Appendixes

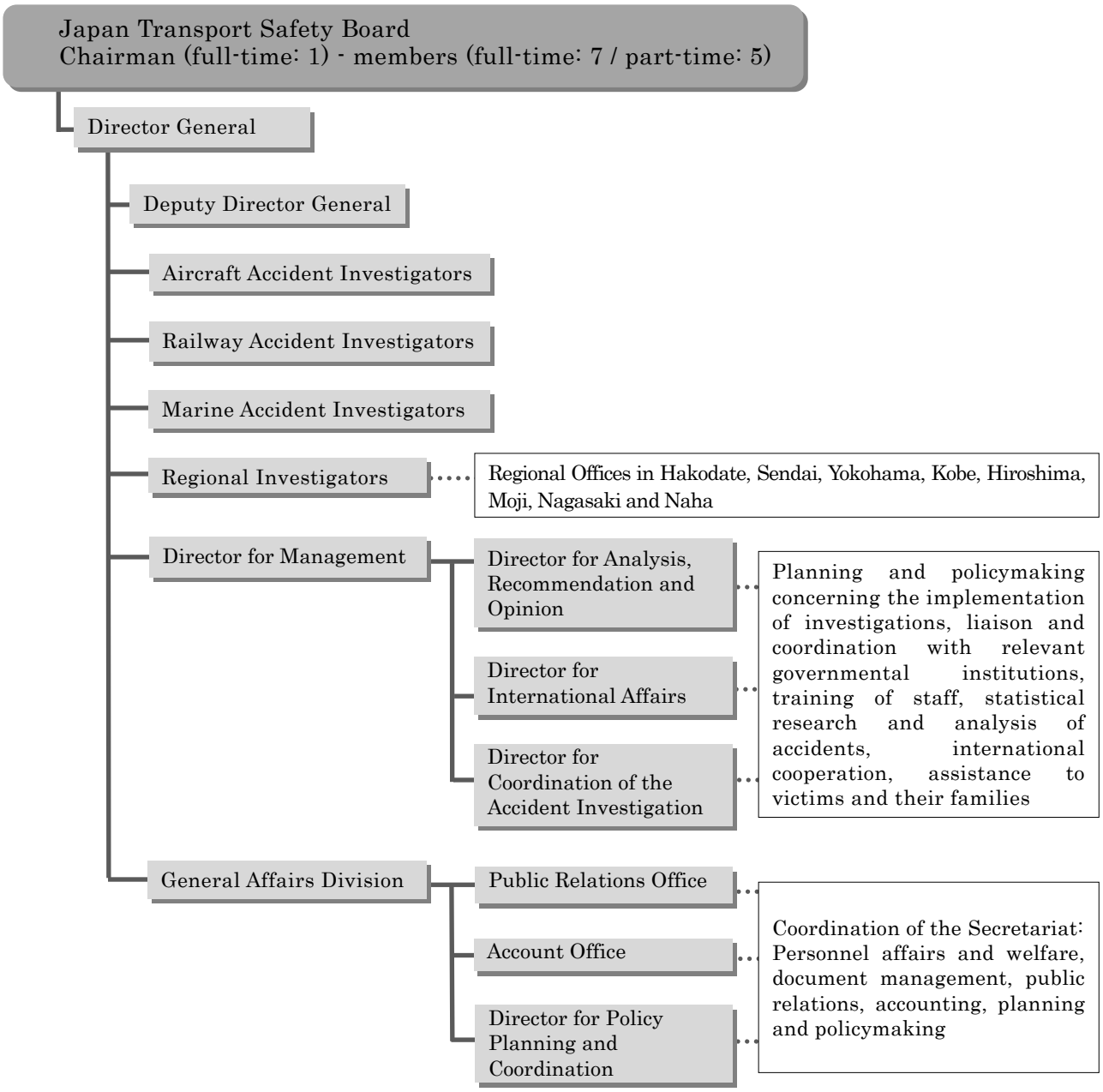
Japan Transport Safety Board
Annual Report 2012

Appendixes

Appendix 1 Outline of the organization

The Japan Transport Safety Board consists of the Chairman, 12 members, and 177 secretariat staff (as of December 2011). The staff in the secretariat consist of investigators who conduct investigations of aircraft, railway and marine accidents; the General Affairs Division that performs coordination-related jobs for the secretariat; and the Director for Management who is dedicated to the support and statistical analysis of accident investigations, and international cooperation. In addition, special support staff and local investigators are stationed at eight regional offices around the country (Hakodate, Sendai, Yokohama, Kobe, Hiroshima, Moji, Nagasaki and Naha). These local investigators investigate marine accidents (excluding serious ones) and support staff provide initial support for aircraft, railway and marine accidents.

Organization Chart



Appendix 2 Deliberation items of Board and each Committee

After accident investigators prepare a draft investigation report, the draft report will be deliberated at the Board or Committees. In general, the committee which set up in each mode: Aircraft, Railway, Marine and Marine Special Committees will deliberate on the draft reports while particularly serious accidents will be deliberated at the General Committee, and extremely serious accidents at the Board.

The Board (Committee) is convened by the Chairman (or the Director of Committee), and attended by the members from the respective disciplines. Any matters shall be decided by a majority of the members present. A meeting cannot be convened and a decision cannot be made unless more than half of the members are present.

The Board (Committee) meeting is also attended by the Director General, Deputy Director General, Director for Management, Investigators concerned from the Secretariat.

Deliberation items of Board and each Committee

Board and Committees	Matters to be deliberated
Board	・Matters that the Board considers as extremely serious accidents based on the scale of damage and other matters including social impact
General Committee	・Matters related to particularly serious accidents (i) An accident involving ten or more persons killed or missing (ii) An accident involving twenty or more persons killed, missing or seriously injured (With regard to aircraft accidents and a marine accidents, (i) and (ii) are limited to passenger transport services.) ・Any other matters deemed to be necessary by the Board
Aircraft Committee	・Matters related to aircraft accidents and aircraft serious incidents (excluding the accidents to be handled by the General Committee)
Railway Committee	・Matters related to railway accidents and railway serious incidents (excluding the accidents to be handled by the General Committee)
Marine Committee	・Matters related to marine accidents and marine incidents as may be deemed serious by the Board (excluding the accidents to be handled by the General Committee and the Marine Special Committee)
Marine Special Committee	・Matters related to marine accidents and marine incidents (excluding the accidents to be handled by the General Committee and the Marine Committee)

Appendix 3 Aircraft accidents and serious incidents to be investigated

<Aircraft accidents to be investigated>

◎ Paragraph 1, Article 2 of the Act for Establishment of the Japan Transport Safety Board (Definition of aircraft accident)

The term "Aircraft Accident" as used in this Act shall mean the accident listed in each of the items in paragraph 1 of Article 76 of the Civil Aeronautics Act.

◎ Paragraph 1, Article 76 of the Civil Aeronautics Act (Obligation to report)

1. Crash, collision or fire of aircraft;
2. Injury or death of any person, or destruction of any object caused by aircraft;
3. Death (except those specified in Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism) or disappearance of any person on board the aircraft;
4. Contact with other aircraft; and
5. Other accidents relating to aircraft specified in Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism.

◎ Article 165-3 of the Ordinance for Enforcement of the Civil Aeronautics Act (Accidents related to aircraft prescribed in the Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism under item 5 of the paragraph1 of the Article 76 of the Act)

The cases (excluding cases where the repair of a subject aircraft does not correspond to the major repair work) where navigating aircraft is damaged (except the sole damage of engine, cowling, engine accessory, propeller, wing tip, antenna, tire, brake or fairing).

<Aircraft serious incidents to be investigated>

◎ Item 2, Paragraph 2, Article 2 of the Act for Establishment of the Japan Transport Safety Board (Definition of aircraft serious incident)

A situation where a pilot in command of an aircraft during flight recognized a risk of collision or contact with any other aircraft, or any other situations prescribed by the Ordinances of Ministry of Land, Infrastructure, Transport and Tourism under Article 76-2 of the Civil Aeronautics Act.

◎ Article 76-2 of the Civil Aeronautics Act

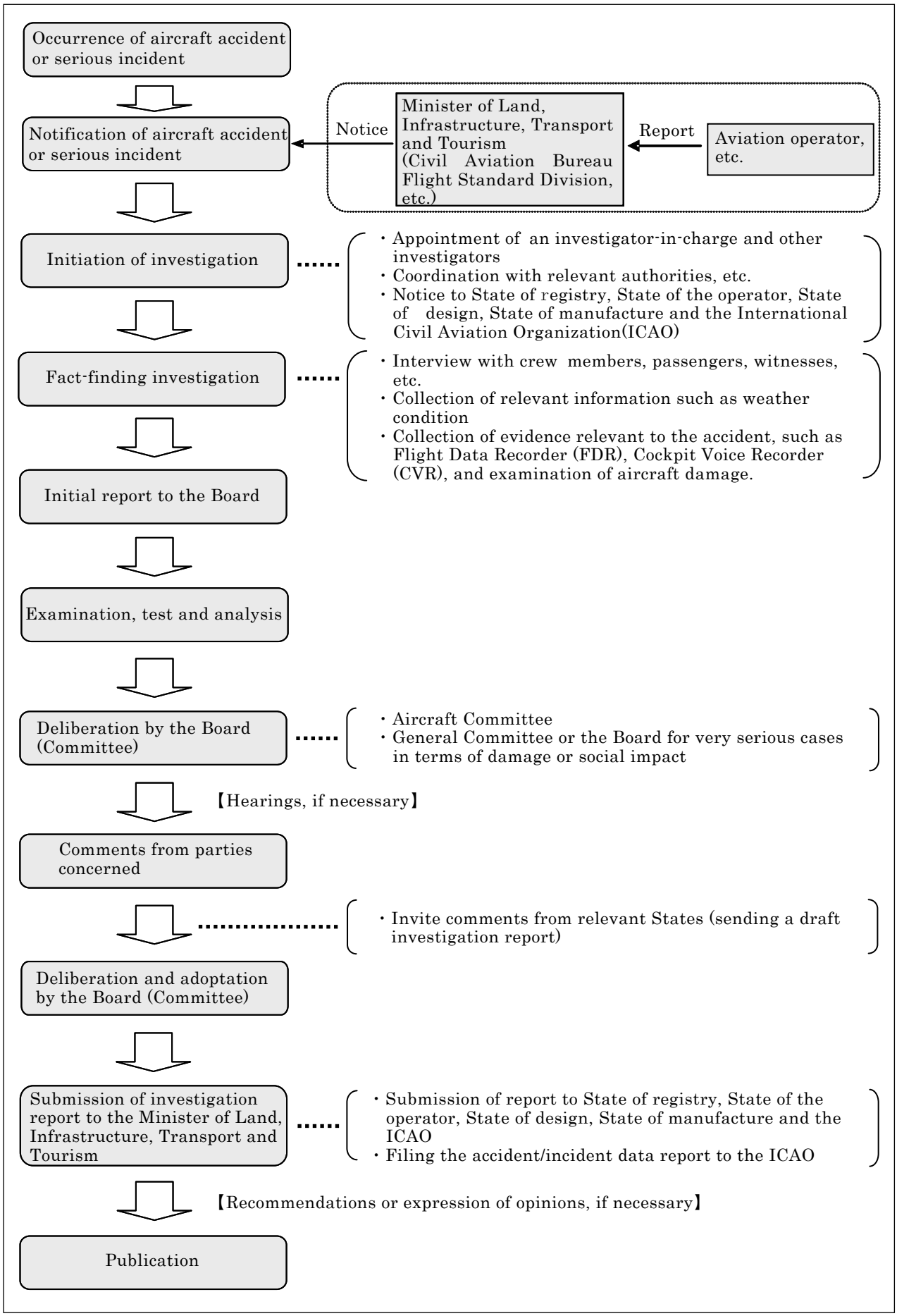
・When the pilot in command has recognized during flight that there was a danger of collision or contact with any other aircraft.

・When the pilot in command has recognized during flight that there is a danger of causing any of accidents listed in each item of paragraph 1, article 76 of the Civil Aeronautics Act, specified by Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism.

