

## Chapter 5 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

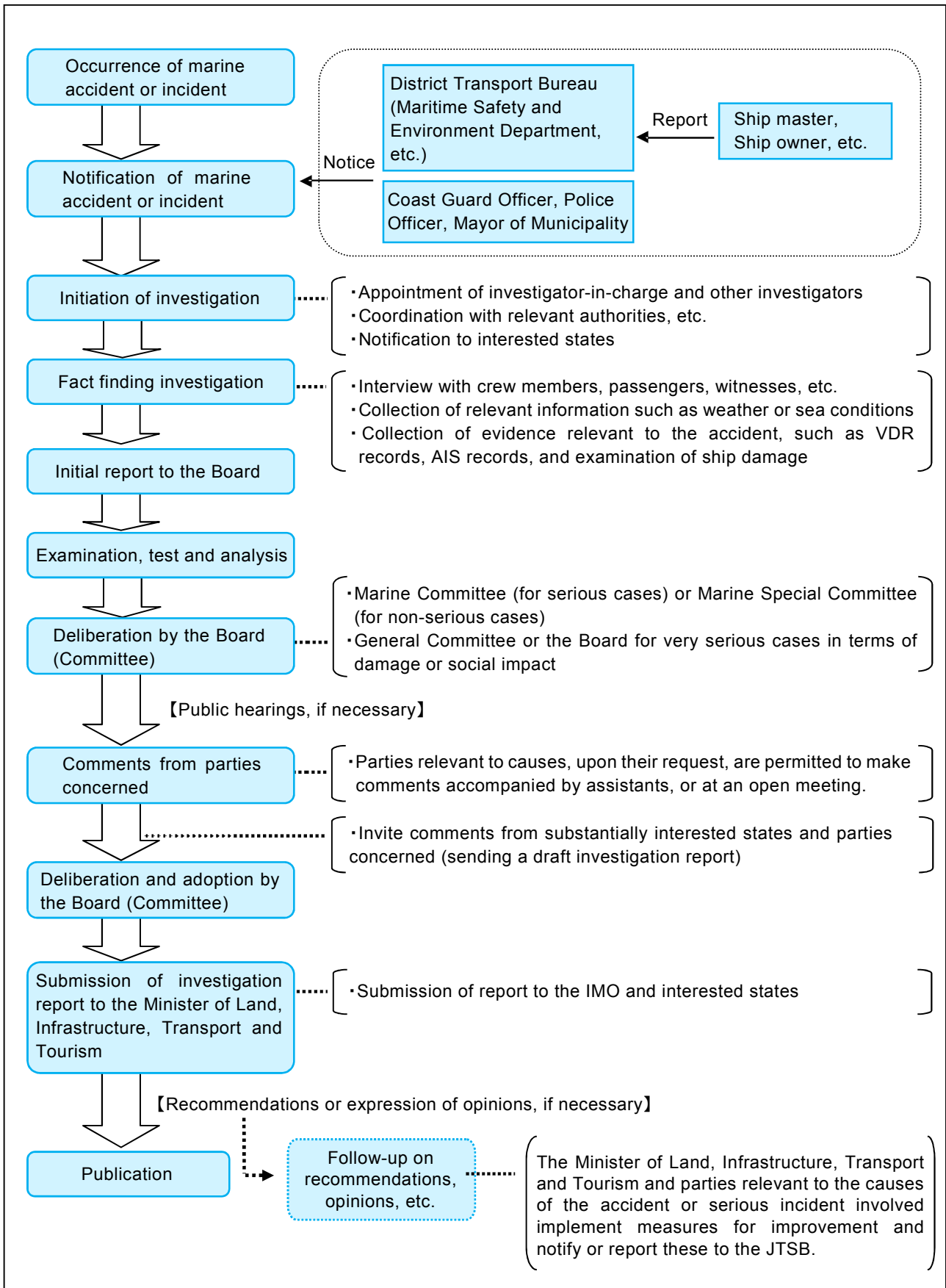
(A situation, prescribed by Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism, stipulated in item 2, paragraph 6, Article 2 of the Act for Establishment of the Japan Transport Safety Board)

- 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.

## &lt;Category of marine accident and incident&gt;

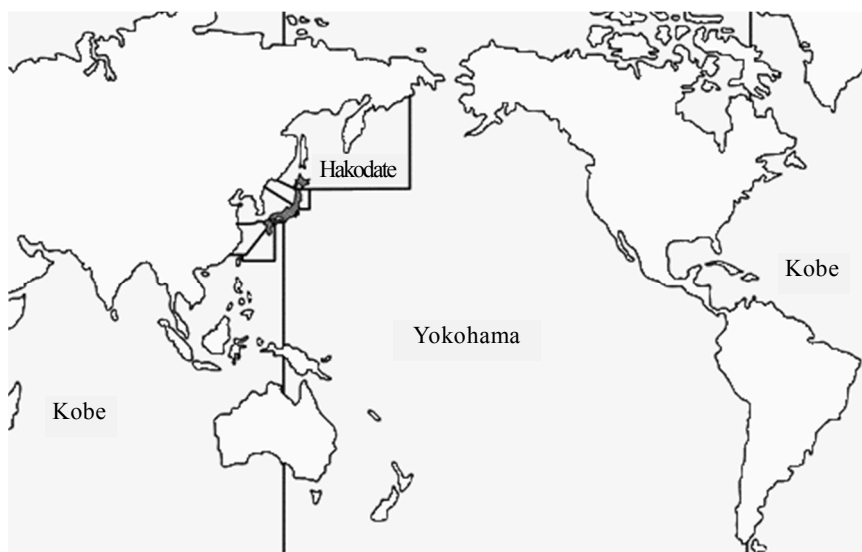
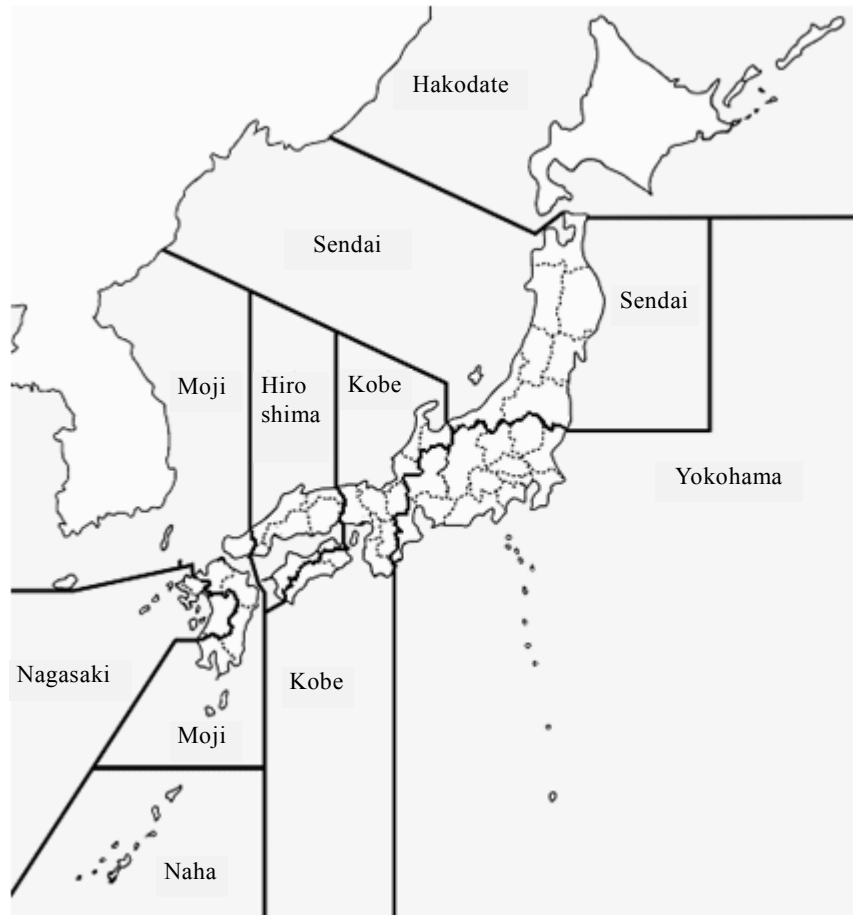
Marine accident and incident to be investigated		Type of marine accident and incident
Marine accident	Damage to ships or other facilities involved in ship operation	Collision, Grounding, Sinking, Flooding, Capsizing, Fire, Explosion, Missing, Damage to facilities
	Casualty related to ship structures, equipment or operations	Fatality, Fatality 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. However, particularly serious accidents are deliberated in the General Committee, and extremely serious accidents are deliberated in the Board.

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

(For the deliberation items of the Board and each Committee, refer to page 2 of the Appendixes)

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

## 5 Statistics of investigations of marine accidents and incidents (As of end of February 2018)

The JTSB carried out investigations of marine accidents and incidents in 2017 as follows:

578 accident investigations had been carried over from 2016, and 782 accident investigations were newly launched in 2017. 825 investigation reports were published in 2017, and thereby 534 accident investigations were carried over to 2018.

70 incident investigations had been carried over from 2016, and 140 incident investigations were newly launched in 2017. 122 investigation reports were published in 2017, and thereby 88 incident investigations were carried over to 2018.

### Investigations of marine accidents and incidents in 2017

Category	Carried over from 2016	Launched in 2017	Not applicable	Transferred to Tokyo Office	Total	(Cases)					
						Publication of investigation report	(Recommendations)	(Safety recommendations)	(Opinions)	Carried over to 2018	(Interim report)
Marine accident	578	782	△1	0	1,359	825	(1)	(2)	(0)	534	(0)
Tokyo Office (Serious cases)	17	12	△1	0	28	15	(1)	(2)		13	
Regional Offices (Non-serious cases)	561	770	0	0	1,331	810				521	
Marine incident	70	140	0	0	210	122	(0)	(0)	(0)	88	(0)
Tokyo Office (Serious cases)	0	1	0	0	1	0				1	
Regional Offices (Non-serious cases)	70	139	0	0	209	122				87	
Total	648	922	△1	0	1,569	947	(1)	(2)	(0)	622	(0)

Note 1. The figures for “Launched in 2017” includes cases which occurred in 2016 or earlier, and which the JTSB was notified of in 2016 as subjects of investigation.

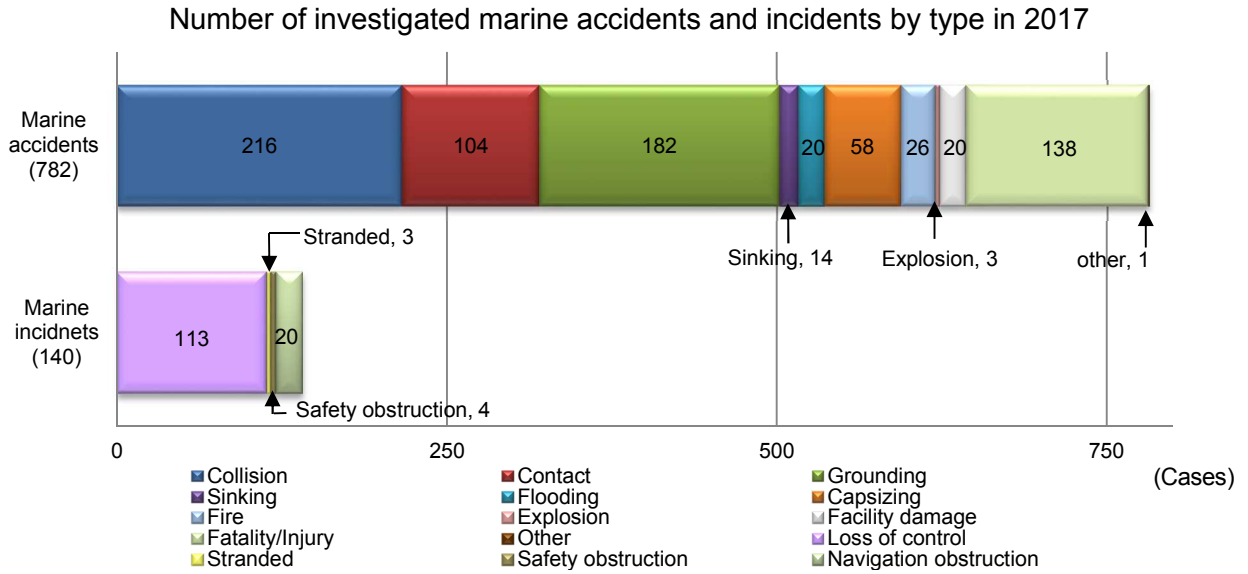
Note 2: The column “Not applicable” shows the number of cases which did not come under the category of accident or incident as defined in Article 2 of the Act for Establishment of the Japan Transport Safety Board.

