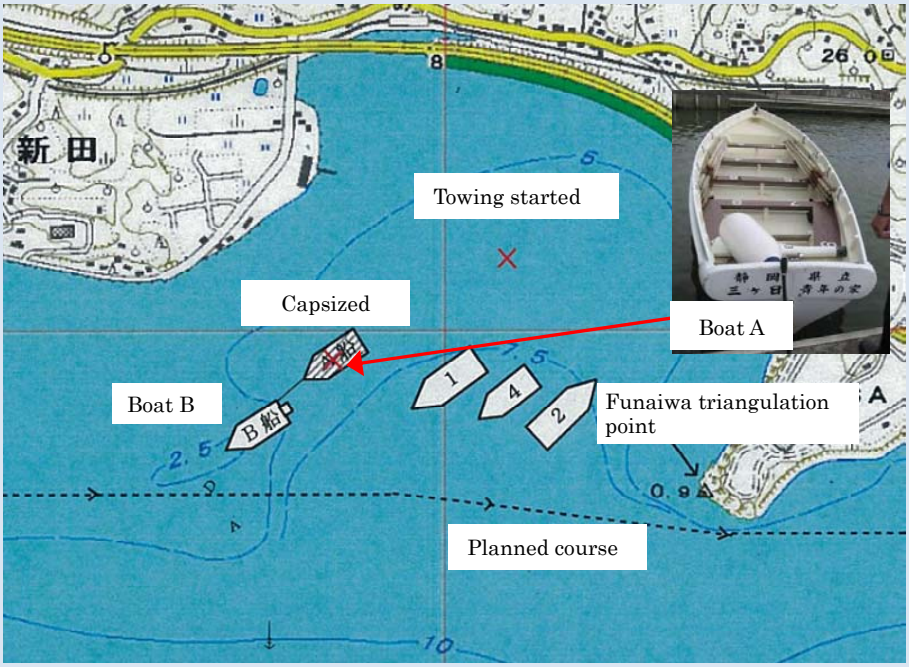
One of the students confined in the overturned boat died.

[Approx. 25 minutes before the capsizing]
The wind direction changed southward, waves became higher, and one of the students got seasick: the rowing became difficult.

[Approx. 20 minutes before the capsizing]
The teacher asked rescue to Youth Center by radio.

[Approx. 10 minutes before the capsizing]
Boat B met Boat A, tied their mooring ropes together, and decided to tow Boat A at a distance of 20 m.

[Approx. 5 to 2 minutes before the capsizing]
Boat B started towing Boat A, which was listing to port, and the bow violently repeated ups and downs and allowed continuous inflow of lake water from over the port bow. The accumulated water on the portside bottom gradually increased the port list.




[Capsized at 15:25]
The portside edge of Boat A subsided to allow massive inflow of lake water into her, Boat A overturned portside, two of the students and one of the teachers were thrown out, and the other 16 students and one teacher were confined inside the boat of which 12 students and one teacher found their way out of the boat by their own effort. Rescue was made to them later by an informed water rescue team, but one student confined in the boat died.

**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, Boat A was used for an outdoor exercise for the junior high school at the 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 Youth Center went for rescuing on Boat B, and towed Boat A 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 Boat A's port list developed under increasing flowed-in water accumulation on her bottom and caused the portside 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 portside, to further increase the port list. Consequently, the port side submerged, lake water flooded into the boat, and the boat overturned portside.

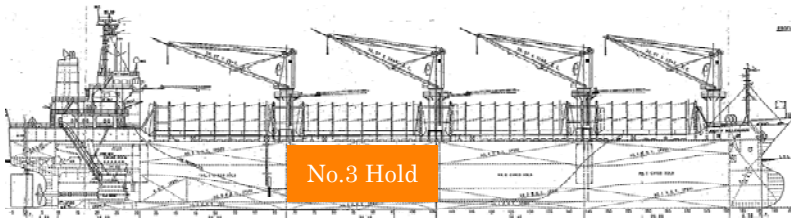
For details, please refer to the investigation report. (Published in Japanese on Jan. 27, 2012)
http://www.mlit.go.jp/jtsb/ship/rep-acci/2012/MA2012-1-8_2010tk0012.pdf

## 3 workers, when handling copper sulfide concentrate, inhaled oxygen-deficient air and died.

## Fatality of Stevedores Working on Cargo Ship SINGAPORE GRACE

**Summary:** This cargo ship was moored for discharging copper sulfide concentrate alongside the quay in Saganoseki Port. At around 08:30 on June 13, 2009, one of the stevedore workers was stepping down the ladder in the No.3 Hold to work, and fell down on it. Two of three workers who went to rescue him also fell down in the Hold.