◎ Article 166-4 of the Ordinance for Enforcement of the Civil Aeronautics Act (The case prescribed in the Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism under Article 76-2 of the Civil Aeronautics Act)

1. Take-off from a closed runway or a runway being used by other aircraft or aborted take off
2. Landing on a closed runway or a runway being used by other aircraft or attempt of landing
3. Overrun, undershoot and deviation from a runway (limited to when an aircraft is disabled to perform taxiing)
4. Case where emergency evacuation was conducted with the use for emergency evacuation slide
5. Case where aircraft crew executed an emergency operation during navigation in order to avoid crash into water or contact on the ground
6. Damage of engine (limited to such a case where fragments penetrated the casing of subject engine or a major damage occurred inside the engine)
7. Continued halt or loss of power or thrust (except when the engine(s) are stopped with an attempt of assuming the engine(s) of a motor glider) of engines (in the case of multiple engines, 2 or more engines) in flight
8. Case where any of aircraft propeller, rotary wing, landing gear, rudder, elevator, aileron or flap is damaged and thus flight of the subject aircraft could be continued
9. Multiple malfunctions in one or more systems equipped on aircraft impeding the safe flight of aircraft
10. Occurrence of fire or smoke inside an aircraft and occurrence of fire within an engine fire-prevention area
11. Abnormal decompression inside an aircraft
12. Shortage of fuel requiring urgent measures
13. Case where aircraft operation is impeded by an encounter with air disturbance or other abnormal weather conditions, failure in aircraft equipment, or a flight at a speed exceeding the airspeed limit, limited payload factor limit operating altitude limit
14. Case where aircraft crew became unable to perform services normally due to injury or disease
15. Case where parts dropped from aircraft collided with one or more persons
16. Case equivalent to those listed in the preceding items

Appendix 4 Procedure of aircraft accident/incident investigation



Appendix 5 Number of occurrence by aircraft category (aircraft accidents)

(Cases)

Category / Year of occurrence	Aircraft			Rotor craft		Glider	Airship	Total
	Large aeroplane	Small aeroplane	Ultralight plane	Helicopter	Gyroplane			
1974	8	15	0	17	1	8	0	49
1975	3	16	0	16	0	8	0	43
1976	9	26	0	14	0	7	0	56
1977	5	12	0	16	1	5	0	39
1978	4	10	0	18	1	6	0	39
1979	8	14	0	20	1	6	1	50
1980	5	11	0	22	0	3	0	41
1981	3	10	1	18	0	8	0	40
1982	3	16	0	9	1	7	0	36
1983	4	13	10	12	0	7	0	46
1984	4	5	6	13	1	3	0	32
1985	5	11	6	15	0	4	0	41
1986	4	12	14	15	3	4	0	52
1987	8	17	8	8	1	3	0	45
1988	5	6	7	12	2	3	1	36
1989	2	6	11	9	1	12	0	41
1990	3	11	9	16	2	7	0	48
1991	2	10	6	19	0	7	0	44
1992	3	5	5	7	0	4	0	24
1993	4	5	3	17	1	2	0	32
1994	3	4	8	13	0	2	0	30
1995	4	7	10	6	0	1	0	28
1996	8	11	5	8	0	4	0	36
1997	3	11	3	8	2	3	0	30
1998	4	14	5	6	1	6	0	36
1999	1	9	5	7	1	5	0	28
2000	1	5	5	11	1	5	0	28
2001	2	5	2	8	0	4	0	21
2002	4	4	5	15	0	7	0	35
2003	2	10	3	1	0	2	0	18
2004	4	11	2	6	1	3	0	27
2005	1	8	0	7	0	7	0	23

Category / Year of occurrence	Aircraft			Rotor craft		Glider	Airship	Total
	Large aeroplane	Small aeroplane	Ultralight plane	Helicopter	Gyroplane			
2006	3	3	4	2	1	5	0	18
2007	5	3	4	7	0	4	0	23
2008	3	6	2	3	0	3	0	17
2009	6	2	1	7	0	3	0	19
2010	0	4	2	4	0	2	0	12
2011	1	8	1	3	0	1	0	14
Total	147	356	153	415	23	181	2	1,277

(Note) 1. The figures include the cases handled by the Aircraft and Railway Accident Investigation Commission.
2. Large aeroplanes are aircrafts with a maximum take-off weight of more than 5,700kg.
3. Small aeroplanes are aircrafts with a maximum take-off weight of 5,700kg or less, excluding Ultralight planes.

Appendix 6 Number of occurrence by aircraft category (aircraft serious incidents)

(Cases)

Category / Year of occurrence	Aircraft			Rotor craft		Glider	Airship	Total
	Large aeroplane	Small aeroplane	Ultralight plane	Helicopter	Gyroplane			
2001	3	0	0	0	0	0	0	3
2002	0	1	2	1	0	1	0	5
2003	7	1	4	2	0	1	0	15
2004	5	3	4	2	0	0	0	14
2005	10	3	1	1	0	0	0	15
2006	2	2	0	0	0	0	0	4
2007	6	2	2	1	0	1	0	12
2008	4	1	0	0	0	0	0	5
2009	4	5	0	2	0	0	0	11
2010	7	1	3	1	0	0	0	12
2011	6	0	0	0	0	0	0	6
Total	54	19	16	10	0	3	0	102

(Note) 1. The figures include the cases handled by the Aircraft and Railway Accident Investigation Commission.
2. Large aeroplanes are aircrafts with a maximum take-off weight of more than 5,700kg.
3. Small aeroplanes are aircrafts with a maximum take-off weight of 5,700kg or less, excluding Ultralight planes.
4. The number of cases for 2001 represents those that occurred from October onward.

Appendix 7 Summary of aircraft accidents and serious incidents in 2011

The summary is based on the information at the time of launching investigation and may be modified as the investigations or deliberations progress.

(Aircraft accidents)

No.	Date of occurrence	Location of occurrence	Operator	Aircraft registration number and type of aircraft	Summary
1	Jan. 03, 2011	About 1.3 km south-southeast of Yagoyama mountain, Otsumachi, Kikuchi-gun, Kumamoto Prefecture	Private	JA701M Piper PA-46-350P (small aeroplane)	The aircraft took off from Kumamoto Airport but did not arrive at Kita-kyushu Airport at the estimated time of arrival, and went missing. A search conducted subsequently found that the aircraft has crashed. Two persons on board died.
2	Feb. 18, 2011	On the runway of Yao Airport	Showa Aviation Co., Ltd.	JA8828 Fairchild Swearingen SA226-AT (small aeroplane)	The aircraft had its airframe damaged when it landed at Yao Airport. A captain, co-pilot and two passengers were on board, but nobody was injured. The aircraft sustained substantial damage.
3	Mar. 24, 2011	On the runway of Kumamoto Airport	Honda Airline Ltd.	JA33UK Cessna 172S (small aeroplane)	The aircraft took off from Kumamoto Airport for flight training. When the aircraft touched the runway for landing, it bounced, then, performed a go-around. After that, the aircraft landed at the airport.
4	Apr. 27, 2011	At an altitude of about 25,000 ft, about 27 nm east-southeast of Kushimoto	All Nippon Airways Co., Ltd.	JA8569 Boeing 767-300 (large aeroplane)	The aircraft took off from Miyazaki Airport for Tokyo International Airport. While flying at about 25,000 ft, about 27 nm east-southeast of Kushimoto, the aircraft encountered turbulence and one cabin attendant was seriously injured in front of the left aft lavatory. Four other passengers and cabin attendants were slightly injured. There were 119 people on board; a PIC, seven crew members and 111 passengers. The aircraft was not damaged.
5	June 12, 2011	Shinshinotsu gliding field, Shinshinotsu-mura, Ishikari-gun, Hokkaido	Private	JA2168 Sportabia SF25C (motor glider, two-seater)	The motor glider sustained damage upon landing at Shinshinotsu gliding field at the end of a familiarization flight. A captain and one passenger were on board the aircraft. The captain was seriously injured while the passenger was slightly injured. The aircraft sustained substantial damage, but there was no outbreak of fire.

No.	Date of occurrence	Location of occurrence	Operator	Aircraft registration number and type of aircraft	Summary
6	July 10, 2011	Saitama Prefecture In the air, about 11,000ft above Honda Airport	Tokyo Skydiving Club	JA55DZ Cessna 208B (small aeroplane)	The aircraft took off from Honda Airport for a skydiving flight with 20 people on board, consisting of the captain, a passenger and skydivers. The 18 divers jumped out of the aircraft into the airspace over the airport and the aircraft landed at Honda Airport. After landing, the Captain inspected the aircraft and found it to be damaged. The aircraft sustained substantial damage and one skydiver was injured due to the collision with the aircraft frame.
7	July 14, 2011	Sabaekoizumi temporary helipad, Sabae-city Koizumi, Fukui Prefecture	Private	JA007J Robinson R22Beta (rotorcraft)	The aircraft rolled over and sustained damage upon landing at Sabaekoizumi temporary helipad after finishing a familiarization flight. A captain and a passenger were on board the aircraft and the captain was seriously injured while the passenger was slightly injured. The aircraft sustained substantial damage, but no fire broke out.
8	July 24, 2011	At the apron of Tajima Airport, Hyogo Prefecture	Private	JA4123 Sokata TB21 (small aeroplane)	When the aircraft was taxiing at the apron for take-off from Tajima airport, the left main landing gear was retracted. The lower surface of the left wing contacted the pavement surface, and the aircraft stopped, causing structural damage and deformation to part of the left wing. Two persons were on board the aircraft but no one was injured.
9	July 26, 2011	On the sea about 8 km east of Miho, Shimizu-ku, Shimizu-City, Shizuoka Prefecture	Private	JA22DB Extra EA300/200 (small aeroplane)	The aircraft took off from Fujikawa glider field but did not return to the field at the estimated time of arrival. A search for the aircraft found part of the airframe on the sea surface about 8 km east of Miho, Shimizu-ku, Shizuoka-City, Shizuoka Prefecture. One person on board was missing.

No.	Date of occurrence	Location of occurrence	Operator	Aircraft registration number and type of aircraft	Summary
10	July 28, 2011	Over the mountains of Tsurugiyama, Memuro-cho, Kasai-gun, Hokkaido	Civil Aviation College	JA4215 Beechcraft A36 (small aeroplane)	After taking off from Obihiro Airport for training, the aircraft notified the air traffic control tower of its entry into the civil training and test airspace. Contact was lost after the aircraft sent out an automatic MAYDAY signal. A search found the aircraft crashed in the mountains of Tsurugiyama, Memuro-cho, Kasai-gun, Hokkaido. Three persons on board died while one was injured. The aircraft was destroyed and fire broke out.
11	Aug. 31, 2011	In the irrigation channel at Takahama, Ishioka-City, Ibaraki Prefecture	Private	JR1417 Sports aviation Aircraft Avenger R447L (ultralight plane, one-seater)	The aircraft with one pilot on board took off from the Chiyoda temporary airfield, Kasumigaura City, Ibaraki Prefecture. While flying for Kasumigaura, the aircraft lost engine power, causing it to contact a power distribution line and crashed into an irrigation channel at Takahama, Ishioka-City. The pilot was slightly injured.
12	Sep. 22, 2011	Hikita baseball field, Higashi-Kagawa-City, Kagawa Prefecture	Shikoku Air Service Co., Ltd.	JA6522 Eurocopter AS350B3 (Rotor craft)	The aircraft with a pilot and two employees from the power company on board took off from Takamatsu Airport to check the power line in the aftermath of Typhoon Roke(#15). During the flight, they were aware of the smell of a burnt odor and then saw white smoke inside the aircraft. So they made an emergency landing on the baseball field at Hikita, Higashi-Kagawa-City. After landing, all passengers evacuated from the aircraft and no one was injured. But the aircraft was damaged seriously by fire.

No.	Date of occurrence	Location of occurrence	Operator	Aircraft registration number and type of aircraft	Summary
13	Oct. 03, 2011	On the runway of Chofu Airport	Kyoritsu Air Co., Ltd.	JA3959 Cessna TU206G (small aeroplane)	The airplane took off from Chofu Airport to take pictures of the Yatsugatake area, but returned to Chofu Airport because it was too cloudy to take any pictures. When landing, the aircraft bounced several times, and it is assumed that the aircraft had been put in the porpoise. The nose landing gear and the fuselage structure near it was damaged and the propeller tip and tail section of the fuselage came into contact with the runway. The captain and photographer on board the aircraft but no one was injured.
14	Oct. 03, 2011	Chojayashiki camp site, 1649-1 Miyagase, Kiyokawa-mura, Aiko-gun, Kanagawa Prefecture	Toho Air Service Co., Ltd.	JA508A Eurocopter AS350B3 (rotor craft)	The aircraft took off from the temporary helipad in Kiyokawa-mura, Aiko-gun, Kanagawa Prefecture for cargo shipment purposes. The tail (including the tail rotor) was damaged during the flight, causing it to crash into the Chojayashiki camp site. A fire broke out when crashed, and most of the aircraft was burst down. One person died and another was injured. The aircraft was destroyed.

(Aircraft serious incidents)

No.	Date of occurrence	Location of occurrence	Operator	Aircraft registration number and type of aircraft	Summary
1	May 10, 2011	About 3 km north west of Fukuoka Airport	Japan Air Commuter Co., Ltd. (Aircraft A)	JA844C Bombardier DHC-8-402 (large aeroplane)	Aircraft A was approaching Fukuoka Airport after receiving the landing clearance from the air traffic controller. In the meantime, Aircraft B entered runway 16 via taxiway E2 after receiving the takeoff clearance. Aircraft A confirmed the landing clearance with the air traffic controller, and the controller instructed go-around to it. There were 79 persons on board the Aircraft A, consisting of PIC, three other crewmembers and 75 passengers, while 129 persons on board the Aircraft B, consisting of the PIC, seven other crewmembers and 121 passengers, but there were no dead or injured and no damage on both aircrafts.
			All Nippon Airways Co., Ltd. (Aircraft B)	JA602A Boeing 767-300 (large aeroplane)	
2	June 04, 2011	Over Okushiri Airport, Hokkaido	Hokkaido Air System Co., Ltd.	JA03HC Saab SAAB340B (large aeroplane)	The aircraft took off from Hakodate Airport and approached Okushiri Airport. But when the aircraft performed a missed approach due to a bad weather, the Ground Proximity Warning System issued a warning over Okushiri Airport. The aircraft climbed according to the warning and, headed back to Hakodate Airport and landed at the airport.
3	June 27, 2011	At an altitude of about 2,000m, about 50km southeast of Osaka International Airport	ANA Wings Co., Ltd.	JA805K Bombardier DHC-8-314 (large aeroplane)	The aircraft took off from Osaka International Airport and while climbing, abnormal sounds came from the No.1 engine and the turbine temperature exceeded the limit at about 2,000 m about 50 km southwest of Osaka International Airport. The PIC stopped the relevant engine; requested priority in air traffic control, returned to the airport and landed.