Note 3: 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 2017 (As of end of February 2018)

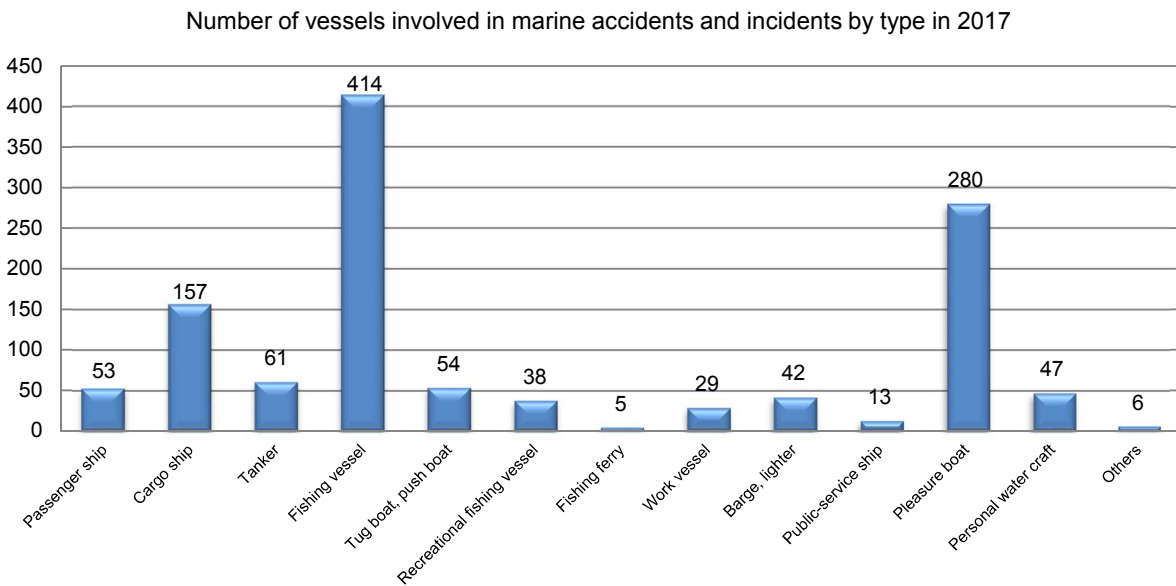
### (1) Types of accidents and incidents

The breakdown of the 922 investigations launched in 2017 by type of accidents and incidents is as follows: The marine accidents included 216 cases of collision, 182 cases of grounding, 138 cases of fatality/injury (not involved in other types of accidents), and 104 cases of contact. The marine incidents included 113 cases of loss of control, 20 cases of navigation obstruction, four cases of safety obstruction, and three cases of stranded. The objects of contact were breakwaters in 28 cases, quays in 16 cases, and piers in 12 cases.



(2) Types of vessels

The number of vessels involved in marine accidents and incidents was 1,199. By type of vessel, they included 414 fishing vessels, 280 pleasure boats, 157 cargo ships, 61 tanker, 54 tug boat and push boat.



The number of foreign-registered vessels involved in marine accidents and incidents was 58, and they were classified by accident type as follows: 27 vessels in collision, 14 vessels in contact and seven vessels in grounding. As for the flag of vessels, 17 vessels were registered in Panama, five vessels in South Korea, five vessels in Belize, three vessels in Hong Kong.

## Number of foreign-registered vessels by flag

(Vessels)

Panama	17	Hong Kong	3	Marshall Islands	2
South Korea	5	Cyprus	2	Taiwan	2
Belize	5	Philippines	2	Others	20

## (3) Number of casualties

The number of casualties was 471, consisting of 84 deaths, 26 missing persons, and 361 injured persons. By type of vessel, 132 persons in fishing vessels and 126 persons in pleasure boats. By type of accident, 163 persons in fatality/injury, 126 persons in collision, 115 persons in contact, 28 persons in capsizing, and 23 persons in grounding.

With regard to the number of persons dead or missing, 59 persons were involved in fishing vessel accidents, 23 persons in pleasure-boat accidents, indicating dead or missing cases occurred frequently in fishing vessels.

## Number of casualties (marine accident)

(Persons)

2017										
Vessel type	Dead			Missing			Injured			Total
	Crew	Passengers	Others	Crew	Passengers	Others	Crew	Passengers	Others	
Passenger ship	3	0	0	1	0	0	3	49	3	59
Cargo ship	3	0	1	1	0	0	14	0	0	19
Tanker	0	0	0	0	0	0	2	0	0	2
Fishing vessel	37	0	0	16	0	0	77	0	2	132
Tug boat, push boat	8	0	0	1	0	0	6	0	0	15
Recreational fishing vessel	0	0	0	0	0	0	5	30	0	35
Fishing ferry	0	2	0	0	0	0	0	0	0	2
Work vessel	1	0	0	0	0	0	3	0	2	6
Barge, lighter	0	0	2	0	0	0	1	0	0	3
Public-service ship	9	0	0	0	0	0	9	0	5	23
Pleasure boat	9	0	8	5	0	1	30	0	73	126
Personal water craft	1	0	0	1	0	0	12	0	33	47
Others	0	0	0	0	0	0	1	0	1	2
Total	71	2	11	25	0	1	163	79	119	471
	84			26			361			

※ The figures above include accidents under investigation and therefore are subject to change depending on the course of investigations and deliberations.



## 7 Summaries of serious marine accidents and incidents which occurred in 2017

The serious marine accidents which occurred in 2017 are summarized as follows: The summaries are based on information available at the initial stage of the investigations and therefore are subject to change depending on the course of investigations and deliberations.

(Marine accidents)

1	Date and location		Vessel type and name, accident type	
	January 19, 2017 Port of Felixstowe, United Kingdom		Container ship MANHATTAN BRIDGE Explosion of the auxiliary boiler	
	Summary	While the vessel was berthing with a master, 25 crew members and a pilot onboard at the port of Felixstowe, United Kingdom of Great Britain and Northern Ireland, an explosion occurred in the furnace of the auxiliary boiler. The duty oiler died, the second engineer suffered injuries and the burner unit of the auxiliary boiler damaged.		
2	Date and location		Vessel type and name, accident type	
	January 30, 2017 Tomakomai Port, Tomakomai city, Hokkaido Prefecture		Cargo ship SWIFTNES (Vessel A) Work boat FUJI MARU (Boat B) Capsizing	
	Summary	Boat B, with its skipper and a crew member onboard, was assisting Vessel A's berthing at Tomakomai Port in Tomakomai City, Hokkaido Prefecture. During the work, Boat B was pulled and capsized because a mooring rope extended from the aft of Vessel A got tangled with the propeller of Vessel A. In the accident, the skipper died and a crew member suffered severe injuries including a fracture in the eighth rib. Boat B was totally lost. On Ship A, the propeller was damaged.		
3	Date and location		Vessel type and name, accident type	
	February 11, 2017 Southwest shore of Suwanose Island, Kagoshima Prefecture		Chemical tanker SAGAN Grounding	
	Summary	While sailing toward South Korea, the vessel began to drift due to engine failure and grounded on the southwest shore of Suwanose Island, Kagoshima Prefecture.		
4	Date and location		Vessel type and name, accident type	
	April 24, 2017 Hakozaki No. 16 Pier, Higashi Ward, Fukuoka City, Hakata Port, Fukuoka Prefecture		Cargo ship TAI YUAN (Belize) Fire	
	Summary	The vessel, with scrap loaded, caught fire and sank while being moored.		
5	Date and location		Vessel type and name, accident type	
	May 14, 2017 Breakwater off Kuroshima Port, Kuroshima Town, Sasebo City, Nagasaki Prefecture		Water taxi SAKURA Contact with breakwater	
	Summary	With passengers getting onboard at Kuroshima, an island in Sasebo City, the vessel collided with a breakwater while sailing to Ainoura Port in the city. In the accident, seven people were injured.		
6	Date and location		Vessel type and name, accident type	
	June 17, 2017 Off southeast coast of Irozaki, Shizuoka Prefecture		Container ship ACX CRYSTAL (Vessel A, Philippines) U.S. naval ship FITZGERALD (Vessel B) Collision	
	Summary	While both Vessel A and Vessel B were underway, they collided with each other off the southeast coast of Irozaki, Shizuoka Prefecture. In the accident, seven crew members onboard Vessel B died while three were injured.		
7	Date and location		Vessel type and name, accident type	
	July 26, 2017 East approaching light beacon E2 at Kobe Airport, Hyogo Prefecture		Passenger ship SORA Contact with lighthouse	
	Summary	The vessel, while sailing from Kansai International Airport to Kobe Airport, collided with the east approaching beacon E2 at Kobe Airport. In the accident, 15 people were injured.		

8	Date and location		Vessel type and name, accident type	
	August 2, 2017 Between Hakata Port, Fukuoka Prefecture, and Shibushi Port, Kagoshima Prefecture		Container ship SINOKOR AKITA Missing of crew member	
	Summary	While the vessel was sailing from Hakata Port to Shibushi Port, a crew member (Philippine nationality) went missing.		
9	Date and location		Vessel type and name, accident type	
	August 22, 2017 Off northern coast of Hirado Island, Nagasaki Prefecture		Towboat No. 6 AOI MARU (Vessel A) Barge No. 8 AOI MARU (Vessel B) Sinking	
	Summary	Both Vessel A and Vessel B sank 4km off the northern coast of Hirado Island after sending distress signals at sea		
10	Date and location		Vessel type and name, accident type	
	October 23, 2017 Toyama District, Fushiki-Toyama Port, Toyama Prefecture		Cargo ship REAL Grounding	
	Summary	The vessel ran onto wave-dissipating blocks in Toyama District at Fushiki-Toyama Port		

(Marine incidents)

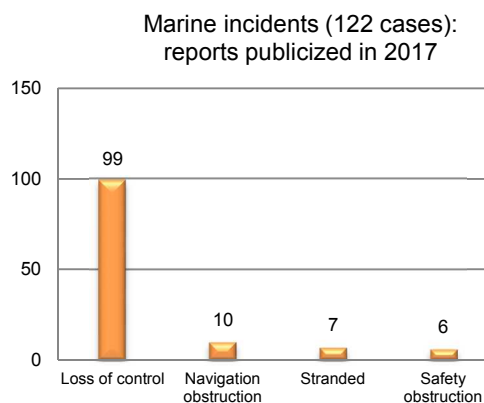
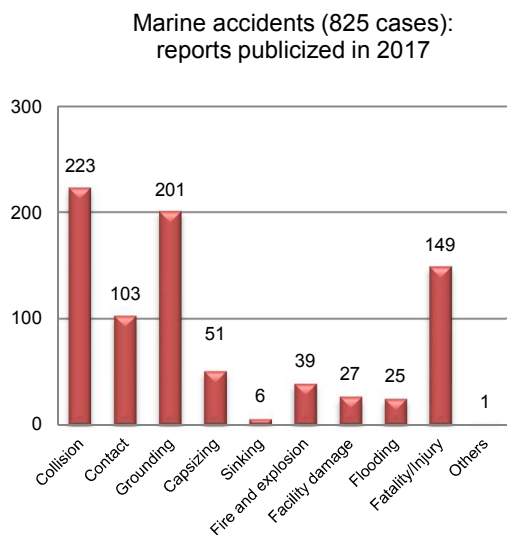
1	Date and location		Vessel type and name, incident type	
	January 11, 2017 Off the north of Oshima Island, Munakata City, Fukuoka Prefecture (approximately 33°56.3'N, 130°25.3'E)		Cargo ship TONG DA Loss of control (listing)	
	Summary	While the vessel was proceeding east-northeast in Genkai-nada, with a master and 13 other crew members onboard, her hull listed to port and she was intentionally run aground. The vessel had seawater damage to her engine, cargo, etc.		

### 8 Publication of investigation reports

The number of investigation reports of marine accidents and incidents published in 2017 was 947, consisting of 825 marine accidents (among them, 15 were serious) and 122 marine incidents.

Breaking them down by type, the marine accidents included 223 cases of collision, 201 cases of grounding, 149 cases of fatality/injury, and 103 cases of contact. The marine incidents included 99 cases of losses of control, (91 cases of navigational equipment failure, seven cases of out-of-fuel, and one case of listing), 10 cases of navigation obstruction, seven cases of stranded, and six cases of safety obstruction.

As for the objects of contact, 26 were breakwaters, 13 were piers, and 12 were quays.



The number of vessels involved in marine accidents and incidents was 1,244. Breaking them down by type, the marine accidents involved 362 fishing vessels, 249 pleasure boats, 155 cargo ships, and 69 personal water craft. The marine incidents involved 48 fishing vessels, 43 pleasure boats, 11 cargo ships, and five passenger ships.