The three fallen workers were taken out of the Hold but eventually confirmed dead.




During the voyage, the copper sulfide concentrates in the closed NO.3 Hold had oxidized, consuming the inside oxygen, to turn the atmosphere*1 in the Hold oxygen-deficient. The flotation reagent adsorbing onto the copper concentrates had produced toxic odorous gases which, heavier than air, had stayed there.

*1: "Atmosphere" means a state of a mixture of certain gases.

Passage into the Hold

**[Primary Accident]**
When the ship was moored in Saganoseki Port, worker A entered the No.3 Hold, moved to its bottom, and died from oxygen deficiency.

**[Probable causes of Primary Accident (Abstract)]**
Worker A entered the No.3 Hold in which the atmosphere had been oxygen-deficient, probably because a sign permitting entry had been posted at the entrance to the Hold and because another worker had been driving a heavy vehicle in the No.1 Hold

**[Secondary Accident]**
In order to rescue Worker A, 3 workers entered No.3 Hold, and Worker B died from oxygen deficiency (while the other two workers felt suffocating and returned to the deck).

**[Probable causes of Secondary Accident (Abstract)]**
It is somewhat likely that Worker B could not become aware of oxygen deficiency in the atmosphere of No.3 Hold because he was so absorbed in a sense of responsibility for rescuing Worker A and that he was upset. The cause of this accident may also partly lie in the facts that there were some workers who thought that oxygen deficiency in a cargo hold would be prevented by natural ventilation in the course of time if the hatch was kept open, and that no measurement of oxygen concentration in oxygen-deficient atmosphere had been made nor a fatal accident due to oxygen depletion had occurred since the last accident that had took place in a cargo hold 4 years before.

**[Tertiary Accident]**
Two workers wearing a gas mask entered No.3 Hold again, and one of them, Worker C, died from oxygen deficiency (while the other of them returned up to near the hatch and was saved by crewmen of this ship.

**[Probable causes of Tertiary Accident (Abstract)]**
It is somewhat likely that Worker C entered No.3 Hold wearing a gas mask because he thought a gas mask could be effective for oxygen deficiency, that he, too, was so absorbed in a sense of responsibility that he was upset, and that the aftereffect of the oxygen depletion he had suffered when he had entered the Hold after the occurrence of the primary accident disabled him to make an appropriate decision.