No.	Date of occurrence	Location of occurrence	Operator	Aircraft registration number and type of aircraft	Summary
4	July 08, 2011	At an altitude of about 9,200m, about 120km northwest of Tokyo International Airport	All Nippon Airways Co., Ltd.	JA8674 Boeing 767-300 (large aeroplane)	The aircraft took off from Tokyo International Airport and while climbing, abnormal sounds and vibration occurred at the No.1 engine at about 9,200m about 120km northwest of Tokyo International Airport. The PIC stopped the relevant engine; requested priority in air traffic control, returned to the airport and landed.
5	Sep. 06, 2011	At about 41,000ft pressure altitude, about 43km south of Hamamatsu-City, Shizuoka Prefecture	Air Nippon Co., Ltd.	JA16AN Boeing 737-700 (large aeroplane)	The aircraft took off from Naha airport and while flying, the PIC left his seat for a while. It is highly probable that when the PIC returned to the cockpit, the FO inadvertently operated the rudder trim control switch instead of the door switch. This caused the aircraft to have an unusual attitude, descended about 6,300 ft (about 1,900 m), and exceeding the speed limit. Two cabin attendants sustained minor injuries out of the 117 persons on board the aircraft, consisting of the PIC, FO, three cabin attendants and 112 passengers.
6	Oct. 12, 2011	On Runway A of Kansai International Airport and about 6.5km southwest of Kansai International Airport	Hawaiian Airlines (Aircraft A)	N588HA Boeing 767-300 (large aeroplane)	While an air traffic controller instructed Aircraft A, which was waiting to depart for Honolulu before Runway A, to remain waiting due to the continuous landing of several arriving aircraft, Aircraft A entered Runway A. Therefore, Aircraft B which had received the landing clearance had to perform a go-around as instructed by the air traffic controller.
			All Nippon Airways Co., Ltd. (Aircraft B)	JA8356 Boeing 767-300 (large aeroplane)	

Appendix 8 Remarks made in 2011

The JTSB provided two remarks (one for aircraft accident and the other for aircraft serious incident), summarized as follows:

1. Aircraft serious incident involving JN8776, Kawasaki Hughes OH-6D (Rotorcraft), operated by No.211 Air Training Squadron of Japan Maritime Self-Defense Force and JA4061 Cessna 172P operated by New Japan Aviation Co., Ltd.

(publicized on March 25, 2011)

Safety impeding flight maneuvers and rapid changes in aircraft attitudes and altitude executed as part of pilot training may affect the flights of other aircrafts. In addition, aircrafts passing-by might be overlooked more often than in ordinary flights. Moreover, once this sort of training starts, it may sometimes be difficult to change the heading or altitude mid-way even if other aircrafts are observed.

Based on the above, the Civil Aviation Bureau should allow training that involves such safety impeding flight maneuvers and rapid changes in aircraft attitude and altitude only in training/testing airspace that has been noticed.

For the JSDF training/testing airspace, it is also preferable that safety precautions similar to those in the civil aviation sector be applied in their training airspace, including those that are stipulated under the following acts: "Enforcement of prior coordination (Article 95-3 of Civil Aeronautics Act and Article 198-13 of Ordinance for Enforcement of the Civil Aeronautics Act)", "Obtaining of air traffic information (Article 96-2 paragraph (1) of Civil Aeronautics Act and Article 202-4 of Ordinance for Enforcement of the Civil Aeronautics Act)", "Listening of air traffic information (Article 96-2 paragraph (2) of Civil Aeronautics Act) ", and "Equipping of wireless telephone (Article 60 of Civil Aeronautics Act and Clause 3, Article 146 of Ordinance for Enforcement of the Civil Aeronautics Act) ".

2. Aircraft accident involving JA96GF, BELL 412EP (Rotorcraft), operated by Gifu Air Rescue Team

(publicized on October 28, 2011)

This accident occurred when the disaster prevention helicopter of Gifu Prefecture (hereinafter referred to as “the Aircraft”) was operating for a mountain rescue activity. Following the results of the accident investigation, points listed below are believed to have been inappropriate in terms of the operation of the Aircraft.

- In making a decision to dispatch the Aircraft, there was no provision that requires the Operation Control Manager to examine whether the dispatch of the Aircraft is appropriate or not, nor were there a provision that requires the Operation Control Manager and the Operation Control Supervisor to have professional knowledge and experience related to aviation, and a provision regarding the number of pilots aboard an aircraft to be dispatched.

- A final decision at the Disaster Prevention Aviation Center of Gifu Prefecture (hereinafter referred to as "the Center") to dispatch the Aircraft for an emergency activity had been in effect made by the captain. Therefore, the Center lacked a systematic process in which the Manager of the Center can make a decision for the dispatch after confirming an agreement from each group toward the dispatch.
- There was no clear provision between the Center and the Gifu Prefectural Police Aviation Unit regarding the division of jobs for mountain rescue activities in the Northern Alps. It is somewhat likely that the Center lacked a clear recognition about this burden sharing.
- Judging from the rescue activity and training records for the Aircraft, it is highly probable that the Center had not assumed that it would be dispatched for a rescue operation in the higher Northern Alps areas, but nevertheless, the Center dispatched the Aircraft for the rescue mission.

The urgent necessity to begin a rescue operation for the purpose of life saving as quickly as possible is fully understandable. However, many difficult factors are involved in rescue activities in Higher Mountainous Areas by helicopter. Therefore, in order to prevent subsequent accidents and ensure safety in such activities, efforts must be made not only to acquire high levels of techniques for helicopter operations and rescue activities but also to establish a safety management system under which the dispatch of a helicopter can be decided in a swift and appropriate manner.

Consequently local governments which use helicopters for rescue activities, while keeping in mind the points above, are strongly desired to review their own safety management systems, rules and other related matters to ensure the safety of helicopter operations. It is also desirable that the Fire and Disaster Management Agency, which has given recommendations to local governments up until now, will do so regarding their review.

Appendix 9 Information provision during an investigation in 2011

There were two cases (one for aircraft accident and the other for aircraft serious incident) of information provision in 2011, which are summarized below:

1. Aircraft serious incident involving Saab SAAB340B operated by Hokkaido Air System Co., Ltd.

(provided on September 22, 2011)

The JTSB provided the following information on a serious incident "emergency operation (ground proximity) involving a Saab SAAB340B, operated by Hokkaido Air System Co., Ltd., occurred on June 4, 2011, to the Civil Aviation Bureau of Ministry of Land, Infrastructure, Transport and Tourism. Information on the following two points was provided.

(1) It is possible that when the go-around switch is pressed without setting the missed approach altitude in APA, the mode in the vertical direction may not have changed to the go-around mode.

It is therefore critical to set the appropriate missed approach altitude in APA first before commencing operation.

(2) If the APA altitude setting is changed with the vertical mode in the ALTS Capture mode, the vertical mode is changed to the VS mode.

If the VS mode is engaged with the Autopilot System ON during descent, the aircraft will control to maintain the rate of descent at that time and continue descending.

When the APA altitude setting is changed in the ALTS Capture mode, attention must be paid to the change in the mode.

2. Aircraft accident involving Beechcraft A36 operated by Civil Aviation College

(provided on September 22, 2011)

The JTSB provided the following information on a crash accident involving a Beechcraft A36, operated by Civil Aviation College, occurred on July 28 2011, to the Civil Aviation Bureau of Ministry of Land, Infrastructure, Transport and Tourism.

The latest investigation results revealed the following issues on the captain's aviation medical examination.

(1) The captain's regular medicine

A hospital in Obihiro has prescribed the captain "ONON 112.5mg", a leukotriene receptor antagonist, to treat his allergic rhinitis. The captain has been taking a total of four capsules a day, two in the morning and evening each.

(2) Issuance of Class 1 Aviation Medical Certificate to the captain

When applying for the Medical Certificate, the captain indicated that he was taking ONON on a regular basis when he submitted his application form on January 24, 2011. He subsequently underwent a medical examination conducted by a designated doctor at Obihiro Kosei Hospital which is run by the Federation of Agricultural Cooperation Associations in Hokkaido. The captain was judged to have conformed to the requirements on January 31 of the same year, and the medical certificate was then issued.

Appendix 10 Railway accidents and serious incidents to be investigated

<Railway accidents to be investigated>

◎ Paragraph 3, Article 2 of the Act for Establishment of the Japan Transport Safety Board
(Definition of railway accident)

The term "Railway Accident" as used in this Act shall mean a serious accident prescribed by the Ordinance of Ministry of Land, Infrastructure, Transport and Tourism among those of the following kinds of accidents; an accident that occurs during the operation of trains or vehicles as provided in Article 19 of the Railway Business Act, collision or fire involving trains or any other accidents that occur during the operation of trains or vehicles on a dedicated railway, collision or fire involving vehicles or any other accidents that occur during the operation of vehicles on a tramway.

◎ Article 1 of Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board (Serious accidents prescribed by the Ordinance of Ministry of Land, Infrastructure, Transport and Tourism, stipulated in paragraph 3, Article 2 of the Act for Establishment of the Japan Transport Safety Board)

1. The accidents specified in items 1 to 3 inclusive of paragraph 1 of Article 3 of the Ordinance on Report on Railway Accidents, etc. (the Ordinance);
2. From among the accidents specified in items 4 to 6 inclusive of paragraph 1 of Article 3 of the Ordinance, that which falls under any of the following sub-items:
   (a) an accident involving any passenger, crew, etc. killed;
   (b) an accident involving five or more persons killed or injured;
   (c) an accident found to be likely to have been caused owing to a railway officer's error in handling or owing to malfunction, injury, destruction, etc. of the vehicles or railway facilities, which resulted in the death of any person;
3. The accidents specified in items 4 to 7 inclusive of paragraph 1, Article 3 of the Ordinance which are found to be particularly rare and exceptional;
4. The accidents equivalent to those specified in items 1 to 7 inclusive of paragraph 1, Article 3 of the Ordinance which have occurred relevant to dedicated railways and which are found to be particularly rare and exceptional; and
5. The accidents equivalent to those specified in items 1 to 3 inclusive which have occurred relevant to a tramway, as specified by a public notice issued by the Japan Transport Safety Board.

[Reference] The accidents listed in each of the items of paragraph 1, Article 3 of the Ordinance on Reporting on Railway Accidents, etc.
Item 1: Train collision

Item 2: Train derailment
Item 3: Train fire
Item 4: Level crossing accident
Item 5: Accident against road traffic
Item 6: Other accidents with casualties
Item 7: Heavy property loss without casualties

◎ Article 1 of the Public Notice of the Japan Transport Safety Board (Accidents specified by the public notice stipulated in item 5, Article 1 of the Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board)

1. From among the accidents specified in items 1 to 6 inclusive of paragraph 1 of Article 1 of the Ordinance on Reporting on Tramway Accidents, etc. (the Ordinance), that which falls under any of the following sub-items:
   (a) an accident that causes the death of a passenger, crewmember, etc.;
   (b) an accident that causes five or more casualties;
2. The accidents specified in items 1 to 7 inclusive of paragraph 1 Article 1 of the Ordinance which are found to be particularly rare and exceptional; and
3. From among the accidents occurring on a tramway operated under the application of the Ministerial Ordinances to Provide Technical Regulatory Standards Railways mutatis mutandis as specified in paragraph 1 of Article 3 of the Ordinance on Tramway Operations, the accidents equivalent to those specified in items 1 to 3 of Article 1 of the Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board.

[Reference] The accidents specified in the items of paragraph 1, Article 1 of the Ordinance on Reporting on Tramway Accidents, etc.