Number of vessels by type involved in marine accidents and incidents for which reports were publicized in 2017

Classification	(Vessel)													Total
	Passenger ship	Cargo ship	Tanker	Fishing vessel	Tug boat, push boat	Recreational fishing vessel	Fishing ferry	Work vessel	Barge, lighter	Public-service ship	Pleasure boat	Personal water craft	Others	
Marine accident	50	155	50	362	55	32	6	33	42	13	249	69	4	1,120
Marine incident	5	11	4	48	3	1	0	5	1	0	43	3	0	124
Total	55	166	54	410	58	33	6	38	43	13	292	72	4	1,244
%	4.4	13.3	4.3	33.0	4.7	2.6	0.5	3.1	3.5	1.0	23.5	5.8	0.3	100.0


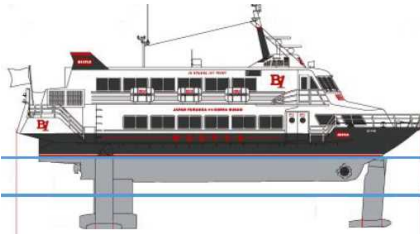
The marine accidents and serious incidents which occurred in 2017 are summarized as follows:

## Marine serious accident reports published in 2017

1	Date of Publication	Date and location	Vessel type and name, accident type
	February 23, 2017	October 17, 2015 East off Mutsureshima Island, Shimonoseki City, Yamaguchi Prefecture (Kanmon Passage, Kanmon Port)	Chemical Tanker SULPHUR GARLAND (Vessel A) Oil Tanker WAKOMARU NO. 2 (Vessel B) Collision
	Summary	<p>While Vessel A was proceeding north-northeast along Kanmon Passage of Kanmon Port toward Zhenjiang Port, People’s Republic of China, with a master and a second officer and other 15 crew members onboard, and while Vessel B was proceeding south-southeast along the same passage toward Oita Port, Oita Prefecture, with a master and a second officer and other eight crew members onboard, the two vessels collided near the West Entrance of Kanmon Passage, east of Mutureshima Island, Shimonoseki City, Yamaguchi Prefecture. The bow of Vessel A was crushed, and the aft starboard side shell plating of Vessel B was holed and dented, which resulted in an oil spill. There were no fatalities or injuries on either vessel.</p>	
	Probable Causes	<p>It is probable that, Vessel A and Vessel B collided during nighttime, at off the eastern coast of Mutsureshima Island, because, while Vessel A was proceeding north-northwest through Kanmon Passage toward the West Entrance of the passage, and Vessel B was proceeding south-southeast toward the West Entrance of Kanmon Passage having medium-sized purse seine fishing vessel sailing in the same direction in her starboard bow, Vessel B came close to Medium-sized purse seine fishing vessel and turned to port to an entered the left part side of Kanmon Passage, while Vessel A maintained course and speed.</p> <p>It is somewhat likely that the reason that Vessel B came close to Medium-sized purse seine fishing vessel, turned to port and entered the left part of Kanmon Passage was that, after observing Vessel A proceeding north through Kanmon Passage and Medium-sized purse seine fishing vessel proceeding Southeast toward the West Entrance of the passage, he did not maintain proper lookout om Vessel A and Medium-sized purse seine fishing vessel, and therefore, he was unable to anticipate that Vessel B would be in a situation crossing ahead of Vessel A, which was proceeding north through the Kanmon Passage, and at that time, sailing the port side of Medium-sized purse seine fishing vessel, and further, he made Vessel B’s speed almost same with the speed of Medium-sized purse seine fishing vessel which was sailing in the starboard ahead that made Vessel B unable to take starboard turn and Navigation Vessel B’s second officer became confused.</p> <p>It is somewhat likely that the fact that Navigation Vessel B’s second officer had never experience bride watch without master’s conning and was handling lookout, steering, and VHF radio telephone communication by his own in Kanmon Passage, contributed to Navigation Vessel B’s second officer’s confusion.</p> <p>It is probable that the reason that Vessel A maintained course and speed was that second officer thought that information</p> <div data-bbox="671 1462 1417 1648" data-label="Image"> </div> <p>provided by the Kanmon Kaikyo Vessel Traffic Service Center to keep to the starboard side was an instruction, and that he thought that WAKOMARU NO. 2 would eventually turn to starboard and pass port to port with Vessel A navigating the starboard side of the passage.</p>	
Report	<a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2015tk0008e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2015tk0008e.pdf</a> Refer to case studies (P.118).		
2	Date of Publication	Date and location	Vessel type and name, accident type
	March 30, 2017	February 19, 2016 East off Hime Shima, Himeshima Village, Oita Prefecture	Container ship SINOKOR INCHEON (Vessel A, Republic of Korea) Fishing vessel TOSHIMARU (Vessel B) Collision

	Summary	<p>While Vessel A was proceeding east toward Mishima-Kawanoe Port, Shikokuchuo City, Ehime Prefecture, with a master and a second officer and other 15 crew members onboard, and while Vessel B was proceeding north-northwest toward Mitajiri District of Mitajiri-Nakanoseki Port, Hofu City, Yamaguchi Prefecture, with a skipper onboard, the two vessels collided off to the east of Hime Shima, Himeshima Village, Oita Prefecture. Vessel B received a hole and other damage to her port -side center shell plating and capsized, becoming a total loss. Her skipper was killed. Vessel A had abrasions on her bulbous bow.</p>	
	Probable Causes	<p>It is probable that, off the eastern coast of Hime Shima at night, while Vessel A was proceeding east and Vessel B was proceeding north-northwest, the Vessel A and Vessel B collided because second officer of Vessel A was not keeping lookout on Vessel B because he thought there was no danger of a collision with Vessel B, and because the skipper of Vessel B did not notice of Vessel A until Vessel A had come close to Vessel B.</p> <p>It is probable that second officer of Vessel A thought that there was no danger of colliding with Vessel B because, when he extended the radar's true speed vectors, he found that the tip of Vessel B's vector reached a point behind the tip of Vessel A's vector .</p> <p>It is somewhat likely that the skipper of Vessel B did not notice Vessel A until Vessel A had come close to Vessel B because the skipper of Vessel B had accumulated fatigue; however, it was not possible to determine the situation of lookout as the skipper of Vessel B was killed in this accident.</p>	
	Report	<p><a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0002e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0002e.pdf</a></p>	
3	Date of Publication	Date and location	Vessel type and name, accident type
	April 27, 2017	September 23, 2016 Off west-southwest coast of Okinoshima, Wakayama City, Wakayama Prefecture	Recreational fishing vessel TSURIBITOYA XI Injuries to fishing passengers
	Summary	The boat, with its skipper, a crew member and 23 fishing passengers onboard, while sailing south in Tomogashima Channel, moved up and down, injuring three fishing passengers.	
	Probable Causes	<p>It is probable that the accident occurred as the vessel, while moving south in Tomogashima Channel, sailed over a high wave of around 1.5m at about 15kn and so moved up and down, throwing three fishing passengers on chairs in the front section of the deck up from them and down onto the chairs, etc.</p>	
	Report	<p><a href="http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-4-1_2016tk0014.pdf">http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-4-1_2016tk0014.pdf</a></p>	
4	Date of Publication	Date and location	Vessel type and name, accident type
	June 29, 2017	May 10, 2016 Omaezaki Port, Shizuoka Prefecture	Cargo ship CENTURY SHINE (Panama) Grounding
	Summary	<p>The vessel, with its master and 14 crew members onboard, ran on a shallow place while sailing south-southwest in Omaezaki Port, Shizuoka Prefecture. There were no casualties while the vessel sustained scratching damage to the outer panel of its bottom.</p>	

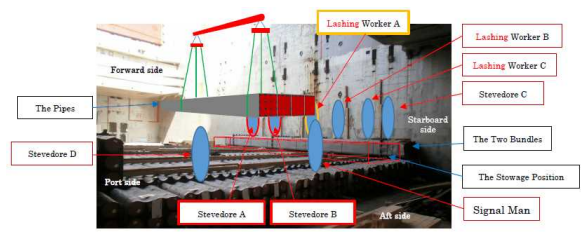


	<p><b>Probable Causes</b></p>	<p>It is probable that the accident occurred because the master of the ship, with no knowledge about the location of the shallow place in question prior to the vessel's entry into Omaezaki Port, had the vessel sail on the side of the breakwater light beacon C and run on the shallow place.</p> <p>It is probable that the master of the vessel had no knowledge about the location of the shallow place as information about it was unavailable during advance studies on waterways using a nautical chart and other means.</p> <p>It is probable that information about the location of the shallow place was unavailable on the nautical chart and other means because the administration office concerned had not conducted water depth investigations in Omaezaki Port for a long time and so did not have information about the depth of water that should be given to the 3rd Regional Coast Guard Headquarters.</p> <p>It is probable that the administration office in question had not conducted water depth investigation in Omaezaki Port because no major changes in the depth of water had been recognized until 2000 and due to, among other reasons, the absence of a large river flowing into the port.</p> <p>It is probable that the vessel took a course on the side of the breakwater light beacon C as the master steered the ship to starboard in a water area before the central wharf.</p> 	
	<p><b>Report</b></p>	<p><a href="http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-6-1_2016tk0007.pdf">http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-6-1_2016tk0007.pdf</a></p>	
<p>5</p>	<p><b>Date of Publication</b></p> <p>July 27, 2017</p> <p><b>Summary</b></p> <p><b>Probable Causes</b></p> <p><b>Report</b></p>	<p><b>Date and location</b></p> <p>January 8, 2016 Northwest off Kami Shima, Tsushima City, Nagasaki Prefecture</p> <p>The vessel with a master, a chief officer and five crewmembers onboard and carrying 184 passengers, collided with a marine life when she was proceeding off the west of Kami Shima, Tsushima City, Nagasaki Prefecture toward the Port of Hakata from the Port of Busan at 40 knots, with lifting the hull of the ship above sea level by lift force of hydrofoil wings. Three of the passengers were seriously injured by a lumbar vertebra compressed fracture etc., and four of the passengers and two of the cabin crews suffered minor injuries. Two shock absorbers on the bow stretched out, and then the vessel returned to the Port of Busan in hullborne mode.</p> <p>Concerning the accident, it is probable that the vessel collided with a marine life in spite of a rudder turn since the marine life was discovered in the proximity during the maneuver at a cruising speed (40 km)</p> <p>It is somewhat likely that discovering the marine life in the proximity is associated with the master not directing enhancement of lookout by four persons of a master, a chief engineer, a chief officer, and a first engineer, suspension of inboard sales by cart, seating of cabin crews, and implementation of airing of seat belt wearing to passengers, in addition to decelerated maneuver at 36 – 38 kn (cetacean-cautious maneuver) as well as navigating without enhancing lookout.</p> <p>It is probable that the reason why the master did not direct cetacean-cautious maneuver was that JR Kyushu Jet Ferry Inc. had not established operating guidelines of cetacean-cautious maneuver in the safety management rules and was not thoroughly disseminating them, had informed the allowable delay time associated with implementation of decelerated maneuver, and did not have a grasp of the implementation status of cetacean-cautious maneuver.</p>	<p><b>Vessel type and name, accident type</b></p> <p>Passenger ship BEETLE Contact with marine creature</p> 
		<p><a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0005e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0005e.pdf</a></p>	

6	Date of Publication	Date and location	Vessel type and name, accident type
	August 31, 2017	May 16, 2016 Off the west of Heigun-tou, Yamaguchi Prefecture	Cargo ship HUNAN (Singapore) Missing of a crew member
	Summary	When the ship, with a master, 22 crewmembers and a pilot on board, was moving northeast on the Heigun Channel off the west of Heigun-tou, Yanai City, Yamaguchi Prefecture toward the Port of Fukuyama, Hiroshima Prefecture, an able seaman fell off an accommodation ladder and although he hanged in midair with a lifeline of “a harness-type safety belt with an expansion-type life jacket” (safety belt) he wore, slip under the water and went missing.	
	Probable Causes	<p>It is probable that the accident occurred by able seaman who was working on lifting up and stowing a pilot ladder with three crews falling off an accommodation ladder and hanging in midair with a lifeline of the safety belt and going by the board as his body separated from the safety belt when he raised both arms in an attempt to grab a rope or the like when the ship was moving northeast on the Heigun Channel.</p> <p>It is probable that the separation of the body of able seaman from the safety belt stems from his failure to have two thigh buckles of the safety belt fastened.</p> <p>It is probable that the reason why he raised both arms in an attempt to grab the rope or the like was because he was not able to the rope or the like as he was in a state of being dragged on the sea surface though he tried to grab one with his left hand.</p> <p>It is probable that not taking measures to ease the situation of able seaman being dragged on the sea surface such as decelerating or stopping the ship was involved in able seaman remaining in that situation.</p> <p>It is somewhat likely that the boatswain and others not having held an advance meeting with regard to the contents such as:</p> <p>(1) Necessity of doing the lifting up and stowing work</p> <p>(2) Implementation of safety measures such as confirmation of adequate wearing of a safe protector in connection with engaging in the lifting up and stowing work with the responsible official for work in doing the work of lifting up and stowing the pilot ladder was involved in the occurrence of the accident.</p>	
Report	<a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0004e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0004e.pdf</a>		
7	Date of Publication	Date and location	Vessel type and name, accident type
	August 31, 2017	May 21, 2016 Unknown (Off the south of Cape Ashizuri, Tosashimizu City, Kochi Prefecture)	Chemical tanker FINE CHEMI (Republic of Korea) Missing of a crew member
	Summary	While the tanker was proceeding east toward Chiba Port, Chiba Prefecture, off the south of Cape Ashizuri, with a master and other 11 crew members onboard, the chief engineer went missing.	
	Probable Causes	<p>It is probable that the accident occurred when, as the tanker was proceeding east toward Chiba Port at night off the south of Ashizuri, the chief engineer fell into the sea after leaving the access opening that leads from the engine room to the exposed part of the tanker.</p>	
Report	<a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0006e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0006e.pdf</a>		
8	Date of Publication	Date and location	Vessel type and name, accident type
	September 28, 2017	January 10, 2016 Near the Port of Sakata, Sakata City, Yamagata Prefecture	Cargo ship CITY (Panama) Grounding