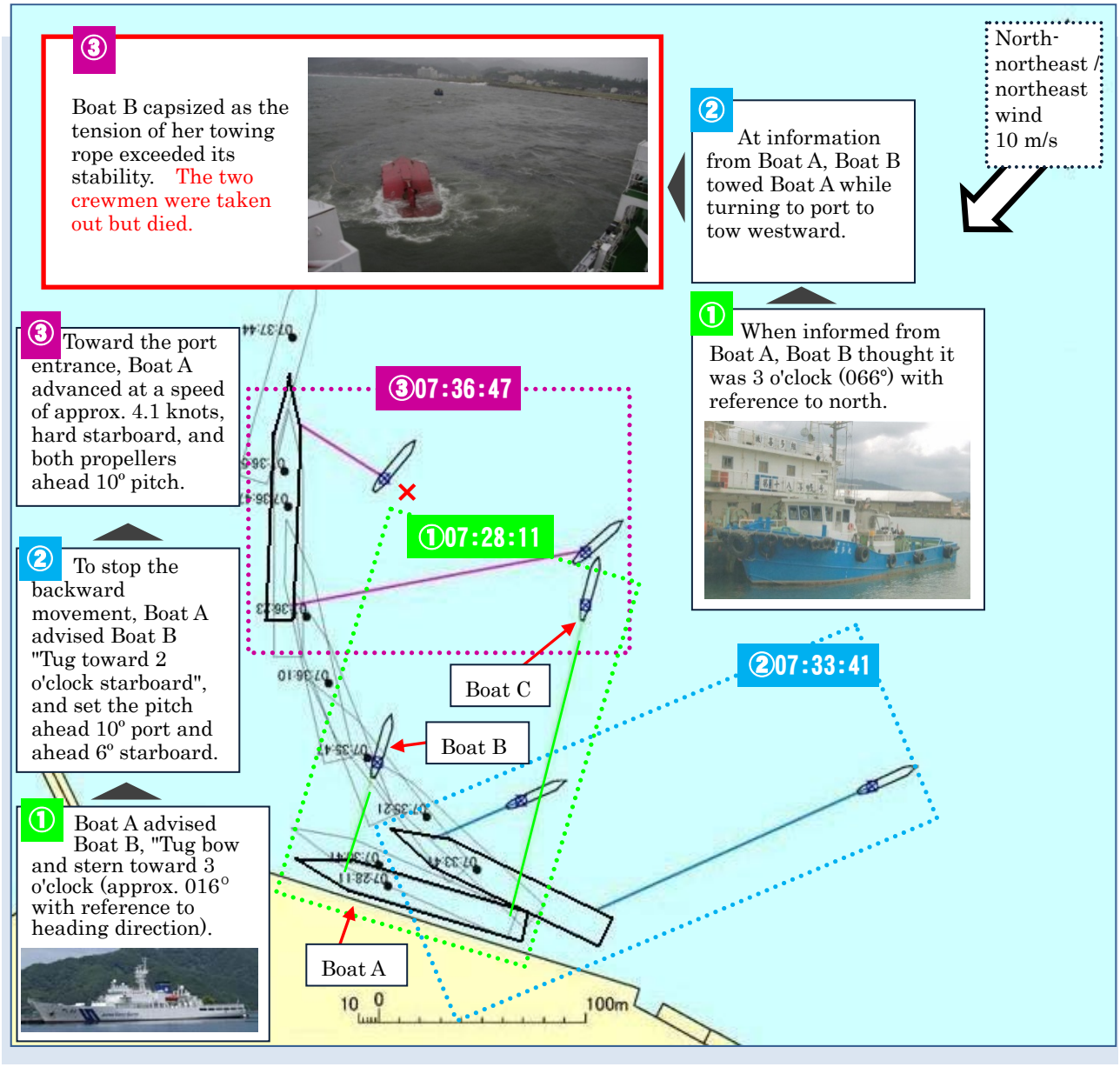
For details, please refer to the investigation report. (Published on Apr. 27, 2012)
http://www.mlit.go.jp/jtsb/eng-mar_report/2012/2009tk0008e.pdf

# A tugboat capsized when towing a departing vessel, losing 2 lives.

## Capsizing of Tugboat KITA MARU No. 12

**Summary:** When towing the patrol boat MIURA (Boat A) to assist her departure, together with the tugboat KITA MARU No.8 (Boat C), the tugboat KITA MARU No.12 (Boat B) with a skipper and a crewman aboard it capsized at around 07:36:47-54 on Sept. 19, 2011.

All the crew (2 crewmen) of Boat B 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 Boat B, along with Boat C, was towing Boat A to assist the departure of Boat A from Wajima Port, with the towing rope tied at the bow of Boat A, under north-northeast to northeast wind velocity of approx. 10 m/s and wave-height of approx. 3 m, Boat B capsized because the tension of her towing rope exceeded her stability.