Item 1: Vehicle collision
Item 2: Vehicle derailment
Item 3: Vehicle fire
Item 4: Level crossing accident
Item 5: Accidents against road traffic
Item 6: Other accidents with casualties
Item 7: Heavy property loss without casualties

Railway accidents to be investigated

<table>
<tr><th>Category</th><th>Train collision</th><th>Train derailment</th><th>Train fire</th><th>Level crossing accident</th><th>Accident against road traffic</th><th>Other accidents with casualties</th><th>Heavy property loss without casualties</th></tr>
<tr><td rowspan="2">Railway (including tramway operated as equivalent to railway)

[Notice 1-3]</td><td colspan="3" rowspan="2">All accidents
(These refer to train accidents and do not include vehicle accidents on railways.*1)
[Ordinance 1-1]</td><td colspan="3">・Accidents involving the death of a passenger, crew member, etc.
・Accidents involving five or more casualties
・Accidents found to have likely been caused by a railway worker's error in procedure or due to the malfunction, damage, destruction, etc., of vehicles or railway facilities, which resulted in the death of a person
[Ordinance 1-2]</td><td></td></tr>
<tr><td colspan="4">Accidents that are particularly rare and exceptional [Ordinance 1-3]</td></tr>
<tr><td>Dedicated railway</td><td colspan="7">Accidents that are particularly rare and exceptional [Ordinance 1-4]</td></tr>
<tr><td rowspan="2">Tramway
[Ordinance 1-5]</td><td colspan="6">Accidents involving the death of a passenger, crewmember, etc., and accidents involving five or more casualties
[Notice 1-1]</td><td></td></tr>
<tr><td colspan="7">Accidents that are particularly rare and exceptional [Notice 1-2]</td></tr>
</table>

*1: Among vehicle collisions, derailments, and fires on railways, accidents that fall under the category of level crossing accident, accidents against road traffics , or other accidents with casualties and which involve the death of a passenger, crewmember, etc. [Ordinance 1-2] or which are particularly rare and exceptional [Ordinance 1-3] are to be investigated.

(Note) "Ordinance" refers to the Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board; "Notice" refers to the Public Notice by the Japan Transport Safety Board; and the numbers refer to the Article and paragraph numbers.

< Railway serious incidents to be investigated>

◎ **Item 2, paragraph 4, Article 2 of the Act for Establishment of the Japan Transport Safety Board** (Definition of railway serious incident)

A situation, prescribed by the Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism (Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board), deemed to bear a risk of accident occurrence.

◎ **Article 2 of the Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board** (A situation prescribed by the Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism, stipulated in item 2, paragraph 4, Article 2 of the Act for Establishment of the Japan Transport Safety Board.)

1. The situation specified in item 1 of paragraph 1 of Article 4 of the Ordinance on Reporting on Tramway Accidents, etc. (the Ordinance), wherein another train or vehicle had existed in the zone specified in said item;
   [A situation where a train starts moving for the purpose of operating in the relevant block section before completion of the block procedure: Referred to as "Incorrect management of safety block."]
2. The situation specified in item 2 of paragraph 1 of Article 4 of the Ordinance, wherein a train had entered into the route as specified in said item;
   [A situation where a signal indicates that a train should proceed even though there is an obstacle in the route of the train, or the route of the train is obstructed while the signal indicates that the train should proceed: Referred to as "Incorrect indication of signal."]
3. The situation specified in item 3 of paragraph 1 of Article 4 of the Ordinance, wherein another train or vehicle had entered into the protected area of the signal which protects the zone of the route as specified in said item;
   [A situation where a train proceeds regardless of a stop signal, thereby obstructing the route of another train or vehicle: Referred to as "Violating red signal."]
4. The situation specified in item 7 of paragraph 1 of Article 4 of the Ordinance, which caused malfunction, injury, destruction, etc. bearing particularly serious risk of collision or derailment of or fire in a train;
   [A situation that causes a malfunction, etc., of facilities: Referred to as "Dangerous damage in facilities."]
5. The situation specified in item 8 of paragraph 1 of Article 4 the Ordinance, which caused malfunction, injury, destruction, etc. bearing particularly serious risk of collision or derailment of or fire in a train;
   [A situation that causes a malfunction, etc., of a vehicle: Referred to as "Dangerous trouble in vehicle."]
6. The situation specified in items 1 to 10 inclusive of paragraph 1 of Article 4 of the

Ordinance which is found to be particularly rare and exceptional; and

[These are referred to as: item 4 “Main track overrun”; item 5 “Violating closure section for construction”; item 6 “vehicle derailment”; item 9 “Heavy leakage of dangerous object”; and item 10 “others,” respectively.]

7. The situations occurred relevant to the tramway as specified by a public notice of the Japan Transport Safety Board as being equivalent to the situations specified in the in preceding items.

◎ Article 2 of the Public Notice of the Japan Transport Safety Board

(A situation prescribed by the public notice stipulated in item 7, Article 2 of the Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board (Serious incident on a tramway))

1. The situation specified in item 1 of Article 2 of the Ordinance on Reporting on Tramway Accidents, etc. (the Ordinance), wherein another vehicle operating on the main track had existed in the zone specified in said item;

   [A situation where a vehicle is operating on the main track for the purpose of operating in the relevant safety zone before the completion of safety system procedures: Referred to as “Incorrect management of safety block.”]

2. The situation specified in item 4 of Article 2 of the Ordinance, which caused malfunction, injury, destruction, etc., bearing a particularly serious risk of collision, derailment of or fire in a vehicle operating on the main track;

   [A situation that causes a malfunction, etc., of facilities: Referred to as “Dangerous damage in facilities.”]

3. The situation specified in item 5 of Article 2 of the Ordinance, which caused malfunction, injury, destruction, etc., bearing a particularly serious risk of collision, derailment of or fire in a vehicle operating on the main track;

   [A situation that causes a malfunction, etc., of a vehicle: Referred to as “Dangerous trouble in vehicle.”]

4. The situation specified in items 1 to 7 inclusive of Article 2 of the Ordinance which is found to be particularly rare and exceptional; and

   [These are referred to as: item 2 “Violating red signal;” item 3 “Main track overrun;” item 6 “Heavy leakage of dangerous object;” and item 7 “others,” respectively.]

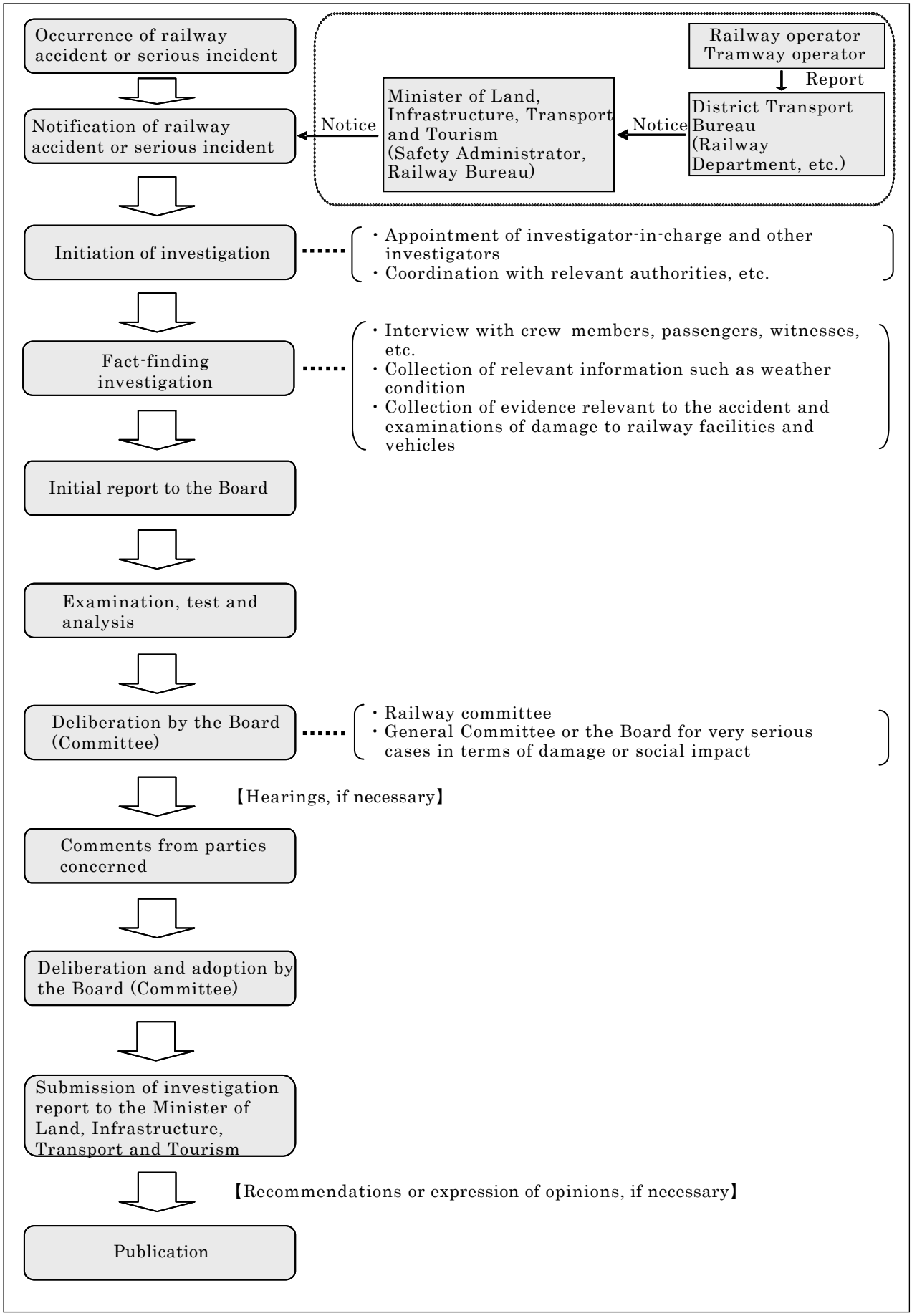
5. From among the situations occurring on a tramway operated under the application of the Ministerial Ordinances to Provide Technical Regulatory Standards Railways mutatis mutandis as specified in paragraph 1 of Article 3 of the Ordinance on Tramway Operations, the situations equivalent to those specified in items 1 to 6 of Article 2 of the Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board.

Serious incidents to be investigated

<table>
<tr><th>Category</th><th>・Incorrect management of safety block (Railway)
・Incorrect management of safety block (Tramway)</th><th>・Incorrect indication of signal (Railway)
・Violating red signal</th><th>Dangerous damage in facilities</th><th>Dangerous trouble in vehicle</th><th>・Main track overrun
・Violating closure section for construction (Railway)
・Vehicle derailment (Railway)
・Heavy leakage of dangerous object
・Others</th></tr>
<tr><td rowspan="2">Railway (including tramway operated as equivalent to railway) [Notice 2-5]</td><td colspan="2">Certain conditions such as the presence of another train [Ordinances 2-1, 2-2, and 2-3]</td><td colspan="2">Risk of collision, derailment or fire [Ordinances 2-4/ 2-5]</td><td></td></tr>
<tr><td colspan="5">Incidents that are particularly rare and exceptional [Ordinance 2-6]</td></tr>
<tr><td rowspan="2">Tramway [Ordinance 2-7]</td><td>Certain conditions such as the presence of a vehicle [Notice 2-1]</td><td></td><td colspan="2">Risk of collision, derailment or fire [Notices 2-2 and 2-3]</td><td></td></tr>
<tr><td colspan="5">Incidents that are particularly rare and exceptional [Notice 2-4]</td></tr>
</table>

(Note) “Ordinance” refers to the Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board; “Notice” refers to the Public Notice by the Japan Transport Safety Board, and the numbers refer to the Article and paragraph numbers.

Appendix 11　Procedure of railway accident/incident investigation



Appendix 12 Number of occurrence by type (railway accidents)

(Cases)

Year of occurrence \ Type	Railway							Tramway							Total
	Train collision	Train derailment	Train fire	Level crossing accident	Accident against road traffic	Other accidents with casualties	Heavy property loss without casualties	Vehicle collision	Vehicle derailment	Vehicle fire	Level crossing accident	Accident against road traffic	Other accidents with casualties	Heavy property loss without casualties	
2001	0	4	1	0	0	0	0	0	0	0	0	0	0	0	5
2002	1	14	1	2	0	1	1	0	0	0	0	0	0	0	20
2003	1	20	2	0	0	0	0	0	0	0	0	0	0	0	23
2004	0	18	0	1	0	0	0	0	1	0	0	0	0	0	20
2005	2	20	0	0	0	1	0	0	1	0	0	0	0	0	24
2006	1	13	0	1	0	0	0	1	0	0	0	0	0	0	16
2007	0	12	2	3	0	0	0	0	2	0	0	0	0	0	19
2008	0	7	2	2	0	1	1	0	0	0	0	0	0	0	13
2009	0	5	1	2	0	3	0	0	0	0	0	0	0	0	11
2010	0	6	0	0	0	1	0	0	0	0	0	2	0	0	9
2011	0	12	0	1	0	1	0	0	0	0	0	0	0	0	14
Total	5	131	9	12	0	8	2	1	4	0	0	2	0	0	174

(Notes) 1. The figures include the cases handled by the Aircraft and Railway Accidents Investigation Commission.

2. The number of cases for 2001 represents those that occurred from October onward.

Appendix 13 Number of occurrence by type (railway serious incidents)

(Cases)

Year of occurrence \ Type	Railway										Tramway							Total
	Incorrect management of safety block	Incorrect indication of signal	Violating red signal	Main track overrun	Violating closure section for construction	Vehicle derailment	Dangerous damage in facilities	Dangerous trouble in vehicle	Heavy leakage of dangerous object	Others	Incorrect management of safety block	Violating red signal	Main track overrun	Dangerous damage in facilities	Dangerous trouble in vehicle	Heavy leakage of dangerous object	Others	
2001	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2002	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
2003	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
2004	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2
2005	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	3
2006	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	4
2007	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	3
2008	0	0	0	0	1	0	0	3	0	0	0	0	0	0	0	0	0	4
2009	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	4
2010	1	0	0	0	1	1	0	2	0	0	1	1	0	0	0	0	0	7
2011	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
Total	1	7	0	0	5	1	1	16	0	1	1	1	0	0	0	0	0	34

(Notes) 1. The figures include the cases handled by the Aircraft and Railway Accidents Investigation Commission.