	<p><b>Summary</b></p>	<p>When the ship, with a master and 17 crewmembers on board, was riding a single-anchor near the Port of Sakata in Sakata City, Yamagata Prefecture, a wind velocity increased and though she hove up anchor and attempted to standing out to sea, she was driven by a pressure, and stranded on a tetrapod near the Port of Sakata.</p> <p>Though the ship swamped to the position of the bridge of her hull and became total loss, there was no fatality.</p>	
	<p><b>Probable Causes</b></p>	<p>It is probable that the accident occurred because weather and sea information was not appropriately obtained on the ship during anchorage in the waters off the Port of Sakata under the condition of anticipated a wind with a maximum speed of 15 m/s and about 2.8-meter-high waves and the master did not have a grasp of the seaworthiness of the ship, she missed the timing for evacuating to a safe water area, and although she heaved up anchor and tried to head out to sea, the speed necessary to keep the course and the ship became unable to maneuver, and ran on a wave-absorbing blocks.</p> <p>It is probable that the reason why the master did not appropriately obtain weather and sea information because the master thought there was no sign of worsening weather seeing Asian Pacific surface analysis charts and coastal wave analysis charts.</p> <p>It is probable that the reason why the master did not have a grasp of the seaworthiness of the ship was because the safety management manual of Trans Ocean Shipping Co., Ltd. did not describe about seaworthiness such as limiting clutch force and limit wind speed in a ballasted condition and a limit of ship maneuvering for course keeping considering a wind pressure and output power of the main engine in the said condition.</p>	
	<p><b>Report</b></p>	<p><a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0001e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0001e.pdf</a></p>	
<p>9</p>	<p><b>Date of Publication</b></p>	<p><b>Date and location</b></p>	<p><b>Vessel type and name, accident type</b></p>
	<p>September 28, 2017</p>	<p>October 30, 2016 Shinko East Quay T Wharf, Kobe Section, Hanshin Port</p>	<p>Cargo ship BBC ASIA (Antigua and Barbuda) Death and injury of workers</p>
	<p><b>Summary</b></p>	<p>The accident occurred on the ship when, during work to load pipes with a crane at Shinko East Quay T Wharf, Kobe Section, Hanshin Port, three workers who were working in a cargo hold were caught between pipes being hoisted by the crane and a side wall.</p> <p>Two of the workers were killed and one was seriously injured.</p>	
	<p><b>Probable Causes</b></p>	<p>It is probable that the accident occurred when, as the ship was being loaded with cargo starboard-side alongside at Shinko East Quay T Wharf, Kobe Section, Hanshin Port, “stainless steel pipes bundled in sets of nine” (the Pipes), which had been hoisted and then stopped by the No. 1 crane, swung to the starboard side, and as a result two stevedores, and one lashing worker, who had been standing by and doing other activities on top of the cargoes that had been stowed on the starboard side, were caught between the Pipes and starboard wall.</p> <p>It is probable that the Pipes, which had been hoisted and then stopped by the No. 1 crane, swung to the starboard side because—under conditions whereby, at the time of the accident, the underside of the fender on the vessel’s starboard midship hull was caught on the tops of the wharf’s fenders and the vessel’s starboard inclination was arrested because, among other reasons, the height of tide had fallen compared to that at the time of docking and the vessel’s draft had increased—the underside of the hull’s fender came off the tops of the wharf’s fenders when the Pipes were hoisted by the No. 1 crane and then stopped “at a position at which the Pipes’ starboard side was approximately 3 meters from the starboard wall and bottom was approximately 2.75 meters above the inner bottom plating”(the Stop Position), which caused the vessel’s hull to roll and she inclined to the starboard side.</p>	






		It is probable that workers were standing by and doing other activities on top of the cargoes that had been stowed on the starboard side at the time of the accident because, in addition to not being prohibited from standing on top of the cargoes for reasons that included over the cargoes not being in the handling area of the Pipes, they could not predict that the Pipes would swing over the cargoes from the Stop Position, as theretofore hoisted cargo had not swing greatly when the crane operation was stopped.	
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0015e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0015e.pdf</a> Refer to case studies (P.119).	
10	Date of Publication	Date and location	Vessel type and name, accident type
	September 28, 2017	April 22, 2016 Port of Bordeaux, French Republic	Chemical tanker BUCCOO REEF Fatality of a crew member
	Summary	While the Vessel was docking, with a master, 21 crew members and a pilot onboard, assisted by tugboats at the port of Bordeaux, French Republic, an ordinary seaman who was letting out the messenger rope of a tug line was struck on his body by a structural part of the bow and fell overboard and died on April 23.	
	Probable Causes	<p>It is probable that the accident occurred when, as BUCCOO REEF (Vessel A) was docking in an approximately 2.6-knot upstream current in Bordeaux Port, French Republic, in a state in which a tug line from RM PAULLAC (Vessel B) had been removed from a bollard on Vessel A's bow's port side during release of the end of the tug line, and as the ordinary seaman in charge of letting out the tug line (Ordinary Seaman A) was letting out the messenger rope of the tug line with it coiled once around the bollard, Ordinary Seaman A fell to the deck and was dragged until his body struck a structure on the foredeck because the messenger rope's exit speed increased, and then his leg had become entangled in the messenger rope. The circumstances by which Ordinary Seaman A's leg became entangled in the messenger rope could not be determined as there were no witnesses to those circumstances.</p> <p>It is probable that the increase in the messenger rope's exit speed was caused by an increase in the separation speed between Vessel A's bow end and Vessel B that occurred when Vessel A gathered sternway while continuing her starboard turn.</p> <p>It is somewhat likely that chief officer of Vessel A gave Ordinary Seaman A no instructions to keep distance from the messenger rope such as holding the end of the messenger rope in case unexpected tension occur, when having Ordinary Seaman A hold the messenger rope in order to avoid it becoming entangled with the propeller, and that this contributed to the accident.</p>	
	Report	<a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0009e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0009e.pdf</a>	
11	Date of Publication	Date and location	Vessel type and name, accident type
	October 26, 2017	September 9, 2016 Off to the south of Gobo City, Wakayama Prefecture	Oil/Chemical tanker EIWA MARU 3 Explosion
	Summary	<p>While the tanker was sailing southeast off to the south of Gobo City, Wakayama Prefecture for Yokkaichi Port, Yokkaichi City, Mie Prefecture, with a master and other nine crew members onboard, after unloading base oil, which is a base material of lubricants and other products, at Wakayama Shimotsu Port, Wakayama Prefecture, and with her crew cleaning her cargo tanks, an explosion occurred in her cargo tanks.</p> <p>One crew member of the tanker was killed and two crew members suffered serious injuries. The tops and bulkheads of the vessel's No. 2 and No. 3 cargo tanks were bent.</p>	



	<p><b>Probable Causes</b></p>	<p>It is probable that the accident occurred when, as the Vessel was proceeding southeast off to the south of Gobo City while conducting cleaning of the cargo tanks at night after unloading base oil in her No. 1 and No. 3 cargo tanks at Wakayama Shimotsu Port and leaving port, explosions occurred when, under conditions in which the tanker began cleaning the cargo tanks using seawater with Butterworth cleaning machines and the cargo pumps and, in the course of the cleaning, base oil that remained in No. 2 cargo pump, bottoms of the No. 1 and No. 3 cargo tanks, and cargo-handling piping for the tanks was sprayed in the No. 3 cargo tank and became airborne up to the starboard No. 3 cargo tank ventilation duct, base oil in the duct and starboard No. 3 cargo tank vaporized and ignited because the chief engineer conducted welding on the starboard No. 3 cargo tank ventilation duct.</p> <p>It is somewhat likely that the chief engineer conducted the welding of the starboard No. 3 cargo tank ventilation duct as cleaning work was being done in tanks that had carried base oil with a high flash point because he thought there was no danger because the welded area was small and welding ted quickly. It is probable that not flushing the cargo tanks, etc., prior to cleaning of the cargo tanks contributed to the circumstances in which base oil was sprayed in the No. 3 cargo tank and became airborne up to the starboard No. 3 cargo tank ventilation duct.</p> <div style="text-align: center;"> <p>(Looking forward from the back of starboard No. 3 tank) (Looking forward from the front of starboard No. 3 tank)</p> <p>Note: The (1) to (5) appearing in the photos correspond to items 2.3 (1) to (5).</p> </div> <div style="text-align: center;"> </div>	
	<p><b>Report</b></p>	<p><a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0013e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0013e.pdf</a></p>	
<p>12</p>	<p><b>Date of Publication</b></p> <p>October 26, 2017</p> <p><b>Summary</b></p> <p><b>Probable Causes</b></p>	<p><b>Date and location</b></p> <p>December 30, 2016 Near southwest coast of Kuwashima, Amakusa City, Kumamoto Prefecture</p> <p>The boat, with its skipper and 11 fishing passengers onboard, left Ushibuka Port in Amakusa City to visit fishing spots. While two passengers were getting off the boat to land on a rocky stretch near the southwest coast of the Kuwashima island, one of them fell into the sea and died.</p> <p>The accident occurred when the boat pushed its gangplank to the landing spot in question. It is probable that the passenger lost balance and fell into the sea while stepping on a spot with the left leg.</p>	<p><b>Vessel type and name, accident type</b></p> <p>Fishing ferry HAIYA MARU Fatality of a fishing passenger</p> <div style="text-align: center;"> </div>
	<p><b>Report</b></p>	<p><a href="http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-10-2_2017tk0003.pdf">http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-10-2_2017tk0003.pdf</a></p>	
<p>13</p>	<p><b>Date of Publication</b></p> <p>November 30, 2017</p> <p><b>Summary</b></p>	<p><b>Date and location</b></p> <p>December 14, 2016 Off north of Mihonoseki lighthouse in Matsue City, Shimane Prefecture</p> <p>The main engine of the fishing vessel DAIFUKU MARU (Boat A), with its skipper and eight crew members, stopped while returning to Sakaiminato. Boat A was thus towed by another fishing boat, the No. 2 KYOFUKU MARU (Boat B), but capsized and sank north of the Mihonoseki lighthouse in Matsue City, Shimane Prefecture. In the accident, four of the nine onboard Boat A died and the remaining five went missing.</p>	<p><b>Vessel type and name, accident type</b></p> <p>Fishing vessel DAIFUKU MARU Capsizing</p>

	Probable Causes	<p>It is somewhat likely that the main engine of Boat A stopped when the vessel became less stable, sailing at night, and its freeboard was reduced. While being towed northeast by Boat B north of the Mihonoseki lighthouse in Matsue City, Shimane Prefecture, it is somewhat likely that Boat A became almost unable to regain stability as the angle of the heel exceeded the bulwark submerge angle and was overturned in the face of continuous waves.</p> <p>It is somewhat likely that the angle of the heel exceeded the bulwark submerge angle due to static heel caused by wind, wave-triggered large sways and an increase in heeling moment caused by the power of towing.</p> <p>It is somewhat likely that the reason for the increase in heeling moment caused by the force of towing is that Boat A was exposed to the possibility of a sudden increase in towing power as the towing rope used was not long enough so that the angle created by the towing rope and the bow's direction expanded.</p> <p>It is somewhat likely that the stability of Boat A weakened and the freeboard was reduced due to, among other reasons, the addition of structural objects, etc. to the ship and presence of a water tank on its deck.</p>	
	Report	<p><a href="http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-11-1_2016tk0016.pdf">http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-11-1_2016tk0016.pdf</a> Refer to case studies (P.120).</p>	
14	Date of Publication	Date and location	Vessel type and name, accident type
	November 30, 2017	January 30, 2017 Tomakomai Port, Tomakomai city, Hokkaido	Cargo ship SWIFTNES (Vessel A, Panama) Work boat FUJI MARU (Vessel B) Capsize
	Summary	<p>During its service to help Vessel A dock at Tomakomai Port, Tomakomai City, Hokkaido, Vessel B, with a coxswain and a workman on board, the mooring ropes being veered out from the aft deck of Vessel A entangled the propeller of Vessel A, and was drawn toward the propeller.</p> <p>The coxswain of Vessel B died and the workman was wounded. Vessel A suffered damage on her propeller.</p>	
	Probable Causes	<p>It is probable that the accident occurred when, its service to help Vessel A dock at Tomakomai Port, in a circumstance in which the four stern lines which Vessel B was towing was veered out from the aft deck of Vessel A, due to Vessel A's engine was used, the four stern lines was entangled the propeller of Vessel A, toward which Vessel B was pulled and then capsized.</p> <p>It is probable that the reason why Vessel A's engine was used was the master and the pilot had not shared the information as for the four stern lines, had expected each other securing propeller clear which had not been conducted.</p>	
	Report	<p><a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2017tk0005e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2017tk0005e.pdf</a></p>	
15	Date of Publication	Date and location	Vessel type and name, accident type
	December 21, 2017	January 19, 2017 Port of Felixstowe, United Kingdom of Great Britain and Northern Ireland	Container ship MANHATTAN BRIDGE Explosion of the auxiliary boiler