For details, please refer to the investigation report. (Published in Japanese on Nov. 30, 2012)
http://www.mlit.go.jp/jtsb/ship/rep-acci/2012/MA2012-11-1_2011tk0034.pdf

## A tanker listed, capsized and sank as seawater flowed in through air pipe of ballast tank

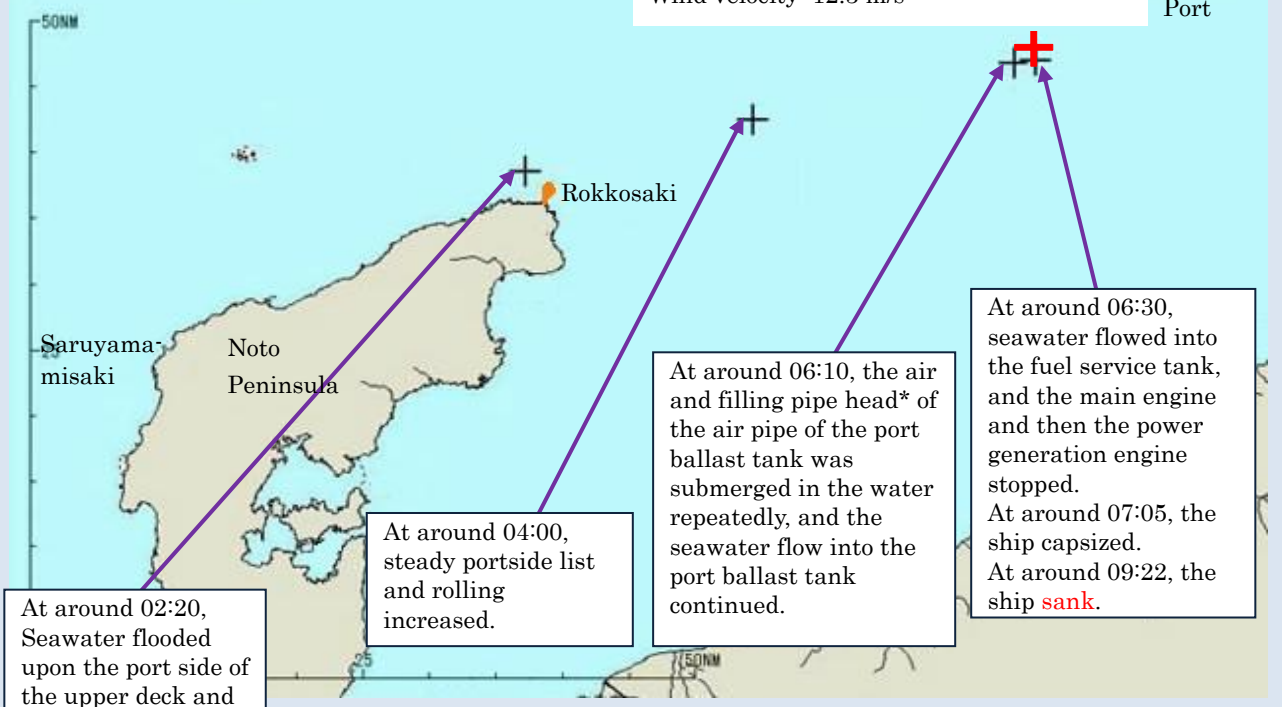
## Foundering of Chemical Tanker SEIYO

**Summary:** When this tanker, manned with a master and 4 crewmen and loaded with approx. 1,000 tons of vinyl acetate monomer, which had left an anchorage off the Oita Airport, Oita Prefecture and had passed off the Rokkosaki (Noto Peninsula), Suzu City, Ishikawa Prefecture, was heading east-northeast toward Akadomari Port (Sadogashima), Sado City, Niigata Prefecture on Jan. 9, 2011, she capsized and, at around 09:22, sank.

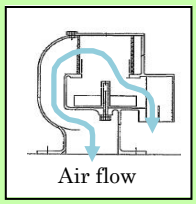
The chief engineer died and the master went missing.

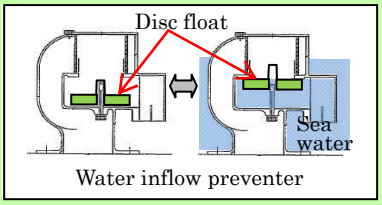
Gross tonnage: 499 tons
L x B x D: 64.8 x 10.0 x 4.5 (m)
Launched: December 2003

Weather & sea conditions when capsized (at around 07:00):
Wave height: 2.95 m; Wave cycle: 7.3 s;
Wave direction: 285°; Wind direction: 285°;
Wind velocity: 12.3 m/s




* The "air and filling pipe head of the air pipe" is an automatic closing device to block the inflow of waves, in which a disc float is designed to shut out seawater inflow as it rises up.