2. The number of cases for 2001 represents those that occurred from October onward.

Appendix 14 Summary of railway accidents and serious incidents in 2011

The summary is based on the information at the time of launching investigation and may be modified as the investigations or deliberations progress.

(Railway accidents)

No.	Date of occurrence	Operator	Line section	Type	Summary
1	Jan. 01, 2011	West Japan Railway Company	Between Higashiyama Koen and Houkidaisen Stations, San-in Line, Tottori Prefecture	Train derailment	The up-going single-car snow plow train left the Yonago Station behind schedule to rescue a limited express train that had stopped due to fallen trees between Shimoichi and Mikuriya Stations. When the driver was operating the snow plow train by power running at about 10 km/h between Higashiyama Koen and Houkidaisen Stations, he saw a stop signal indicated on the obstruction warning indicator at a Level crossing, and stopped the train before the indicator. Then, he tried to advance the train closer to the Level crossing in order to confirm the safety at the Level crossing, but the train did not move. When the snow removal crew who were on board to rescue the limited express train removed the snow from around the plow head, they found that the first axle of the head was derailed to the left. The driver and four snow removal crew members were on board the train, but there were no deaths or injuries.
2	Jan. 27, 2011	West Japan Railway Company	On the premises of Nagahara Station, Kosei Line, Shiga Prefecture	Train derailment	The down-going 8-car train arrived at Nagahara Station almost on schedule. When the train arrived, there was a snow bank on the rails at the train stop position target, so the driver stopped the train before the target. Then, the driver started up the train to depart on time and shuttle back to Kyoto Station, but the train did not move. He reported the situation to the traffic control center. When the personnel who were contacted by the center arrived and removed snow from the train, it was found that the two axles of the 8th (rearmost) car's rear truck were derailed to the left. Four passengers and two crew members were on board the train, but there were no deaths or injuries.

No.	Date of occurrence	Operator	Line section	Type	Summary
3	Feb. 01, 2011	East Japan Railway Company	Between Morimiyanohara and Ashidaki Stations, Iiyama Line, Niigata Prefecture	Level crossing accident	The down-going single-car local train left Morimiyanohara Station behind schedule. When the train was coasting at a speed of about 60 km/h, the driver of the train noticed a small truck approaching the Oonehara Level crossing from the left. The driver immediately applied the emergency brake and blew the horn, but it was too late. The train struck the truck and came to a halt at about 75 meters past the Level crossing. Seven passengers, one driver, and two trackmen were on board the train, but there were no deaths or injuries on the part of the train. The only person in the truck was the driver, who was killed in the accident. The train suffered damage to the bottom cover plate, but did not derail. The truck was severely damaged but no fire occurred.
4	Mar. 10, 2011	Japan Freight Railway Company	Between Kuzumi and Namegawa Stations, Narita Line, Chiba Prefecture	Train derailment	The down-going 10-car train passed Kuzumi Station on time. When the driver let the train coast onto the premises of Namegawa Station, the train's emergency brake operated and the train stopped on the premises of the station. As the emergency brake could not be released after the train stopped, the train was inspected on the orders of the traffic control center. It was found that the train's 8th and 9th freight cars were separated from each other, that the 9th freight car had derailed and tipped over to the left, and that the 10th freight car was derailed to the right. The train was scheduled to pass an up-going passenger train at that station. There were marks on the sleepers, etc., indicating that the train was running with derailed cars before it had entered the station. One driver was on board the train, but there were no injuries.
5	Mar. 11, 2011	East Japan Railway Company	On the premises of Sendai Station, Tohoku Shinkansen Line, Miyagi Prefecture	Train derailment	When the train was entering Sendai Station, the driver felt a strong shaking and the cab signal indicated a stop signal. The driver immediately applied the emergency brake to stop the train. When the train was checked after stopping, it was found that the two axles of the front truck of the 4th car from the front were derailed.
6	Mar. 11, 2011	Japan Freight Railway Company	Between Hamayoshida and Yamashita Stations, Joban Line, Miyagi Prefecture	Train derailment	When the train was running between Hamayoshida and Yamashita Stations, the train protection radio issued a warning signal. The driver of the train felt a strong shaking while he was stopping the train. Then, several tsunami waves struck the train. The driver checked the rear of the train and found that some of the freight cars had derailed and washed away.

No.	Date of occurrence	Operator	Line section	Type	Summary
7	Mar. 11, 2011	Japan Freight Railway Company	On the premises of Nagamachi Station, Tohoku Line, Miyagi Prefecture	Train derailment	The up-going 21-car high-speed freight train left Miyagino Station on time. When the train was passing Nagamachi Station at a speed of about 45 km/h, the train protection radio issued a warning signal and an emergency stop order was received. At the same time, the driver of the train felt a shaking. He stopped the train using the service brake. After that, he inspected the train on an order from the traffic control center. It was found that the second axle of the 14th freight car's front truck was derailed to the right. One driver was on board the train, but there were no injuries.
8	May 27, 2011	Hokkaido Railway Company	In the No. 1 Niniu Tunnel on the premises of Seifuzan Signal Station (between Shin-Yubari and Shimukappu Stations), Sekisho Line, Hokkaido	Train derailment	When the train was running near Seifuzan Signal Station, the driver received a call from the conductor who had heard an abnormal sound and felt a vibration in the conductor's room in the 4th car. The driver immediately carried out the emergency stop procedure. The train stopped inside the No. 1 Niniu Tunnel and white smoke billowed from the train, forcing the 248 passengers, one driver, one conductor and two cabin crewmembers to escape from the tunnel on foot. One axle of the 5th car's rear truck was derailed, and all six cars were burnt. Seventy-eight passengers and one crewmember were injured.
9	Jun. 17, 2011	Nishi-Nippon Railroad Co., Ltd.	Between Shimoori and Tofuromae Stations, Tenjin-Omuta Line, Fukuoka Prefecture	Other accidents with casualties	While the train was running, a hole opened up in the roof near the pantograph on the 3rd car from the front of the train and molten metal spattered inside the car. One passenger was injured.
10	Jul. 14, 2011	East Japan Railway Company	On the premises of Tokuzawa Station, Ban'etsu Saisen Line, Fukushima Prefecture	Train derailment	The up-going 3-car local train left Kanose Station on time. When the train was coasting in the Nishikawa tunnel on the premises of Tokuzawa Station at about 35 km/h, the driver of the train noticed a chunk of rock between the rails at about 27 meters ahead of the tunnel's exit. He immediately applied the emergency brake, but it was too late and the train ran onto the rock. Both axles of the first car's front truck were derailed to the right and both axles of the rear truck were derailed to the left. Twelve passengers and two crew members (driver and conductor) were on board the train, but there were no injuries.

No.	Date of occurrence	Operator	Line section	Type	Summary
11	Nov. 01, 2011	Chichibu Railway Co., Ltd.	Between Higuchi and Nogami Stations, Chichibu Honsen Line, Saitama Prefecture	Train derailment	After leaving Nogami Station, at around the exit of the right curve, the driver of the train noticed a dump truck at Higuchi #3 Level crossing. He immediately applied the emergency brake and blew the horn, but it was too late. The train struck the dump truck. The two axles of the front car's front truck were derailed to the right and the two axles of the rear truck were derailed to the left. The dump truck almost tipped over. Four passengers and one driver on board the train were injured.
12	Nov. 29, 2011	West Japan Railway Company	Between Kaga Onsen and Daishoji Stations, Hokuriku Line, Ishikawa Prefecture	Train derailment	The driver of the train noticed an automobile at the Shinkannami Level crossing. He immediately applied the emergency brake, but it was too late. The train struck the passenger car, and stopped after traveling about 300 meters. The front axle of the front car's front truck was derailed to the left. About ninety passengers, one driver and three conductors were on board the train, but there were no injuries.
13	Dec. 24, 2011	Seibu Railway Co., Ltd.	On the premises of Higashi-murayama Station, Seibuen Line, Tokyo	Train derailment	The train left Seibuen Station on time. Around when the train passed turnout #66 where the line crosses the down-going Shinjuku Line, the driver felt as if the train were being pulled backward. When he looked at the instrument panel, the door closure light momentarily went out, so he carried out the emergency stop procedure. When the train was inspected after stopping, it was found that the first and second axles of truck #1 of the second car from the end were derailed to the right. About 450 passengers and two crewmembers were on board the train, but there were no injuries.
14	Dec. 27, 2011	Japan Freight Railway Company	On the premises of Gifu Kamotsu Terminal Station, Tokaido Line, Gifu Prefecture	Train derailment	At Gifu Kamotsu Terminal Station, loading/unloading of containers was performed on the 10th to 14th freight cars from the front of the train. After completion of the loading/unloading work, the driver of the train operated the power running handle to the 1st through 4th notch, and then to the serial position. When the train was running at about 30 km/h, the emergency brake operated and the train stopped. The train was separated between the 12th and 13th cars. The two axles of the 12th car's rear truck and the two axles of the 13th car's front truck were derailed by about 1 meter to the left.

(Railway serious incident)

No.	Date of Occurrence	Operator	Line Section	Type	Summary
1	Jun. 15, 2011	Hokkaido Railway Company	On the premises of Oiwake Station, Sekisho Line, Hokkaido	Dangerous damage in facilities	A train started to leave Oiwake Station with the "Go" indication on the departure signal. When the train passed the departure signal, an official noticed that the signal was still showing the "Go" indication when it should have changed to the "Stop" indication.
2	Aug. 09, 2011	Tenryu Hamanako Railroad Co., Ltd.	Between Hamamatsu Daigaku-mae and Miyakoda Stations, Tenryu-Hamanako Line, Shizuoka Prefecture	Danderous trouble in vehicle	When the train was braking to stop at Miyakoda Station, the door at the right front side of the vehicle opened. The driver therefore stopped the train when the rear end of the vehicle reached the platform. The train was inspected after stopping and it was found that the right front door was fully opened. After that, on the orders of the traffic control center, the train operation was continued with all doors locked, and the vehicle was exchanged at Tenryu Futamata Station. More than ten passengers were on board the train, but there were no injuries due to falling, etc.

Appendix 15　Remarks made in 2011

The JTSB provided two remarks (two for railway serious incident), summarized as follows:

1. Railway serious incident (Incorrect management of safety block) between Oura Kaigan-dori and Oura Tenshudo-shita Stops on the Oura Branch Line of Nagasaki Electric Tramway Co., Ltd.

(publicized on August 29, 2011)

It is highly probable that this serious incident occurred because, at the single track section where the Tablet and ticket block system was in place, the driver of Tram No. 1505 did not check for a tablet and started moving his tram into the single track section despite the fact that Tram No. 1203 was already in that section.

As it is somewhat likely that one of the factors behind this serious incident was the limitations of the operation facilities between Kaigan-dori and Ishibashi Stops and its influence on the behavior and mentality of the drivers and tablet system staffs, it is desirable that the following actions be taken with regard to the improvement of the operation facilities.

1. Consideration of measures to prevent similar incidents by improving facilities
   (1) Consideration of the feasibility of facilities improvements including changing the signal cycle, introduction of tram interchange facilities, tram turning facilities at Kaigan-dori Stop.
   (2) Consideration of the introduction of a device that indicates the presence of a tram in a single track section and a communication means that allows direct communication between drivers or tablet system staffs and traffic controllers.
2. Support and cooperation from local public bodies and other relevant government authorities and others

   Support and cooperation from local public bodies and other relevant government authorities as required from the stage at which the Company starts considering facilities improvements.

2. Railway serious incident (Incorrect management of safety block) on the premises of Kadoma-minami Station on Line 7 (Nagahori Tsurumi-ryokuchi Line) of the Osaka Municipal Transportation Bureau

(publicized on October 17, 2011)

As a number of inappropriate practices concerning actions and procedures in the event of an abnormal situation were revealed in this serious incident, it is probable that personnel related to the operation in the line section concerned failed to take sufficient measures to cope with the abnormal situation. In addition, it is somewhat likely that a safety management system for coping with abnormal situations was not well established at the Bureau.

For this reason, it is desirable that, in order to prevent similar serious incidents from occurring again, the Bureau should improve its safety management system to cope with abnormal situations by enhancing and thoroughly implementing education and training so that all personnel related to operation are capable of taking the appropriate action in the event of an abnormal situation. At the same time, it is desirable to review the measures against abnormal situations by taking into full consideration the workings of the systems related to train operations such as automatic train operation, automatic train protection and programmed traffic control.