Summary	<p>While the ship was docking with a master, 25 crew members and a pilot onboard at the port of Felixstowe, United Kingdom of Great Britain and Northern Ireland an explosion occurred in the furnace of the auxiliary boiler.</p> <p>The duty oiler died, the second engineer suffered injuries and the burner unit of the auxiliary boiler damaged.</p>	
Probable Causes	<p>It is probable that the accident occurred, in the night time, while the ship was docking at the port of Felixstowe, United Kingdom of Great Britain and Northern Ireland, an explosion occurred within the furnace of the auxiliary boiler.</p> <p>It is considered somewhat likely that explosion occurred in the furnace is because under existence of carbon monoxide gases heated by incomplete combustion and flames in the furnace, the second engineer operated the forced draft fan and the secondary air was supplied. The explosion occurred by a rapid chemical reaction changing heated carbon monoxide gas. Or in the situation where marine gas oil existed as a highly concentrated flammable gas in the high temperature furnace, the forced draft fan was operated and secondary air was supplied, then the flammable gas was mixed with air, the concentration was between the upper limit and lower limit concerning the explosion. As a result, the explosion occurred.</p> <p>It is probable that the second engineer operated the forced draft fan for the purge in the furnace.</p> <p>It is probable that the existence of the marine gas oil a highly concentrated flammable gas was as follows. Under slimy wax-like material stuck to strainer etc., which was clogged causing the marine gas oil pressure drop but the marine gas oil pressure did not drop to fuel oil low pressure alarm set point, the marine gas oil to the rotary cup burner flow reduced. The primary air and the secondary air was supplied as same volume as before marine gas oil clogging, the marine gas oil was blown away and the atomizing marine gas oil became unevenly stable. The flame was cooled by the excess air and flame pattern was broken causing the combustion status very bad and remaining unburnt marine gas oil in the furnace and unburnt marine gas oil vaporized.</p> <p>It is probable that the carbon monoxide gases heated by incomplete combustion and flame existed in the furnace because the forced draft fan stopped by the Furnace (Flame-Eye) Abnormal alarm, the secondary air damper was closed, secondary air was not supplied, and combustion continued under insufficient air quantity.</p> <p>It is probable that the strainer was clogged as follows. When the ship used the marine gas oil containing a large amount of paraffin wax and the Cold Filter Plugging Point of it was high, the temperature around the auxiliary boiler oil burning apparatus was below the cold filter plugging point of the marine gas oil and the paraffin wax precipitated in the strainer.</p>	
Report	<p><a href="http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2017tk0004e.pdf">http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2017tk0004e.pdf</a> Refer to case studies (P.121).</p>	

(Marine incident)

No serious marine incident occurred in 2017.

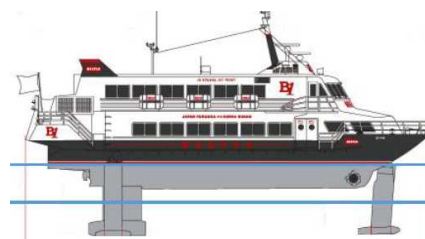
## 9 Actions taken in response to recommendations in 2017

Actions taken in response to recommendations were reported with regard to accidents and marine serious incident in 2017. Summaries of these reports are as follows.

### ① Contact of passenger ship BEETLE with marine creature

(Recommendations on July 27, 2017)

The Japan Transport Safety Board investigated an accident in which a passenger ship, BEETLE, collided with a marine creature off the northwest coast of Kamijima, Tsushima City, Nagasaki Prefecture, on January 8, 2016. On July 27, 2017, the JTSB released a report on the investigation and made recommendations to JR Kyushu Jet Ferry Inc. The board received a report (action plan) on what the company should do, as follows, based on the recommendations.



○Summary of the Accident, Probable Causes and Recommendations

See “Chapter 1 Summary of Recommendations and Opinions Issued in 2017, 1 Recommendations ” (P.13 (2))

○Measures JR Kyushu Jet Ferry Inc. should take based on the recommendations (implementation plan)

Recommendation:

- (1) Prescribe implementation of cetacean-cautious maneuver in safety management rules.

Measures:

Addition to the safety management rules of such items as the effectuation of a document for setting decelerating ocean areas, implementation of navigation with vigilance for cetaceans and monitoring of them, and of cetacean-cautious navigation to the operation manual of the rules. Effective on September 21, 2017, a “notification of changes in the safety management rules” was submitted to the Kyushu District Transport Bureau.

Recommendation:

- (2) Make each ship enforce cetacean-cautious maneuver in setup reduction areas.

Measures:

- In addition to thorough sharing of “visual confirmation of whales” by the distribution of mails via information-sharing terminals conducted hitherto, a decision was made to distribute a “document for setting decelerating marine areas,” mentioning marine areas for speed reduction and a period of deceleration, etc. to enable each vessel to recognize what should be done more clearly. All crew members were informed of the measure through the administrative circular 27-7 “On Document for Setting Decelerating Marine Areas,” dated January 26, 2016.
- Reconfirmation will be also made at the Safety Management Committee which is convened every six months or twice a year in principle (last meeting was held on April 26, 2017) in compliance with the safety management guidebook (called the “safety management manual” at our company) as set forth in Article 12 of the enforcement regulations of the Ship Safety Act

Members of the Safety Management Committee

Chief executive officer (President), committee chairman (person in charge of safety management), vice committee chairmen (deputy), official members (ship captains, chief engineers and head of the maintenance center) and special members (managing director and director)

- In case navigation with vigilance for cetaceans is not deemed enforced rigorously, the operation manager or deputy manager telephones or directly visits a vessel concerned to give instructions for rigorous enforcement. When necessary, the Safety Management Committee is convened to prompt the thorough implementation of cetacean-cautious navigation.

Recommendation:

- (3) Establish an administration system capable of grasping an implementation status of cetacean-cautious maneuver in each ship.

Measures:

- Implementation of cetacean-cautious maneuver is monitored as follows during a period of deceleration (roughly one week) as set forth in the document for setting decelerating marine areas.
- The operation manager or operating worker confirms the ship's speed reduction, based on information from the automatic identification system, on a monitor in the office
- Check columns for the following points are added by revising the form of the document for setting decelerating marine areas so that the captain of a ship confirms the reduction of speed and places a check mark in each column for timely confirmation by the operation manager or deputy. (1) Navigation at reduced speed (2) Reinforcement of lookout (3) End of wagon-based sale and (4) Use of seat belts and storing of tables

Recommendation:

- (4) Accelerate mounting of shock-absorbing material in passenger cabins and storing of table at cetacean-cautious maneuver.

Measures:

- To mount shock-absorbing material on the upper parts of armrests in sequence in each ship, starting in late November 2017.
- To inform passengers of the need for storing tables over the intercom in each ship 10 minutes before the start of navigation at a reduced speed. The first officer and passenger cabin attendants orally ask passengers to store tables, if they are in use, when they make their rounds.

Deadline for presentation of completion report:

Report on the status of measures, including already completed measures, is due to be presented, together with reference materials for confirmation of the status, by June 30, 2018.

- \* The original text of the notification from JR Kyushu Jet Ferry Inc. can be found on the JTSB website.

[http://www.mlit.go.jp/jtsb/shiphoukoku/ship-kankoku17re-1\\_20171024.pdf](http://www.mlit.go.jp/jtsb/shiphoukoku/ship-kankoku17re-1_20171024.pdf)

## 10 Provision of factual information in 2017

The JTSB provided factual information on one case (two marine accident) to relevant administrative organs in 2017. The contents are as follows.

### ① Information provided on accidents involving personal water craft operated by unlicensed drivers

(Information provided on April 11, 2017)

An analysis conducted on accidents that occurred between 2011 and 2015, involving personal water craft operated by unlicensed drivers (hereinafter called “unlicensed driver accident”), based on marine accident reports released by the Japan Transport Safety Board, found the following results. Information on the findings was provided to the Ministry of Land, Infrastructure, Transport and Tourism.

(1) There were 27 unlicensed driver accidents involving 30 personal water crafts

The number of accidents breaks down into five in 2011, eight in 2012, six in 2013, five in 2014 and three in 2015.

(2) The unlicensed driver accidents consisted of 12 collisions between personal water crafts, seven cases of death or injury and five collisions against objects such as a seawall.

(3) The 27 unlicensed driver accidents resulted in 43 casualties (four dead, one missing and 38 injured, including 21 seriously).

(4) Roughly 90% of the 27 unlicensed driver accidents occurred in July or August and about 80% of the summertime accidents occurred between 12 and 16 o'clock).

(5) Of the 30 unlicensed drivers

① 16 were in their 10s or 20s

② Six were drunk

③ While nine were driving wet bikes without owners' permission, four were allowed by owners to drive them.

④ While six rode personal water crafts for the first time, 12 had already rode them and began doing so several years before.

(6) Prior to unlicensed driver accidents, drivers, who were considered not to understand basic features of personal water crafts, had taken the following behaviors, etc.

① They pulled the throttle level, seeing it as the brake of a bicycle, motorcycle or other vehicle, when they thought, while driving the personal water craft, they would collide with another personal water craft.

② They thought the operation of a personal water craft was the same as a road bike.

③ When they noticed an obstacle ahead, they took their hand off the throttle lever and immediately turned the handlebar.

④ When they attempted to pass through a water channel between detached breakwaters, they failed to make enough of a turn and took their hand off the throttle lever before an imminent

detached breakwater.

- ⑤ They did not know how to stop the personal water craft.
  - ⑥ They were riding a personal water craft with both knees down rather than in a normal standing position for riding.
- (7) Following are principal measures to prevent the recurrence of unlicensed driver accidents mentioned in investigation reports on them.
- ① The owner of a personal water craft should take control of the vehicle so as not let an unlicensed person ride it through such measures as pulling the ignition key when leaving it.
  - ② The owner of a personal water craft, when asked for permission by another person to drive the vehicle, should check whether the person has a driving license or not.

\* The information provided can be found on the JTSB website.

[http://www.mlit.go.jp/jtsb/iken-teikyo/s-teikyo9\\_20170411.pdf](http://www.mlit.go.jp/jtsb/iken-teikyo/s-teikyo9_20170411.pdf)

② Information provided on capsizing accident of fishing vessel DAIFUKU MARU

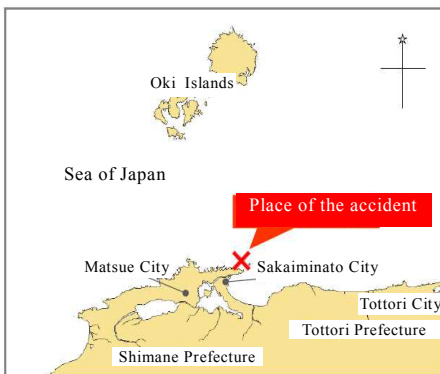
(Information provided on May 16, 2017)

Information was provided to Tottori Prefecture and Shimane Prefecture

1. Summary of accident

- (1) Date of occurrence: December 14, 2016
- (2) Place of occurrence: Off north of Mihonoseki lighthouse in Matsue City, Shimane Prefecture
- (3) Developments to accident

Fishing vessel DAIFUKU MARU, with its skipper and eight crew members onboard, developed engine failure while sailing toward Sakaiminato, Tottori Prefecture. While being towed by a consort ship, it capsized and sank some 1,600 km north of the Mihonoseki lighthouse in Matsue



Place of the accident



DAIFUKU MARU

(Photo: Tottori Prefecture)

City, Shimane Prefecture, at around 5:02 a.m. on December 14, 2016.



Of the nine crew members onboard DAIFUKU MARU, four died and five went missing.

2. Information on facts about waves

Following is the situation of waves near the place where the accident occurred, as calculated by a commissioned external organ.

(1) Significant wave height\*<sup>1</sup>

The marine area near the place where the accident occurred (off Mihonoseki) is off the marine area sheltered by the Oki Islands and waves (about 3.7m) were higher than those (around 3.3m) around Oki-no-Gozenjima and waters around the island, in addition to reflected waves from Mihonoseki (See Drawing 1 for reference)

(2) Significant wave period\*<sup>2</sup>

The significant wave period near the place where the accident occurred had a longer wave cycle (of about 7.4 seconds) than (around 7.1 seconds) in the surrounding water area because of the same influence as mentioned in (1).

(3) Wave direction

The marine area near the place where the accident occurred had a combined wave formed by an overlapping of waves from a total of three directions -- two from the offshore directions (northeast and north-northeast) and one from the seacoast direction (See Drawing 3 for reference).