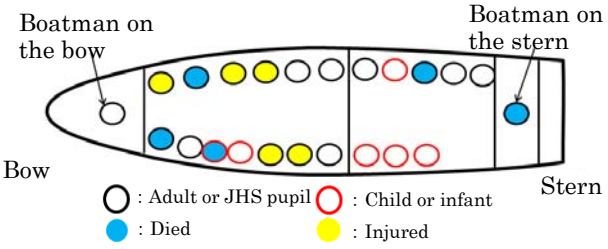

**Probable causes:** It is probable that this accident occurred as follows. When this ship was sailing off Saruyama-misaki toward Akadomari Port in a quartering sea from port side, the water inflow preventive function of the air and filling pipe head of the air pipe of the port ballast tank failed to function and allowed seawater to flood upon the port side of the deck and the expansion trunk and to continuously stay. The seawater that flowed into the ballast tank increased the list of the ship to port and caused to repeatedly submerge the air and filling pipe head of the air pipe. Flowed-in seawater from the air pipe into the port ballast tank continuously increased the port list to consequently turn over and sink the ship.

For details, please refer to the investigation report. (Published in Japanese on Dec. 21, 2012)
http://www.mlit.go.jp/jtsb/ship/rep-acci/2012/MA2012-12-1_2011tk0001.pdf

# A sightseeing boat on a river cruise ran aground and then capsized

## Capsizing of Passenger Boat TENRYU MARU No. 11

**Summary**: When cruising down the river Tenryugawa with 2 boatmen and 21 passengers aboard on August 17, 2011, this boat ran aground at around 14:17 on a rocky area on the left side of the bank of the Tenryugawa at Futamata, Tenryu Ward, Hamamatsu City, Shizuoka Prefecture, and was overturned, to take the life of four of the passengers and one of the boatmen and to injure five of the

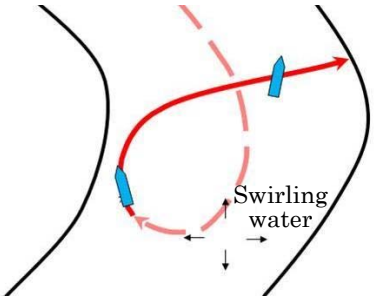



With a total of 21 passengers aboard, consisting of 14 adults including a boatman on the bow and a boatman the stern, 1 junior high school pupil, 5 children and 1 infant, this boat left the embarkation pier.


It is probable that when this boat approached the water area of this accident, the boatman on the stern started the outboard motor at upstream of the area and, at a central part of the rapids, took a course to run by the right-hand side of the swirling water without increasing the outboard motor speed. As a result, the bow was turned rightward by the swirling water so much as it was directed to face the right bank of the river.

It is somewhat likely that, with the addition of repelling waves from the right bank, the boat bow might have been turned upstream.

It is probable that, having been brought in an equilibrium between the pressure of strong current from upstream and the propelling force of the outboard motor, the boat moved obliquely toward a rocky area on the left bank side until the bottom of the starboard bow ran aground a rock, to incur port stern submergence and overturn.




**Probable causes**: It is probable that this accident occurred as follows. While cruising down along the route on the river Tenryugawa, this boat deviated her course from the center to the right-hand side of the swirling water which had arisen in the water area of this accident and was forcibly turned toward upstream direction. The boatman on the stern then increased the propeller speed by the throttle of the outboard motor, to bring about equilibrium between the pressure of strong steam from upstream and the propelling force of the outboard motor. In the equilibrium, the boat could not turn her bow upstream due to the strong downstream at the left bank side but was obliged to obliquely move toward a rocky area on the left bank side and to run aground the rock. Submergence started from her port stern and the boat was overturned.

For details, please refer to the investigation report. (Published in Japanese on Dec. 21, 2012)
http://www.mlit.go.jp/jtsb/ship/rep-acci/2012/MA2012-12-3_2011tk0026.pdf