Appendix 16　Actions taken in response to recommendations in 2011

Actions taken in response to recommendations were reported with regard to one railway serious incident in 2011. Summary of this report is as follows:

・ Railway serious incident (Incorrect management of safety block) between Oura Kaigan-dori and Oura Tenshudo-shita tram Stops on the Oura Branch Line of Nagasaki Electric Tramway Co., Ltd. (recommended on September 30, 2011)

As a result of the investigation of a railway serious incident that occurred between Oura Kaigan-dori and Oura Tenshudo-shita tram Stops on the Oura Branch Line of Nagasaki Electric Tramway Co., Ltd. on October 21, 2010, the JTSB published an investigation report and made recommendations to the Company as one of the parties relevant to the cause of the accident, on September 30, 2011. The Board received the following report on the implementation status of measures (implementation plan) in response to the recommendations:

<Summary of accident>

On October 21 (Thursday), 2010, at about 14:15, when the tablet and ticket system was in place in a single track section between Oura Kaigan-dori and Oura Tenshudo-shita tram Stops, the driver of tram No. 1505 started the tram from Oura Kaigan-dori tram Stop after confirming that tram No. 503 had come out of the single track section. When the driver stopped the tram at the stop line for the track leading to Ishibashi at the Matsugaebashi intersection, he saw that a 1-car tram, No. 1203 from Ishibashi Stop bound for Hotarujaya tram Stop, was stopped at No.1 stop line at the Matsugaebashi intersection. At this time, the distance between tram No. 1505 and tram No. 1203 was about 46 m.

Subsequently, upon orders from a staff dispatched to Oura Kaigan-dori tram Stop for operating the tablet and ticket system, tram No. 1203 backed up to Ishibashi tram Stop, and then tram No. 1505 continued to Ishibashi tram Stop.

< Recommendations made by the JTSB and the status of measures taken in response to the recommendations>

1. Recommendations made by the JTSB

Based on the results of the investigation into this serious incident, the JTSB issues the following recommendations to Nagasaki Electric Tramway Co., Ltd. pursuant to paragraph 1, Article 27 of the Act for Establishment of the Japan Transport Safety

Board in order to ensure transportation safety:

1. Concerning the education on regulations, standards, etc.

1) Examine whether the work standards, etc., related to the operation of the safety system are appropriate and check the actual state of the operators including their response capability, etc.

2) Conduct appropriate education and training for the relevant employees, and periodically and continuously check the progress level to ensure that the education and training are put into practice.

3) Ensure that the relevant employees thoroughly understand and comply with the regulations, internal standards, etc.

2. Concerning the enhancement of the safety management system and the promotion of effective measures

1) Verify the effectiveness of current measures for safety management, and abolish or review systems and/or measures that are no longer effective.

2) Review the safety management system driven by the head office, and implement measures to establish an organization where field personnel are motivated to learn and make improvements on their own without ignoring problems.

2. Status of measures (implementation plan) taken in response to recommendations, reported by Nagasaki Electric Tramway Co., Ltd. (December 14, 2011) (The Summary and Causes sections of the plan are omitted.*)

1. Concerning the education on regulations, standards, etc.

1) Examine whether the work standards, etc., related to the operation of the safety system are appropriate and check the actual state of the operators including their response capability, etc.

[Actions]

Since the implementation of the safety system (safety blocks) related to the work standards is not beyond the adaptation level of staffs, we will review the contents and method of education and work to raise awareness among training-course participants.

Specifically, we will pursue a bottom-up approach by a questioning method instead of one-way teaching and guidance, and also work to create an environment where trainers and training-course participants can exchange opinions on the safety system(safety blocks) by having participants describe the procedures of the safety system(safety blocks).

In addition, we will create a tablet and ticket system operation manual and training method implementation manual (with details specified) to supplement the work standards, and implement sufficient education to ensure that procedures do not

differ among staffs.

2) Conduct appropriate education and training for the relevant employees, and periodically and continuously check the progress level to ensure that the education and training are put into practice.

[Actions]

To check the progress level of staffs, we will conduct yearly education for personnel and individual interview-type education.

For other training workshops, we will create an annual training plan and establish the basic training contents, and continuously implement the basic training items.

We will make sure that the level of understanding is checked through written tests, etc., after conducting a training workshop so that workshops will not become merely a formality.

In addition, we will have an examiner on board a train for each crewmember twice a year to check if the contents of education and training are understood and put into practice in the field.

Furthermore, we will review the check sheet items used by examiners on board a train to make sure that the basic actions are consistently and correctly performed.

3) Ensure that the relevant employees thoroughly understand and comply with the regulations, internal standards, etc.

[Actions]

In biannual training workshops, we will make sure that our employees fully understand the meaning of laws, regulations, etc., using past cases of accidents as references in order to raise awareness of what is required to fulfill their duties.

To alleviate the pressure on drivers from passengers and reduce the mental burden on drivers during the wait time at Oura Kaigan-dori tram Stop when the tablet and ticket system is under operation, we will instruct station personnel at Oura Tenshudo-shita tram Stop to collect fares at the center door (or rear door) when the tablet and ticket system is in operation so that the stopping time is reduced and the time required to operate in the single track section is reduced. Also, in terms of facilities, we have provided a traffic signal control button at the end of the up-going Oura Kaigan-dori tram Stop (by installing a control box) so that the signal for trams (proceed signal) can be indicated by field staffs in addition to trolley contactor control, thus eliminating wasted time due to traffic signals.

By taking these measures, we are working to ensure smooth operation when the tablet and ticket system is in operation.

In addition, with regard to the change in operation procedures due to the relocation of the tram signal and the elimination of the confirmation stop signal for tram, which are some of the facilities measures at Oura Kaigan-dori tram Stop, we will conduct individual-based education to raise staff awareness of compliance.

Furthermore, in order to confirm that safe operation practices are followed, we will utilize the eyes of passengers who make daily contact with crewmembers. To this end, we have installed a customer survey box. Based on this information, we will educate the crewmembers on compliance and pursue the enhancement of their capabilities.

2. Concerning the enhancement of the safety management system and the promotion of effective measures

1) Verify the effectiveness of current measures for safety management, and abolish or review systems and/or measures that are no longer effective.

[Actions]

In order to foster a safety culture, we will encourage field personnel to actively participate in their respective management systems, including making suggestions. In addition to this approach for familiarizing all employees with various measures, we will work to eliminate the gap in safety awareness between management and field personnel.

In addition, we have examined the effectiveness of each of the measures, and eliminated or reviewed them as required. As a result, we now hold an accident prevention workshop every two months for the purpose of investigating the factors and causes of accidents by focusing on the persons whose actions resulted in an accident, as well as enhancing the awareness of defensive operation.

Furthermore, in order to improve safety when the safety system(safety blocks) is in operation, we will install a monitoring system at Oura Kaigan-dori tram Stop and take necessary measures so that the presence of a tram in the single track section can be confirmed.

2) Review the safety management system driven by the head office, and implement measures to establish an organization where field personnel are motivated to learn and make improvements on their own without ignoring problems.

[Actions]

To establish a system where drivers ask themselves, “Why is it so?” we will hold a drivers-only meeting every two months, thereby enhancing their awareness of compliance and safety and improving our corporate culture. In addition, we will have the field management staff recognize and review the themes and results of these

meetings, in order to help create future education policies and improve communication among management staff.

With regard to operation in cases of abnormal situations, we will conduct education and training for developing the necessary knowledge and judgment capability of the staffs, and create an environment where staffs and drivers feel free to point out erroneous operation to each other.

Implementation plan regarding measures to be taken

Recommendations	Specific actions	Completion report (deadline)
1-(1)	1. Implement safety system (safety blocks) education in training workshops. 2. Review the tablet and ticket system operation manual. 3. Create a training method implementation manual.	1. To be reported from Oct. 2010 to Dec. 2012 2. To be reported in May 2012 3. To be reported in May 2012
1-(2)	1. Hold training workshops by creating an annual training plan. 2. Carry out written tests, etc., to check the level of understanding. 3. Conduct personnel training workshops and individual interviews to check the progress level. 4. Have an examiner on board a tram for each crewmember twice a year. 5. Review the check sheet used by examiners on board.	1. To be reported from Apr. 2011 to Dec. 2012 2. To be reported from Oct. 2010 to Dec. 2012 3. To be reported from Apr. 2011 to Dec. 2012 4. To be reported in Dec. 2012 5. To be completed in Aug. 2011 To be reported in May 2012
1-(3)	1. Conduct a survey of customers 2. Implement education based on past accident cases at regular training workshops 3. Conduct individual-based education for the operation procedure that was changed due to the relocation of the Oura block signal and the elimination of the confirmation stop signal for tram.	1. To be reported from Oct. 2010 to Dec. 2012 2. To be reported from Dec. 2011 to Dec. 2012 3. To be reported in May 2012

2-(1)	1. Participation of field personnel in the near-accident review committee and accident prevention committee. 2. Establish an accident prevention workshop by elimination or review of various measures. 3. Install a monitoring system at Oura Kaigan-dori tram Stop.	1. To be reported from Apr. 2011 to Dec. 2012 2. To be reported from Apr. 2011 to Dec. 2012 3. To be implemented in Jan. 2012 To be reported in May 2012
2-(2)	1. Conduct safety meetings 2. Conduct operation training in cases of abnormal situations.	1. To be reported from Sep. 2011 to Dec. 2012 2. To be reported in Dec. 2012

Appendix 17 Information provision during an investigation in 2011

There was one case (for railway accident) of information provision in 2011, which is summarized below:

・ Other accidents with casualties at Maiko Station on the Sanyo Line of West Japan Railway Company

(provided on November 15, 2011)

The JTSB provided the Railway Bureau, Ministry of Land, Infrastructure, Transport and Tourism with the following information on Other accidents with casualties that occurred at Maiko Station on the Sanyo Line of West Japan Railway Company on December 17, 2010:

(Information):

At Maiko Station on the Sanyo Line, where this incident occurred, emergency buttons are installed on the platform to alert station staff and the entering train about abnormal conditions. If an emergency button is pressed, the emergency alarm light for restraining an entering train flashes, the yellow rotating light closest to the emergency button comes on, and the buzzer sounds.

In the case of this accident, the emergency button was pressed immediately after a train started, and the above devices operated normally. However, no staff were posted to the platform at that station, and the yellow rotating light and the sound of the buzzer did not convey the fact to the train crewmembers that the emergency button was pressed, and thus the system failed to immediately stop the starting train.

Appendix 18　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>

◎ **Item2, 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.

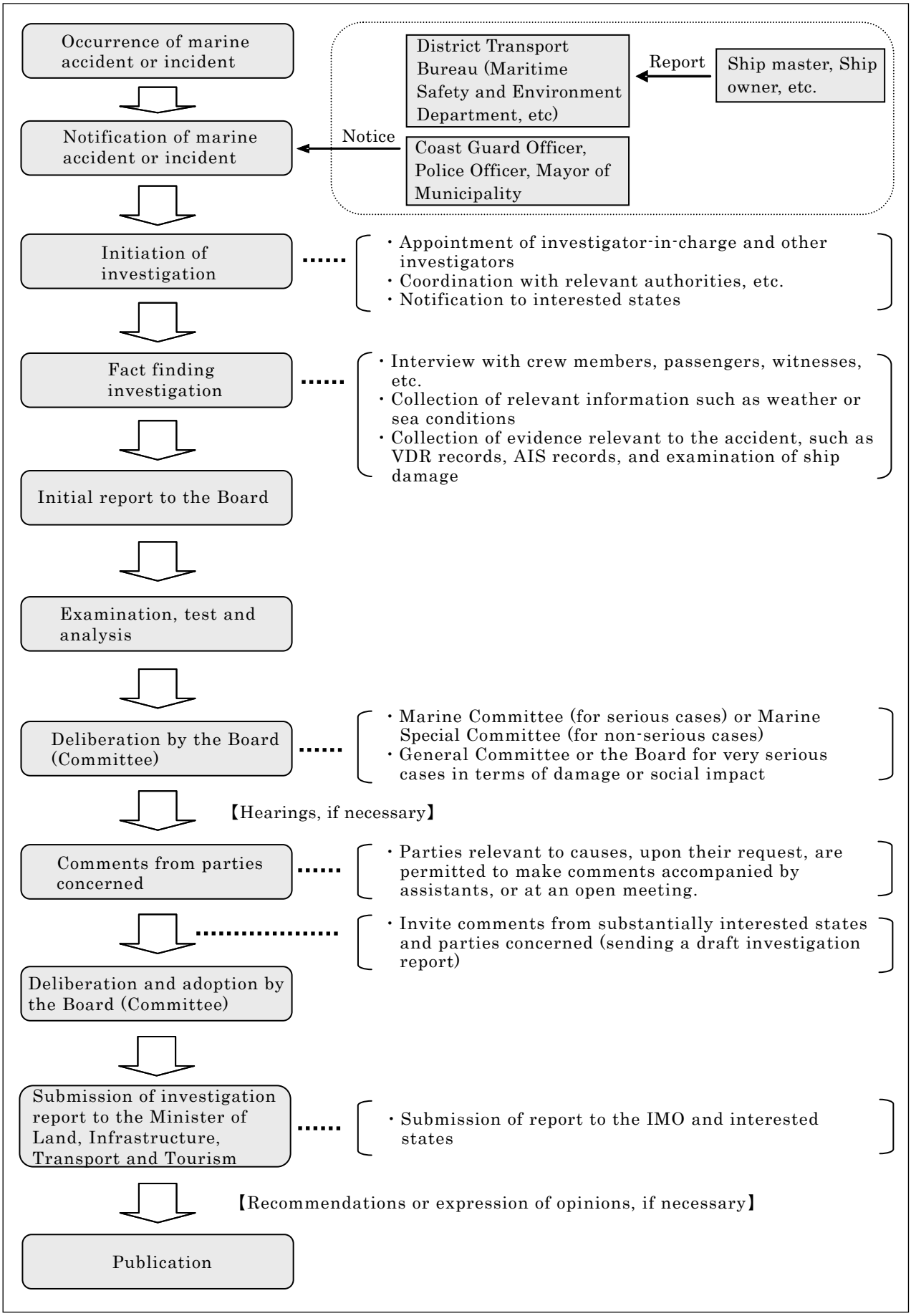
◎ **Article 3 of Ordinance for Enforcement of the Act for Establishment of the Japan Transport Safety Board** (A situation, prescribed by Ordinance of the Ministry of Land, Infrastructure, Transport and Tourism, stipulated in item 2, paragraph 6, Article 2 of the the Act for Establishment of the Japan 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＞