(4) Data and estimation models used to estimate waves (including verification of estimation results)

① Data

- a. Wave observation data (Nationwide Ocean Wave Information Network for Ports and Harbors (NOWPHAS))
- b. Water depth terrain data (Nautical chart published by the Japan Coast Guard, etc.)
- c. Ocean wind data (Local Forecast Model (LFM))

② Models

The following two third-generation wave estimation models were used to estimate waves:

a. WAM (Wave Model)

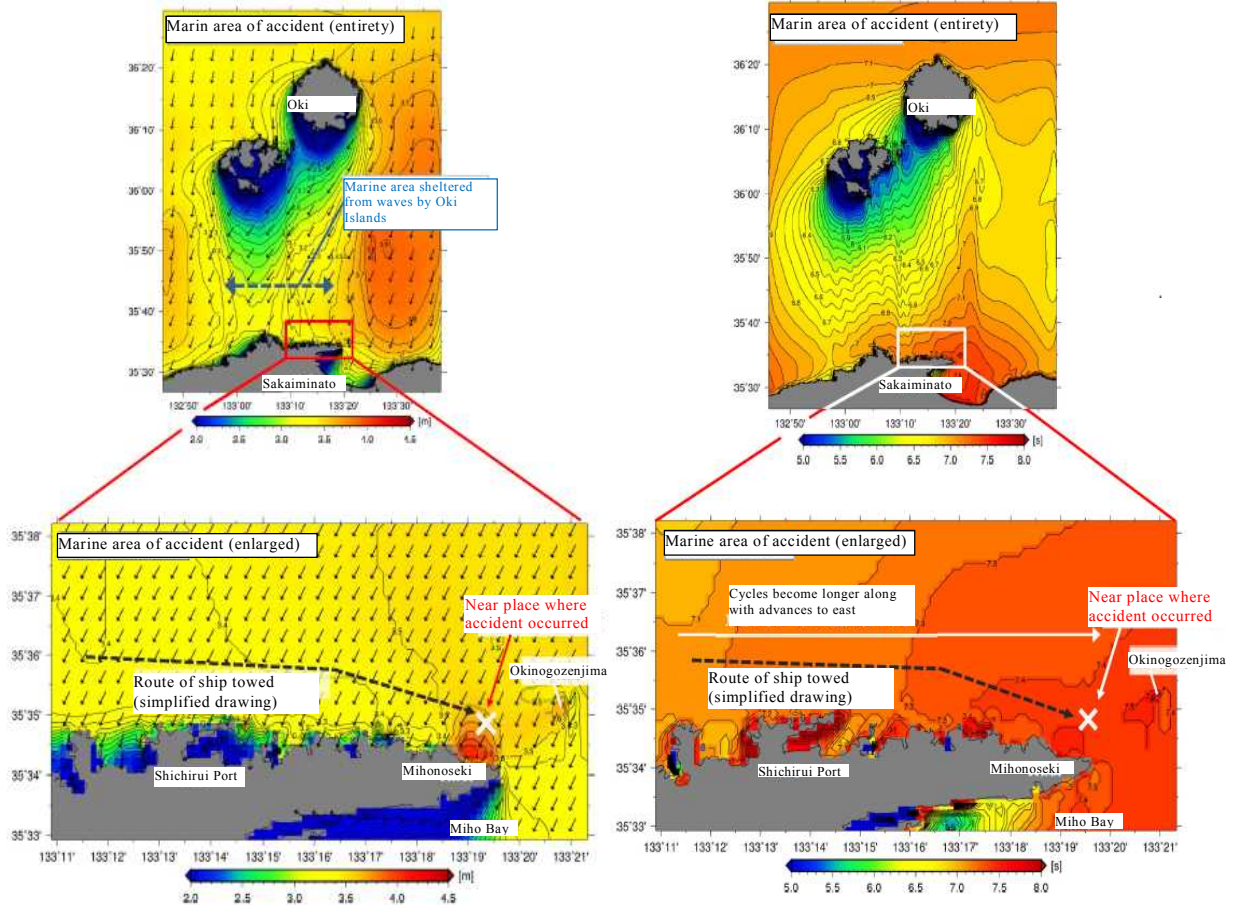
The model has been created to cover the oceanic region and is adopted by many countries in the world, especially those in Europe. In Japan, it is also used as a standard model at the time of estimating offshore waves in designing fishing ports and harbors.

b. SWAN (Simulating Wave Nearshore)

The model has been created to cover coastal regions and is used by many countries in the world, especially those in Europe. In Japan, it is also used generally by universities, research institutes and others.

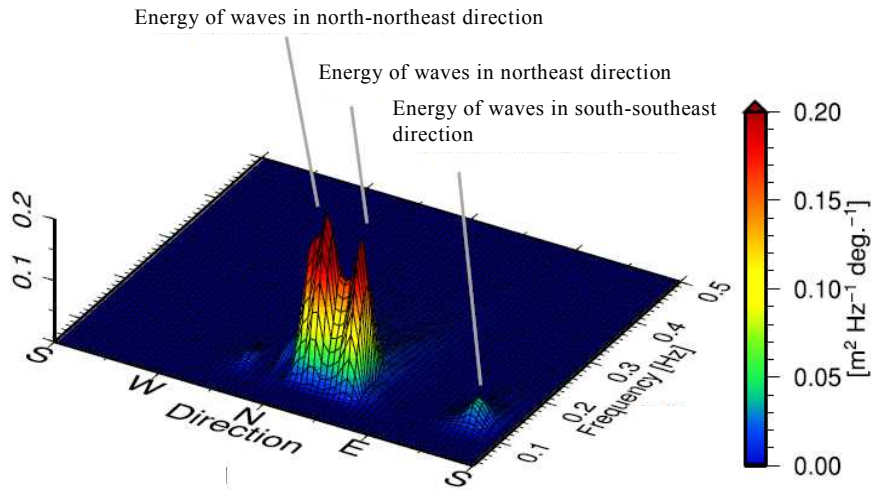
\*1 The “significant wave height” is the average calculated from the highest third of waves when a sequence of waves is observed at a place. It is known to be close to a figure by visual observation. On the actual ocean surface, there are waves higher and lower than the significant wave height. Statistically, the highest of 100 waves observed is estimated to be roughly 1.6 times the significant wave height and the highest of 1,000 waves observed is estimated to be nearly double the significant wave height.

\*2 The “significant wave period” is the average cycle of the highest third of waves when a sequence of waves is observed at a place. It is known to be close to a figure by visual observation.



Drawing 1: Situation of wave height (at 05:00 on December 14)

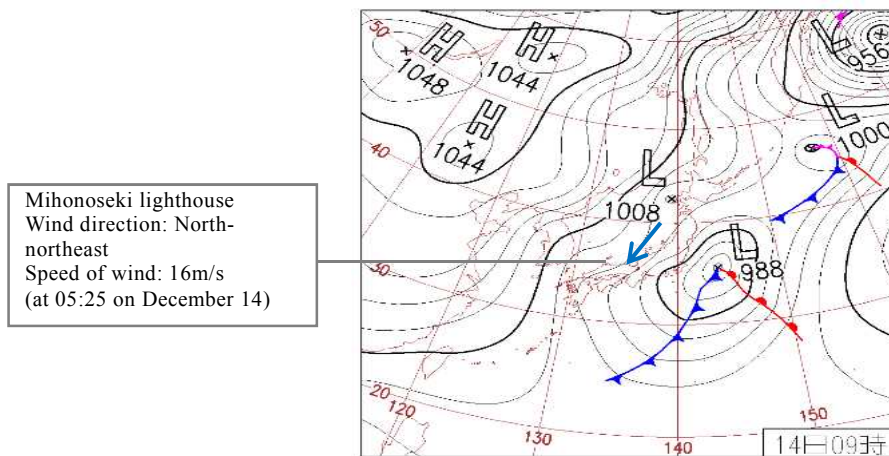
Drawing 2: Situation of Cycles (05:00 on December 14)



Drawing 3: Spectrum situation of wave directions near place where accident occurred (at 5:00 on December 14)

(Reference) Weather at time of accident

On the day of the accident, low atmospheric pressure passed while growing rapidly when the winter pressure pattern spread on a nationwide basis. A north-northeast wind was blowing in the marine area where the accident occurred. (See the weather chart for reference)



\* The information provided can be found on the JTSB website.

[http://www.mlit.go.jp/jtsb/iken-teikyo/s-teikyo10\\_20170516.pdf](http://www.mlit.go.jp/jtsb/iken-teikyo/s-teikyo10_20170516.pdf)


 Column

## Cooperative relations with overseas investigation authorities

### Marine Accident Investigator

We received cooperation from overseas investigation authorities in four serious accidents we released or investigated in 2017. The four consisted of three accidents involving Japanese-flagged ships at overseas ports or on the high seas and one accident of a foreign-registered ship in the territorial sea. The number is larger than usual and is expected to further grow due to an increase in the number of Japanese-registered ships. While we conduct our own investigations in many cases, investigations into foreign-registered ships and their crew members, etc., are limited, compared with home-registered ships, due to the application range of domestic laws and other factors. To make up for such a limitation, therefore, we seek cooperation from overseas investigation authorities. Following are the kinds of cooperation we received in 2017.

In an accident in which a high-speed craft collided with a whale and seriously injured three passengers, we needed to check how the passengers were injured from the viewpoint of reducing damage. As the injured passengers were South Koreans living in South Korea, we sought cooperation from an investigation authority in South Korea. JTSB investigators thus were able to interview the passengers.

A crew member of a Japanese-registered chemical tanker died during berthing work by a tugboat at a port in France. Although JTSB investigators could not directly investigate the tugboat, a French investigation authority investigated crew members of the tugboat and others and provided findings to us. As a result, the JTSB compiled a balanced report based on oral statements by crew members of both the Japanese and French ships concerned and objective data (from voyage data recorder, etc.).

An auxiliary boiler exploded on a Japanese-registered container ship at a port in Britain, killing a crew member. The British investigation authority is very powerful and able to seize evidential matters and conduct hearings on people concerned before the criminal investigation agency. In the case in question, a British team of investigators conducted prompt and extensive investigations. Following the British team, the JTSB, the investigation authority of the flag State, started investigations into the container ship and others in Singapore where the vessel made a port call. Sensing that detailed investigations of its own were possible, the JTSB decided to do so. The British investigation authority thus decided to end its investigations and relegated its work to the JTSB's independent investigations and handed over information collected through its investigations until then to the JTSB.

A Philippine-flagged container ship and a U.S. naval battleship collided with each other in Japan's territorial sea, killing seven crew members of the latter. From the beginning, investigations into the U.S. warship were considered difficult in light of the U.N. Convention of the Law of the Sea and military secrets. Soon after the launch of investigations, meanwhile, the Coast Guard, commissioned by the National Transportation Safety Board of the U.S., and the JTSB established amicable and cooperative relations with each other. Under the relationship, the JTSB obtained many photos of damaged parts on the warship and a collection of oral statements by crew members of the ship, which contributed to advancements toward the identification of causes. The accident was a case in which JTSB investigators demonstrated their human resourcefulness and negotiation skills.

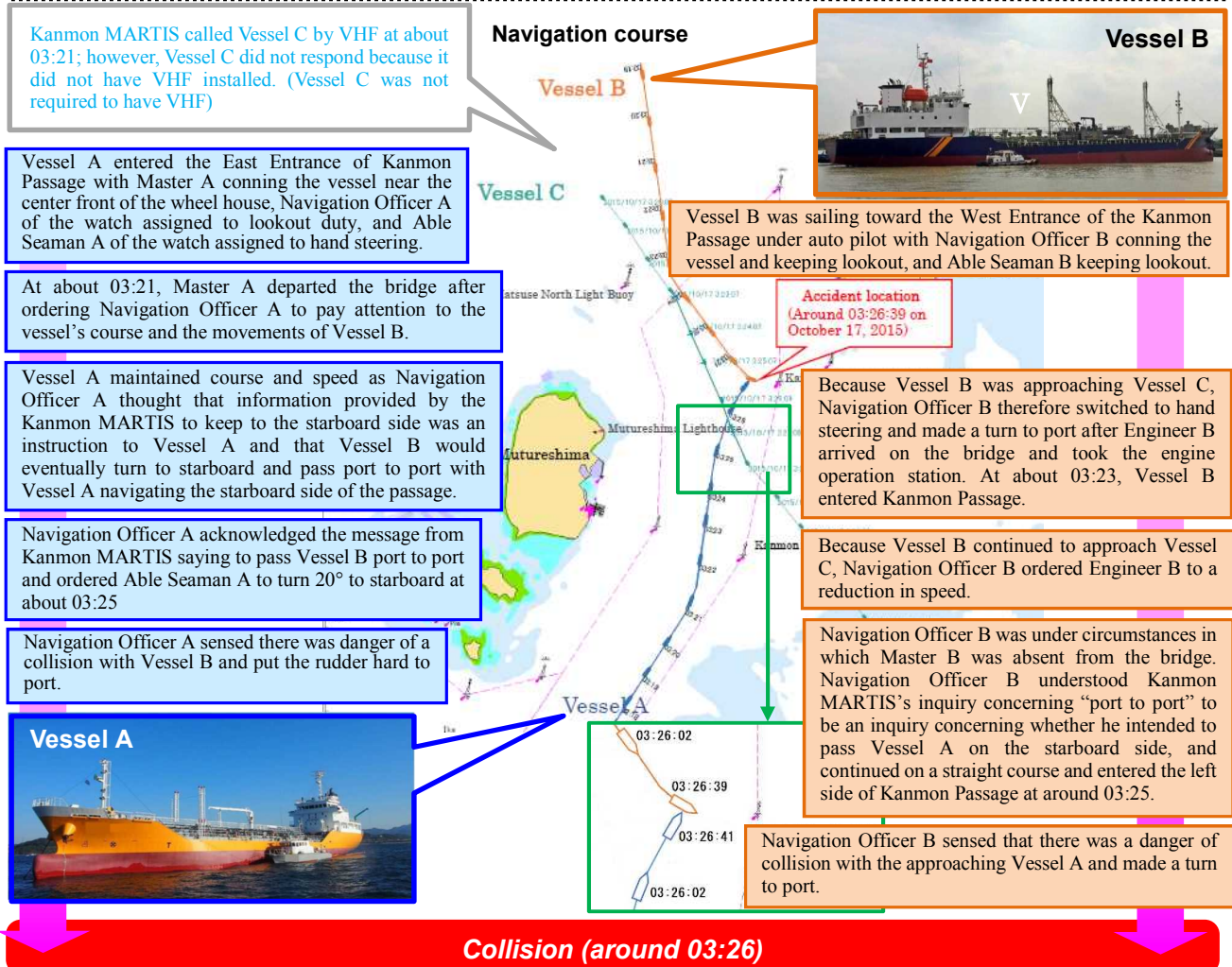
All told, JTSB investigators investigate marine accidents receiving assistance from their overseas peers (marine accident investigation authorities) and working in cooperation with them.

11 Summaries of major marine accident investigation reports (case studies)

Tanker collision causing an oil spill at Kanmon Passage of Kanmon Port

Collision between chemical tanker SULPHUR GARLAND and oil tanker WAKOMARU No. 2

**Summary:** While **chemical tanker SULPHUR GARLAND (Vessel A, 3,498 gross tons)** was proceeding north-northeast along Kanmon Passage of Kanmon Port toward Zhenjiang Port, People’s Republic of China, with a master and a second officer and other 15 crew members onboard, and while **oil tanker WAKOMARU NO. 2 (Vessel B, 2,018 gross tons)** was proceeding south-southeast along the same passage toward Oita Port, Oita Prefecture, with a master and a second officer and other 8 crew members onboard, the two vessels collided at about 03:26 on October 17, 2015, near the West Entrance of Kanmon Passage, east of Mutsureshima Island, Shimonoseki City, Yamaguchi Prefecture. The bow of Vessel A was crushed, and the aft starboard side shell plating of Vessel B was holed and dented, which resulted in an oil spill. There were no fatalities or injuries on either vessel.



**Probable Causes (excerpt):** It is probable that Vessel A and Vessel B collided during nighttime off the eastern coast of Mutsureshima Island because, while Vessel A was proceeding north-northwest through Kanmon Passage toward the West Entrance of the passage and Vessel B was proceeding south-southeast toward the West Entrance of the passage having medium-sized purse seine fishing vessel sailing in the same direction in her starboard bow, Vessel B came close to Vessel C and turned to port to enter the left side of Kanmon Passage while Vessel A maintained course and speed. It is somewhat likely that the reason why Vessel B came close to Vessel C, turned to port and entered the left side of Kanmon Passage was that, after observing Vessel A proceeding north through Kanmon Passage and the medium-sized purse seine fishing vessel proceeding southeast toward the West Entrance of the passage, Navigation Officer B did not maintain proper lookout on Vessel A and Vessel C, and therefore he was unable to anticipate that Vessel B would be in a situation crossing ahead of Vessel A, which was proceeding north through the Kanmon Passage and sailing the port side of Vessel C, and further he made Vessel B’s speed almost same with the speed of Vessel C which was sailing in the starboard ahead which made him confused as Vessel B unable to take starboard turn. It is probable that the reason why Vessel A maintained course and speed was that Navigation Officer A thought that information provided by the Kanmon MARTIS to keep to the starboard side was an instruction, and that he thought that Vessel B would eventually turn to starboard and pass port to port with Vessel A navigating the starboard side of the passage.

For details, please refer to the accident investigation report. (Published on February 23, 2017)  
[http://www.mlit.go.jp/jtsb/eng-mar\\_report/2017/2015tk0008e.pdf](http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2015tk0008e.pdf)

## Three workers killed and injured due to load sway caused by ship rolling during loading operation using a crane

### Fatality and Injury of workers on cargo ship BBC ASIA

**Summary:** The accident occurred at around 11:31 on October 30, 2016, on the cargo ship BBC ASIA (Vessel A, 7,014 gross tons) during work to load pipes with a crane at Shinko East Quay T Wharf, Kobe Section, Hanshin Port, when three workers who were working in a cargo hold were caught between pipes being hoisted by the crane and a side wall. Two of the workers were killed and one was seriously injured.

Vessel A docked starboard-side alongside at the Wharf in the Kobe Section of Hanshin Port. At around 10:00, Vessel A loaded 30 bundles of pipes that had been arranged on the Wharf using the No. 1 crane.

At around 11:15, Vessel A began loading bundled pipes that had been loaded on Vessel B, which was alongside on the port side, using the No. 1 crane and stowed two bundles on the starboard side.

A stevedore who directed cargo-handling in the No. 2 cargo hold (the Signal Man) moved four bundles of nine pipes (the Pipes) hoisted from Vessel B by instructing the stevedore in charge of crane operation (the Winchman) to rotate the crane's jib toward the stowage position. Then the Signal Man instructed the Winchman to temporarily stop operating the crane so he could check the positions of workers and other circumstances.

After the jib of the No. 1 crane was stopped, Vessel A inclined to starboard and inclined to the point that the lower horizontal bar of the handrail installed on the starboard side of Vessel A's upper deck was at about the same height as the bumpers on the wharf.

The Pipes began moving in the starboard direction.

**Stevedore A, Stevedore B, and Lashing Worker A, who were standing by and doing other activities on top of the two bundles of pipes, were caught between the Pipes and the starboard wall. (around 11:31)**

#### (Situation where Vessel A inclined to starboard)

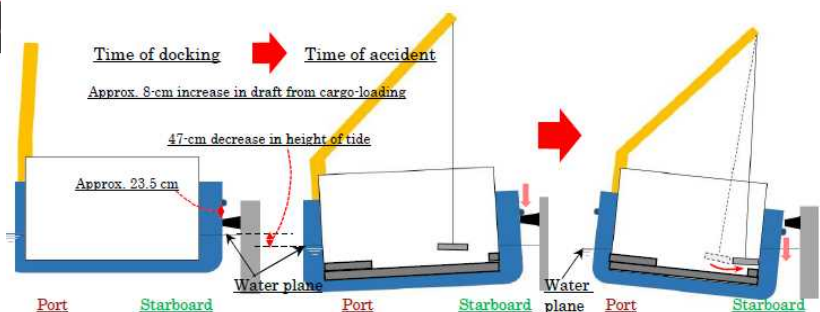
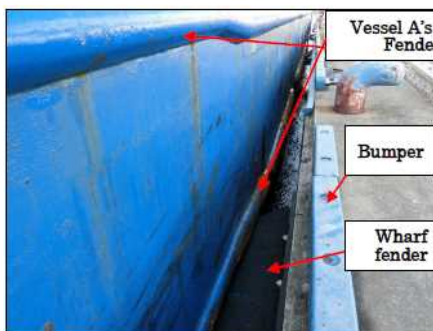
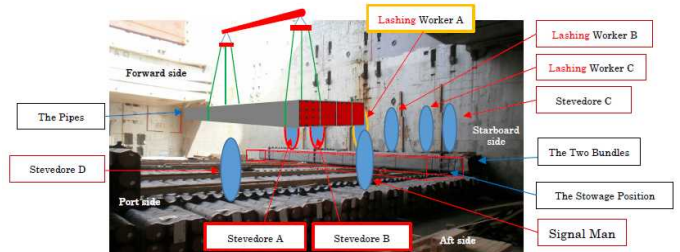
Vessel A had semicircular steel fenders from the stern end toward the bow on both sides of the hull.

Rubber fenders were installed horizontally at intervals of twenty meters on the Wharf's surface.

It is probable that Vessel A rolled and inclined approximately 7° to the starboard side at the time of the accident when the underside of the hull fender on Vessel A's starboard midship hull came off the tops of the wharf fenders when the Pipes were hoisted by the No. 1 crane and then stopped under conditions where the underside of the hull fender was caught on the tops of the wharf fenders and Vessel A's starboard inclination was arrested because, among other reasons, the height of tide had fallen compared to that at the time of docking and the vessel's draft had increased.



(Arrangement of workers at the time of the accident)



**Probable Causes (excerpt):** It is probable that the accident occurred when the Pipes which had been hoisted and then stopped by the No. 1 crane swung to the starboard side, and as a result, two stevedores and one lashing worker, who had been standing by and doing other activities on top of the cargoes that had been stowed on the starboard side, were caught between the Pipes and starboard wall, as Vessel A was being loaded with cargo starboard-side alongside at Shinko East Quay T Wharf, Kobe Section, Hanshin Port.

For details, please refer to the accident investigation report. (Published on September 28, 2017)  
[http://www.mlit.go.jp/jtsb/eng-mar\\_report/2017/2016tk0015e.pdf](http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2016tk0015e.pdf)

# Vessel capsized due to angle of heel exceeding bulwark submerge angle and exposure to continuous waves while being towed

## Capsize of fishing vessel DAIFUKU MARU

**Summary:** The main engine of the fishing vessel DAIFUKU MARU (Vessel A, 76 gross tons), with its skipper and eight crew members onboard, stopped when returning to Sakaiminato. While being towed by another fishing vessel, KYOFUKU MARU No. 2 (Vessel B, 117 gross tons), Vessel A capsized and sank north of the Mihonoseki lighthouse in Matsue City, Shimane Prefecture at about 5:15 on December 14, 2016.

In the accident, four of the nine crewmembers onboard Vessel A died and five went missing.

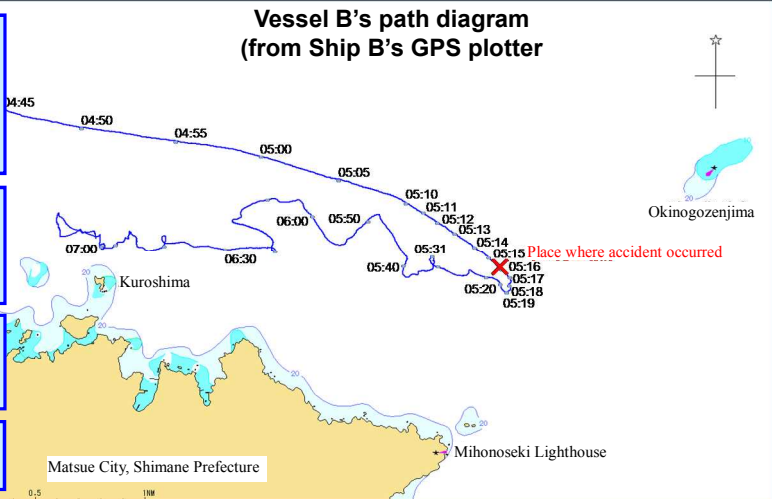
Vessel A left Sakaiminato on December 8 to fish for snow crabs at a fishing ground off Hamada City, Tottori Prefecture. Ending the fishing operation at night on December 13, Vessel A informed an intermediate agent of fishery products that it would return to Sakaiminato at around 2:00 on December 14.

At about 1:54 on December 14, Vessel A asked a consort ship to tow it because its main engine had stopped. The consort ship then asked Vessel B to tow Vessel A because it was closer to Vessel A and bigger.

Vessel B came close to Vessel A at around 2:30 and began to connect the two vessels with a tow rope. With the work completed at about 4:00, Vessel B started to tow Vessel A.

At around 5:00, Vessel B changed its course toward Sakaiminato to avoid rolling.

At around 5:14 to 5:15, Vessel B's radio contact with Vessel A went silent.

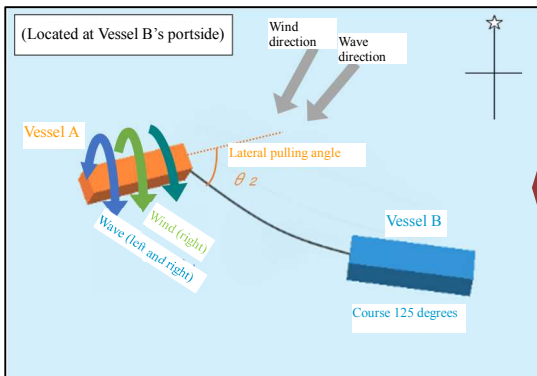


**Capsizing (at around 5:15)**

**(Situation of Wave Height)**

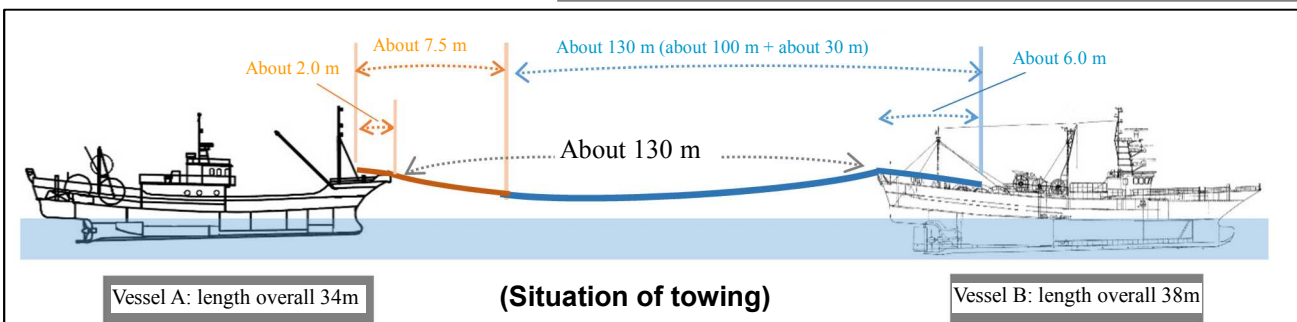
The marine area near the place where the accident occurred is off the marine area sheltered by the Oki Islands. It is probable that waves there were higher than those near Okinogozenjima and in waters around the island, in addition to reflected waves from Mihonoseki.