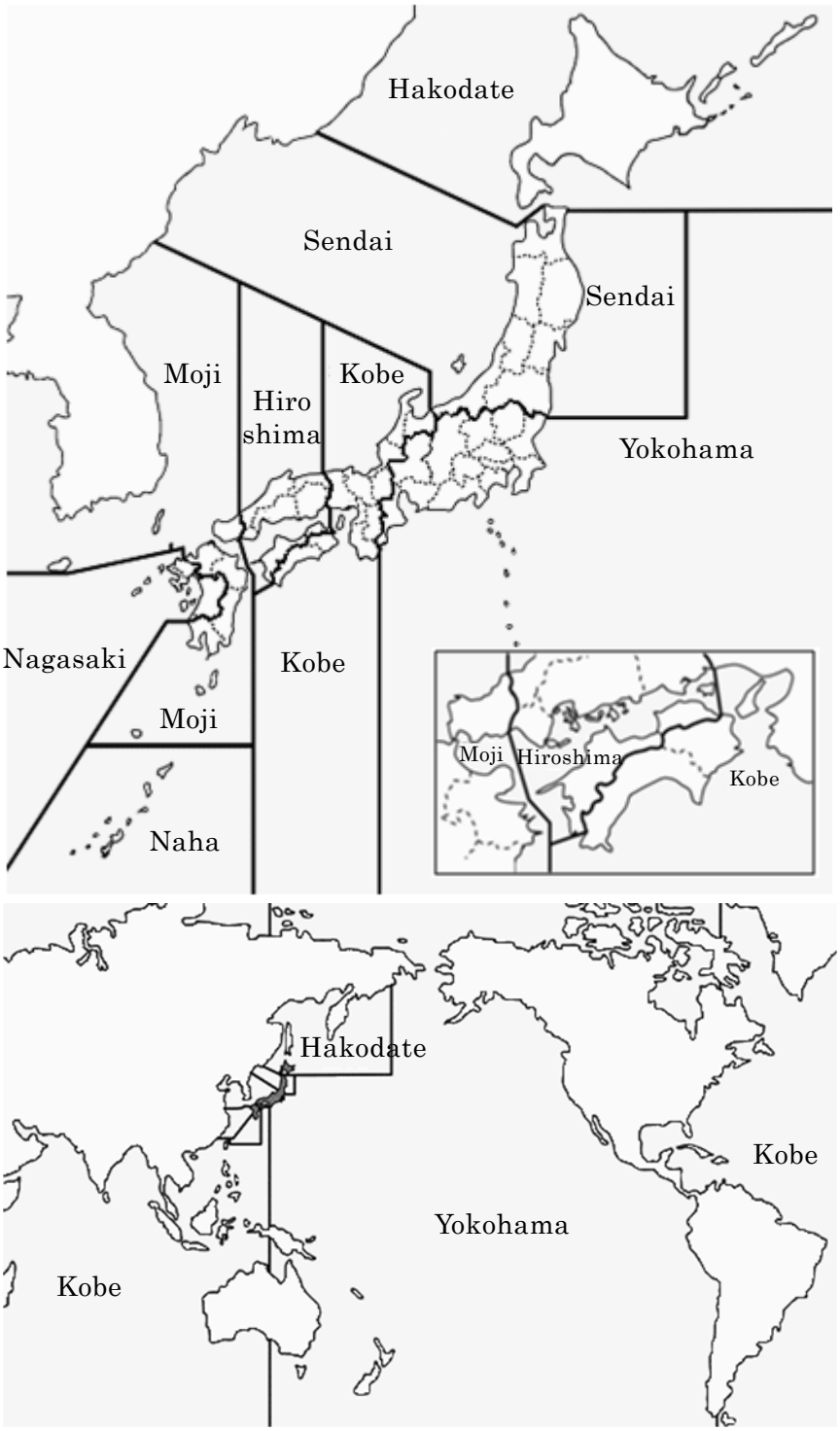
Marine accident and incident to be investigated		Type of marine accident and incident
Marine accident	Damage to ships or other facilities involved in ship operation	Collision, Grounding, Sinking, Flooding, Capsizing, Fire, Explosion, Missing, Damage to facilities
	Casualty related to ship structures,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

Appendix 19 Procedure of marine accident/incident investigation



Appendix 20　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 (8 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

Appendix 21 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
Committee in charge of deliberation and adoption: Marine Committee</td></tr>
<tr><td colspan="2">Definition of “serious marine accidents and incidents”
・Cases where a passenger died or went missing, or two or more passengers were severely injured.
・Cases where five or more persons died or went missing.
・Cases involved a vessel engaged on international voyages where the vessel was a total loss, or a person on the vessel died or went missing.
・Cases of spills of oil or other substances where the environment was severely damaged.
・Cases where unprecedented damage occurred following a marine accident or incident.
・Cases which made a significant social impact.
・Cases where identification of the causes is expected to be significantly difficult.
・Cases where essential lessons for the mitigation of damage are expected to be learned.</td></tr>
<tr><td>Non-serious marine accidents and incidents</td><td>Office in charge of investigation: Regional investigators in the regional offices
Committee in charge of deliberation and adoption: Marine Special Committee</td></tr>
</table>

Appendix 22 Number of accidents and incidents by area

(Cases)

Year \ Area	In Japanese waters			Outside Japanese waters	Total
	In ports specified by the Cabinet Order	Within 12 nautical miles	In lakes or rivers		
2007		3			3
2008	224	579	15	56	874
2009	340	1,067	34	82	1,523
2010	305	908	38	82	1,333
2011	229	789	26	65	1,109
Total	1,098	3,346	113	285	4,842

Note: The above table shows the number of accidents and incidents into which the JTSB launched an investigation from October 1, 2008, to the end of December 2011 (including those carried over from the former Marine Accident Inquiry Agency).

Appendix 23 Number of accidents and incidents by type

(Cases)

Year \ Type	Types of marine accident											Type of marine incident				Total
	Collision	Contact	Grounding	Sinking	Flooding	Capsizing	Fire	Explosion	Facility damage	Casualty	Others	Loss of control	Stranded	Safety obstruction	Navigation obstruction	
2007		1	2													3
2008	181	101	255	12	4	28	15	3	30	61		54	34	8	88	874
2009	326	174	431	16	19	57	42	3	39	218	1	105	33		59	1,523
2010	356	180	369	15	18	51	34	2	26	145		83	16		38	1,333
2011	279	145	259	10	17	56	33	1	23	139	1	103	10	1	32	1,109
Total	1,142	601	1,316	53	58	192	124	9	118	563	2	345	93	9	217	4,842

Note 1: The above table shows the number of accidents and incidents into which the JTSB launched an investigation from October 1, 2008, to the end of December 2011 (including those carried over from the former Marine Accident Inquiry Agency).

Note 2: The figures in the column "Casualty" are the number of cases involving death, death and injury, missing persons, or injury.

Appendix 24 Number of vessels involved in accidents and incidents by type of vessel

(Vessels)

Type of Vessel / Year	Passenger ship	Cargo ship	Tanker	Fishing vessel	Tug boat	Push boat	Work vessel	Barge	Lighter	Commuter boat	Recreational fishing vessel	Angler tender boat	Pleasure boat	Public-service ship	Others	Total
2007	2	1														3
2008	48	324	49	308	50	48	25	28	32	4	28	6	158	11	10	1,129
2009	89	500	64	605	86	77	35	51	53	8	39	6	320	41	22	1,996
2010	90	441	61	554	73	48	45	37	45	4	53	6	323	26	21	1,827
2011	61	334	51	491	46	39	31	23	24	7	38	5	291	16	23	1,480
Total	290	1,600	225	1,958	255	212	136	139	154	23	158	23	1,092	94	76	6,435

Note: The above table shows the number of vessels involved in accidents and incidents into which the JTSB launched an investigation from October 1, 2008, to the end of December 2011 (including those carried over from the former Marine Accident Inquiry Agency).

Appendix 25 Number of vessels involved in accidents and incidents by gross tonnage

(Vessels)

Gross tonnage / Year	less than 20 tons	20 to less than 100 tons	100 to less than 200 tons	200 to less than 500 tons	500 to less than 1,600 tons	1,600 to less than 3,000 tons	3,000 to less than 5,000 tons	5,000 to less than 10,000 tons	10,000 to less than 30,000 tons	More than 30,000 tons	Unknown	Total
2007	1			1							1	3
2008	486	52	139	216	77	24	16	17	10	15	77	1,129
2009	904	89	231	289	116	41	34	49	29	14	200	1,996
2010	895	86	175	261	128	36	37	39	25	24	121	1,827
2011	711	56	140	190	94	37	16	32	23	17	164	1,480
Total	2,997	283	685	957	415	138	103	137	87	70	563	6,435

Note: The above table shows the number of vessels involved in accidents and incidents into which the JTSB launched an investigation from October 1, 2008, to the end of December 2011 (including those carried over from the former Marine Accident Inquiry Agency).

Appendix 26 Number of vessels involved in accidents and incidents in 2011 by type of accident/incident and type of vessel

(Vessels)

Type of accident/incident / Type of vessel	Marine accident											Marine incident				Total
	Collision	Contact	Grounding	Sinking	Flooding	Capsizing	Fire	Explosion	Facility damage	Casualty	Others	Loss of control	Stranded	Safety obstruction	Navigation obstruction	
Passenger ship	9	16	8		1	1	1			6		6			13	61
Cargo ship	113	68	98	1	3	2	5		7	17		14	3		3	334
Tanker	16	10	8		1					5		9	1		1	51
Fishing vessel	227	18	53	2	10	29	24		7	70	1	43	1		6	491
Tug boat	18	4	13			6				1		2			2	46
Push boat	6	3	21	1		1			3	3		1				39
Work vessel	7	3	10	3		5				1		2				31
Barge	10		9						1	1		2				23
Lighter	8		12						3	1						24
Commuter boat	2	2	2									1				7
Recreational fishing vessel	30	2	1				1			2		1	1			38
Angler tender boat		1	1			1				2						5
Pleasure boat	118	19	47	3	2	16	2	1	8	39		24	4	1	7	291
Public-service ship	6	2	5			2				1						16
Others	14	3	3			2			1							23
Total	584	151	291	10	17	65	33	1	30	149	1	105	10	1	32	1,480

Note 1: The above table shows the number of vessels involved in accidents and incidents into which the JTSB launched an investigation from October 1, 2008, to the end of December 2011 (including those carried over from the former Marine Accident Inquiry Agency).

Note 2: The figures in the column "Casualty" are the number of cases involving death, death and injury, missing persons, or injury.

Appendix 27 Summary of serious marine accidents and incidents in 2011

The summary is based on the information at the time of launching investigation and may be modified as the investigations or deliberations progress.