**(Vessel A's heeling moment)**



**(Situation of capsizing)**

- It is probable that the stability of Vessel A was reduced due to addition of structural objects, etc. to it and water tanks on its deck and the freeboard of the ship also decreased.
- Vessel A was exposed to the risk of a sudden increase in heeling moment because the towing rope was not long enough. It is somewhat likely that the heeling moment increased due to the.
- It is probable that the angle of the heel of Vessel A became larger than the bulwark submerge angle due to a combination of Vessel A's steady heel caused by wind, rolling motions caused by waves and Vessel A's heeling energy caused by the tension on the towing rope.
- While Vessel A's angle of heel exceeded the bulwark submerge angle and the righting lever became smaller, it is somewhat likely that continuous waves capsized Vessel A with the bulwark acting as resistance to stability.



**Probable Causes (excerpt):** It is somewhat likely that the accident occurred as follows: The main engine of Vessel A stopped at night when the ship's stability was reduced and its freeboard decreased. While being towed southeast by Vessel B north of the Mihonoseki lighthouse, Vessel A became almost unable to regain stability as the angle of the heel exceeded the bulwark submerge angle and capsized by continuous waves.

For details, please refer to the accident investigation report. (Published on November 30, 2017)  
[http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-11-1\\_2016tk0016.pdf](http://www.mlit.go.jp/jtsb/ship/rep-acci/2017/MA2017-11-1_2016tk0016.pdf)

## Auxiliary oiler in the engine room exploded during berthing operation

### Explosion of an auxiliary boiler on container ship MANHATTAN BRIDGE

**Summary:** While the **container vessel MANHATTAN BRIDGE (the Vessel, 152,297 gross tons)** was docking with a master, 25 crew members and a pilot onboard at the port of Felixstowe, United Kingdom of Great Britain and Northern Ireland, at around 23:04 on January 19, 2017 (local time), an explosion occurred in the furnace of the auxiliary boiler. The duty oiler died, the second engineer suffered injuries and the burner unit of the auxiliary boiler damaged.

At around 14:35 on January 16, 2017 (local time), the Vessel changed the fuel oil (FO) supply from heavy fuel oil to marine gas oil (the MGO) that had been supplied in the port of Rotterdam on 8 November 2016.

When arriving at the port of Felixstowe, at around 16:00, all engineers and duty oiler were assigned to each standby station in the engine department.

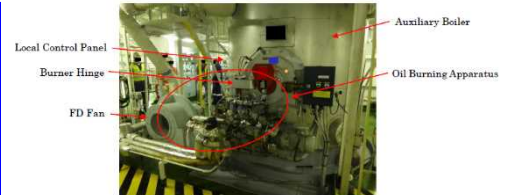
The auxiliary boiler emergency trip alarm was activated at around 17:30 and the second engineer (Engineer A) opened the rotary cup burner of the auxiliary boiler oil burning apparatus and cleaned the inside. After that, the auxiliary boiler emergency trip alarm was activated three times up to 19:51. On every occasion, after checking the auxiliary boiler, the other engineer had cancelled the auxiliary boiler alarm at the auxiliary boiler local control panel and re-started it.

At 23:01, the engine control room alarm panel indicated an auxiliary boiler emergency trip alarm. The Engineer A switched the auxiliary boiler control from 'Auto' to 'Manual' to purge unburnt gases at the auxiliary boiler local control panel, then the forced draft fan (FD fan) started running. While the Engineer A was in position in starboard-fore side of the oil burning apparatus and the oiler who was assigned to his standby station at 20:00 was in position in front of the oil burning apparatus to wait for instruction from the Engineer A, the Engineer A confirmed a flame in the furnace and tried to stop the FD fan after closing the quick-closing valve. However it was impossible to stop the FD fan.



The Vessel

(Auxiliary boiler)



*An explosion occurred in the furnace of the auxiliary boiler (at around 23:04)  
The duty oiler died, the Engineer A suffered injuries*

#### (Analysis on the occurrence of explosion in the furnace of the auxiliary boiler)

- It is somewhat likely that under the condition where the primary air and the secondary air was supplied as same volume as before MGO clogging, the MGO pressure dropped and the MGO flow to the rotary cup burner was reduced and then the atomizing of MGO became unstable. The flame was cooled by excessive air and the burning process was disturbed causing the combustion status very bad and unburnt MGO remained in the furnace.
- After automatic combustion of the rotary cup burner was stopped, unburnt MGO remaining in the furnace during automatic combustion was vaporized, became a flammable gas and continued to burn. Then Furnace (Flame-Eye) Abnormal alarm was activated, FD fan stopped, the secondary air damper was closed and combustion air was not supplied. As a result, flame of incomplete combustion and flammable carbon monoxide gas or flammable gas of the MGO became present in the furnace.
- For the purpose of the purge in the furnace, the FD fan was operated in the auxiliary boiler and the secondary air was supplied, and therefore the explosion occurred by a rapid chemical reaction of oxygen and heated carbon monoxide gas. Or in the situation where MGO existed as a highly concentrated flammable gas in the high temperature furnace, the FD fan was operated and secondary air was supplied, and therefore the explosion occurred because the concentration of the flammable gas mixed with air was within the flammability limits.

#### (Analysis of the MGO remained in the furnace)

- It is somewhat likely that under the condition where the primary air and the secondary air was supplied as same volume as before MGO clogging, slimy wax-like material stuck to the strainer of MGO line or the pressure adjusting valve malfunctioned due to the influence of the precipitated paraffin wax, which caused reduced flow of the MGO to the rotary cup burner and unstable atomization of the MGO.
- It is somewhat likely that slimy wax-like material stuck to strainer etc. at the time of using the MGO, which caused the MGO pressure to drop. However, as the MGO pressure did not drop to the set point for fuel oil low pressure alarm, automatic combustion continued. The atomizing of MGO became unstable. The flame was cooled by excessive air and the burning process was disturbed causing the combustion status very bad and unburnt MGO remained in the furnace.



(Clogging condition of strainer)

**Probable Causes (excerpt):** It is probable that the accident occurred, in the night time, while the Vessel was docking at the port of Felixstowe, United Kingdom of Great Britain and Northern Ireland, an explosion occurred within the furnace of the auxiliary boiler.

For details, please refer to the accident investigation report. (Published on December 21, 2017)  
[http://www.mlit.go.jp/jtsb/eng-mar\\_report/2017/2017tk0004e.pdf](http://www.mlit.go.jp/jtsb/eng-mar_report/2017/2017tk0004e.pdf)



## Collision of cargo ship and stone carrier off Himeji Port sinks stone carrier, claiming 2 lives

### Collision between cargo ship HOSHO MARU and stone carrier YAMATO MARU No. 8

**Summary:** The cargo ship HOSHO MARU (Vessel A, 499 gross tons), with its master and four crew members onboard, was sailing southwest toward Niihama Port in Niihama City, Ehime Prefecture, on July 15, 2016, while the stone carrier YAMATO MARU No. 8 (Vessel B, 499 gross tons), with its master and two crew members onboard, were sailing southeast toward the Osaka section of Hanshin Port. At about 11:43 on the day, the bow of Vessel A collided with the portside of Vessel B off the east coast of Kurakake Island. In the accident, two crew members of Vessel B died and one member was injured. The ship suffered a hole in the center of its portside and other kinds of damage and sank. Vessel A received damage such as a deformation in its bulbous bow but experienced no casualties.

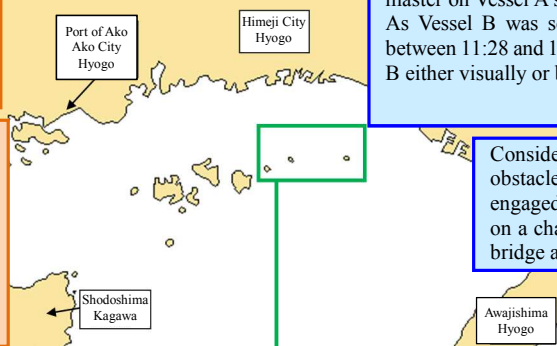
Vessel B was sailing in automatic steering mode with the navigation officer on Vessel B assigned as the sole bridge watchkeeper and noticed Vessel B at around 45 degrees 3.0M on the portside bow for the first time.

When Vessel A's distance came to about 1M, the officer became concerned as Vessel A was nearing without greatly changing its course. But the officer thought Vessel A would give way because it was the give-way vessel in the case and so Vessel B continued to sail in the same course at the same speed.

Vessel A did not change its course when its distance to Vessel B neared to around 1,000m, and the officer felt the danger of a collision and so turned Vessel B to starboard by about 5-10 degrees and sounded a whistle signal.

As Vessel A did not change its course and showed no signs of giving way to Vessel B, the officer turned Vessel B to starboard when Vessel A came to a distance of 200-300m, decreased the number of the main engine's rotations and sounded the electronic horn again.

(Diagrammatic illustration of accident site)



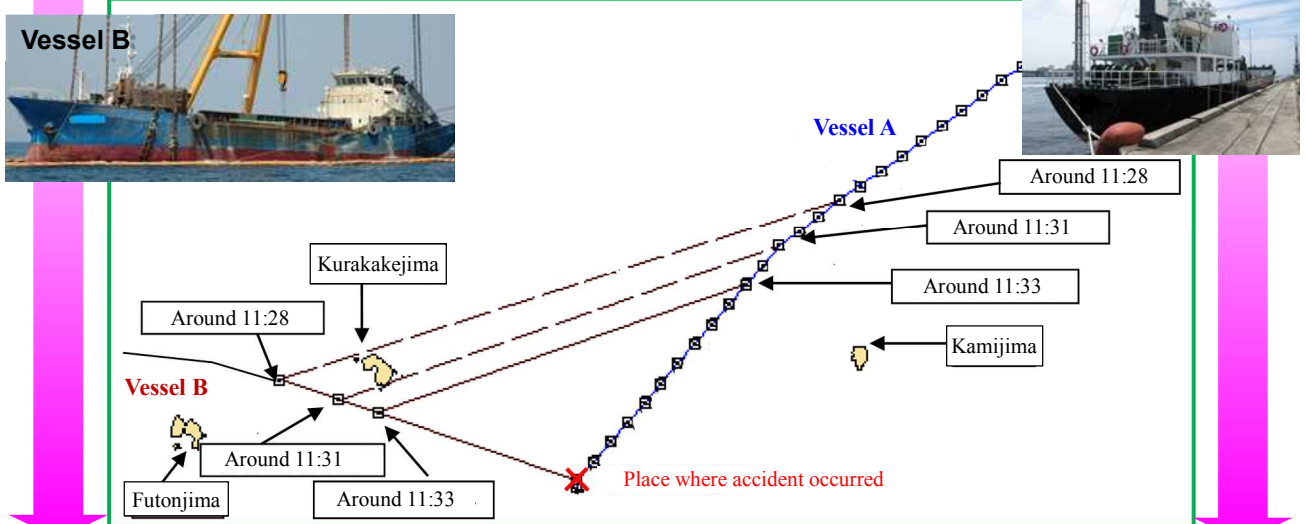
Vessel A was sailing in automatic steering mode, with the master on Vessel A serving as the sole bridge watchkeeper. As Vessel B was southwest of Kurakake Island roughly between 11:28 and 11:31, the master could not detect Vessel B either visually or by radar.

Considering that there was no ship ahead as an obstacle to Vessel A's sailing, the master engaged in such work as filling in a document on a chart table in the rear part of the portside bridge and did not maintain a lookout.

The master noticed Vessel B at about 30 degrees on the starboard side bow roughly 300-500m away for the first time. The master maneuvered the steering mode shift lever to make a shift from automatic to manual steering and tried to turn Vessel A to port. But he operated the power source switch lever on the right side of the mode shift lever and turned off the power source of the automatic steering device.

Although the master turned the steering wheel, he tried to bring the operating lever to the hold position because the helm indicator did not work.

(Vessel A's presumed sailing route based on GPS records and Vessel B's presumed route)



**Collision (at around 11:43)**

**Probable Causes (excerpt):** It is probable that the accident occurred as follows: Vessel A was sailing southwest off the east coast of Kurakake Island while Vessel B was traveling southeast. The master on Vessel A did not notice Vessel B early enough as he engaged in such work as filling in a document and did not maintain a lookout, considering that there was no ship ahead as an obstacle. At the same time, the navigation officer on Vessel B noticed Vessel A on Vessel B's portside bow but thought Vessel A would eventually give way. Although the officer sounded a whistle signal, he did not take actions to avoid the collision in time.

For details, please refer to the accident investigation report. (Published on June 29, 2017)

[http://www.mlit.go.jp/jtsh/ship/rep-acc/2017/MA2017-6-26\\_2016kb0069.pdf](http://www.mlit.go.jp/jtsh/ship/rep-acc/2017/MA2017-6-26_2016kb0069.pdf)