(Marine accidents)

No.	Date of the accident	Vessel type and name, accident type	Location	Deaths/Injuries
1	Jan. 4, 2011	Liquefied gas carrier RYOAN MARU Contact with a light beacon	Nakanose, Tokyo-wan Nakanose Passage Light Beacon No. 1	None
2	Jan. 9, 2011	Chemical tanker SEIYO Sinking	Off Sawasakihana, Sado City, Niigata Prefecture (Around 14.8 km southwest from Sado Sawasakihana Lighthouse)	1 fatality (Chief engineer) 1 missing (Master)
3	Jan. 11, 2011	Cargo ship EN KAI (China) Fatality to a crew member	South Berth A, Funabashi Chuo Wharf, Funabashi City, Chiba Prefecture	1 fatality (Boatswain)
4	Feb. 22, 2011	Angler tender boat SETO MARU Capsizing	Vicinity of Suzu Shima (Suzu Island), located off the west of Azashi Port, Kushimoto Town, Wakayama Prefecture Around 302° true, 5.6 nautical miles from Shionomisaki Lighthouse	1 fatality (Master) 6 injured (Crew, 5 anglers)
5	Apr. 5, 2011	Fishing vessel RYOEI MARU No.18 Missing vessel	Around 40 km east-southeast from Samekado Lighthouse, Hachinohe City, Aomori Prefecture	3 fatalities (Crew) 3 missing (Crew)
6	Apr. 5, 2011	Recreational fishing vessel KAIRIN MARU Fatality to a crew member and an angler	Off the west-southwest of Hinomisaki, Mihama Town, Wakayama Prefecture Around 252° true, 4.5 nautical miles from Kiihinomisaki Lighthouse	2 fatalities (Master, angler)
7	Apr. 9, 2011	Cargo ship RYUNAN Ⅱ Recreational fishing vessel KOYO MARU Collision	Around 32 km southwest from Kabashima Lighthouse, Nomozaki, Nagasaki City, Nagasaki Prefecture	1 fatality (Master of KOYO MARU) 1 missing (Angler of KOYO MARU)
8	May 10, 2011	Cargo ship SCSC WEALTH (Hong Kong) Fatality to a workman	Hibi Port, Tamano City, Okayama Prefecture	1 fatality (Workman)
9	Jun. 12, 2011	Cargo ship DAISENZAN MARU Recreational fishing vessel HISA MARU Collision	Northwest of Oshima Island, Oshima Town, Tokyo Around 305° true, 4.5 nautical miles from Izu-oshima Lighthouse	1 injured (Angler of HISA MARU)
10	Jun. 28, 2011	Chemical tanker NISSHO MARU Fatality and injury to crew members	Near North Passage Light Buoy No. 3, Nagoya Port, Aichi Prefecture	2 fatalities (Crew) 2 injured (Crew)

No.	Date of the accident	Vessel type and name, accident type	Location	Deaths/Injuries
11	Jul. 2, 2011	Recreational fishing vessel KAMOME MARU Contact with break water	Nakaminato Port Outer East Breakwater, Hitachinaka City, Ibaraki Prefecture Around 011° true, 70m from Nakaminato Port Outer East Breakwater Lighthouse	12 injured (Crew, 11 anglers)
12	Jul. 6, 2011	Cargo ship AQUAMARINE (Vietnam) Fishing vessel HIRASHIN MARU Collision	Around 143°, 3,300m from the Yokohama Daikoku Break Water Lighthouse, Yokohama City	1 fatality (Master of HIRASHIN MARU) 1 injured (Deckhand of HIRASHIN MARU)
13	Jul. 17, 2011	Cargo ship YUSHO SEVEN (Republic of Panama) Fatality to a workman	Berth R, Port Island, Chuo District, Kobe City	1 fatality (Workman)
14	Aug. 17, 2011	Passenger ship TENRYU MARU No.11 Capsizing	Tenryu River near Futamata, Tenryu District, Hamamatsu City, Shizuoka Prefecture	5 fatalities (Boatman, 4 passengers) 5 injured (Passengers)
15	Sep. 19, 2011	Tugboat KITA MARU No.12 Capsizing	Wajima Port, Ishikawa Prefecture	2 fatalities (Crew)
16	Nov. 18, 2011	Passenger ferry MANYO Injury to passenger	Off the east of Fukue Shima (Fukue Island), Goto City, Nagasaki Prefecture	3 injured (Passengers)
17	Nov. 27, 2011	Cargo ship MARUKA (Republic of Korea) Fishing vessel KAIRYO MARU No.18 Collision	About 27 km off the north of Okinoshima Lighthouse in Munakata City, Fukuoka Prefecture	1 missing (Chief engineer of KAIRYO MARU No.18)

Appendix 28　Remarks made in 2011

The JTSB provided 46 remarks (45 for marine accidents, and one for marine incident), summarized as follows:

1. Collision between cargo ship TAKASAGO MARU and cargo ship LINGAYEN STAR (publicized in January 28, 2011)
It is probable that this accident took place at night in the Singapore Strait, when TAKASAGO MARU (Ship A) going west bound and LINGAYEN STAR (Ship B) proceeding south bound collided with each other while sailing based on the information that each Vessel was receiving from the VTIS. For the maintenance of safety of navigation in the Singapore Strait, Ship A must abide by the M/S Rules and other relevant procedure manuals and making warning signals when she becomes unable to understand the intention or behaviors of other vessels. As for Ship B, she should follow the advices from the VTIS and forthwith respond to the calls from VHF.

2. Collision between cargo ship PADRE and cargo ship KYOKAI MARU No.30 (publicized in January 28, 2011)
It is probable that the accident occurred near the anchorage area of Fukuyama Port, when PADRE (Ship A), proceeding south-eastward after heaving up her anchor, collided with KYOKAI MARU No.30 (Ship B), proceeding south-westward. It is desirable that both ships comply with and promote the following: 1. Ship A The master and the pilot should communicate and clarify the timing of the ship command hand-over. 2. Ship B The bridge watchkeeper should, with regard to vessels near the anchorage area, confirm with much care, by using binoculars or radars, the existence or non-existence of a black ball, the situation of deck work, and the state of bow and stern waves. On the handover of watchkeeping, the predecessor and the successor ensure the passing on the information about the movement of the vessels in close range around the ship.

3. Contact with a rock by recreational fishing vessel TAIKAI MARU

(publicized in January 28, 2011)

It is probable that, when the vessel collided at almost a right angle with the rock reel in the west of Misumi Lighthouse, two of the passengers lying flat on their backs in the cabin, with their heads toward the bow, were thrown forward by the collision impact. They were injured when their head or neck hit the wooden rack; one of them died after the accident.

It is desirable that recreational fishing vessel service business operators, in order to prevent passengers from suffering from severe damage by a big impact to the head when an unexpected situation such as a collision occurs, take measures for mitigating harm to passengers as much as possible, such as by utilizing shock absorbing gear if necessary or providing passengers with guidance to take a proper boarding posture through paying attention while proceeding at sea to passenger boarding positions, postures, and structures around them.

It is desirable that the Fisheries Agency advise prefectural governors to inform recreational fishing vessel service business operators of the occurrence of the harm to passengers caused by this accident and request them to pay attention to the measures for mitigating such harm.

4. Capsizing of motorboat NO FIGHT

(publicized in January 28, 2011)

1. Obtaining weather information and sea conditions

It is somewhat likely that the accident would have been avoided if the master had collected weather information through MICS (Maritime Information and Communication System) by a mobile phone, etc. before or after departure, and decided to cancel the departure or cut short the fishing to return promptly before the weather worsened.

It is desirable that small-boat operators and others conducting sea-activities collect, also during navigation as well as before departure, the latest weather information and sea conditions via mobile phones, etc. through MICS—the utilization of which has been proven helpful for the safe operation of small boats—and take such actions as returning early in a situation where the weather is expected to worsen, in order to avoid the occurrence of an accident.

2. Accident notification by an emergency call

The accident occurred in winter, when the air and sea temperatures are low. In such a situation, prompt rescue operations are essential.

It is desirable that, because the emergency call system, having precise sender-location-identification features, is expected to make prompt rescue operations possible, the persons involved in an accident and needing assistance make an emergency call through a mobile phone with GPS features to the relief agencies.

It is desirable, although the emergency call-system on 118 has been recognized by pleasure boat crews and passengers, marine-leisure lovers and staffs of fishery-cooperative associations, that the Japan Coast Guard continues to enhance its activities to provide information of 118-call utilization, nationwide, not only to fishers.

5. Collision between cargo ship CROSSANDRA and fishing vessel EISHIN MARU

(publicized in January 28 , 2011)

It is probable that the accident occurred in the west offing of Tsuru shima (Tsuru Island), while CROSSANDRA (Ship A) was proceeding north-eastward toward the west exit of Tsuru shima Channel and Ship B was proceeding north-westward to the fishing ground in the north west of Tsuru shima, when the vessels collided because Ship A proceeded without avoiding Ship B's course and Ship B failed to keep lookouts.

The operators of the vessels in order to prevent a reoccurrence of such an accident should take the following measures:

1. Ship A

Ship A should comply with the navigation rules stipulated in the Act on Preventing Collision at Sea.

2. Ship B

Although Ship B failed to become aware of Ship A's approaching and its whistle blasts because the crew members were on preparations for net-casting on the stern deck, Ship B should at all times maintain a proper lookout by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions.

6. Grounding of fishing vessel NIKKO MARU

(publicized in January 28 , 2011)

It is probable that the accident occurred while the vessel was proceeding in the west offing of Tajiri Fishing Port on the way back to the port early in the morning, when the vessel, passing the scheduled course-change point, proceeding toward the shore in the

north east of the port, grounded on the shore, because the master, a lone watchstander on bridge, fell asleep.

It is probable that the crew members of the vessel were in a state of accumulated fatigue due to consecutive fishing operation and lack of sleep because they were only able to have short sleeps off and on.

When on bridge watch-keeping in a condition of insufficient sleep, the crew should have taken care not to fall asleep, because, in the hours between midnight and early morning, they were in a dark and quiet environment with few vessels nearby, and the possibility of falling into rhythmic temporary drowsiness was high. It is somewhat likely, on the other hand, that if the watch alarm system installed in the steering room had been operative, it could have woken the lone bridge watch-keeper on duty, who had fallen asleep, and then the accident could have been avoided.

It is desirable, therefore, that fishing vessels equipped with the watch alarm system keep such equipment operative, and its timer setting properly controlled because the equipment is effective for the prevention of accidents.

7. Collision between passenger ferry ORANGE 8 and fishing vessel HOSEI MARU

(publicized on January 28, 2011)

It is probable that both vessels, having the other in sight, crossing the other's course, approaching in a situation where a collision was expected, although having visual contact with the other to know the relative positional relation to the other at an early stage, proceeded without keeping proper lookouts and collided. It is probable that, if both vessels had kept proper lookouts, the accident could have been avoided because they had a chance to take the give-way actions and best coordinated actions for avoiding collisions required by the Act on Prevention Collision at Sea, and to use whistle signals.

Therefore, both vessels should comply with the rules stipulated in the Act on Preventing Collision at Sea to prevent a reoccurrence of such an accident as follows:

1. ORANGE 8 (Ship A)

(1) Ship A should at all times maintain a proper lookout to make a full appraisal of the risk of collision with HOSEI MARU (Ship B), because each vessel was crossing the other's course when Ship A had first visual contact with Ship B.

(2) Ship A should use warning signals promptly when Ship B is taking no collision-avoidance actions.

(3) When Ship A, a stand-on vessel, find herself so close to Ship B that collision cannot be avoided by the action of Ship B alone, she should take such action as will best aid to avoid collision.

2. Ship B

(1) Ship B should at all times maintain a proper lookout to make a full appraisal of the risk of collision with Ship A, because each vessel was crossing the other's course when Ship B had first visual contact with Ship A.

(2) Ship B, a give-way vessel, should, so far as possible, take early and substantial action to keep well clear from Ship A.

8. Capsizing of recreational fishing vessel SANKO MARU

(publicized on January 28, 2011)

It is probable that the accident occurred in Motonuwa Fishing Port when the vessel, while on recreational fishing service with the engine stopped, capsized due to the accumulation of water in the hull's starboard side, which entered the PVC (Polyvinyl Chloride) pipe through the exhaust port and leaked through a crack into the hull and increased in volume as the water flow into the hull when the stern draft went up.

It is somewhat likely that, because, in a wet-exhaust system, where an exhaust pipe runs through compartments in the hull, unlike an exhaust system using a funnel, the temperature of exhaust gas must be sufficiently lowered through effective generation of a steam-water mixture, and that if the temperature is not sufficiently lowered, the exhaust pipe will crack due to material-degradation, leading to water-leaks or ignition of rubber joints causing a fire in a case where inflammable material is nearby.

It is desirable that, in view of the facts that, if the temperature of PVC pipes is sufficiently low, heat-insulating materials or protection covers are not necessary and, in addition, structures for convenient inspections, such as visual or hands-on inspections, are allowed, the owners and the operators of the vessels equipped with a wet-exhaust system take the following measures, in order to prevent similar accidents and fires related to such accidents:

1. Vessel operators should, before departure, confirm that the exhaust pipes have no abnormalities, such as deformations or cracks, and during navigation, check whether there is no water around the exhaust gas outlets, whether the surface temperature of the exhaust pipes is normal, and whether no water is leaking out of the exhaust pipes.
2. Vessel owners should, on a scheduled basis, inspect cooling water pump and exhaust pipes, and in addition, periodically replace key parts, such as pump impellers.

Furthermore, it is desirable that vessel builders consider taking safety measures, such as installing warning devices activated when the surface temperature of exhaust

pipes increases.

9. Contact with breakwater by cargo ship TOFUKU MARU

(publicized on February 25, 2011)

It is probable that, in the night hours, while the ship was proceeding south-eastward in Kaminoseki Port toward Kaminoseki Kaikyo (Kaminoseki strait), the accident occurred when the ship continued to proceed to and collided with the breakwater, because Officer B, a lone watchstander on bridge, fell asleep. It is somewhat likely, however, that, if the watch alarm system installed in the ship had been operative, the equipment's alarm would have woken Officer B and the accident would have been avoided.

The ship did not routinely use the watch alarm system, and Company A, although knowing that the equipment had been turned off, did not provide guidance to the crew members to keep the equipment operative.

It is desirable that vessels equipped with the watch alarm system keep it operative and its timer setting it properly controlled, because the equipment is effective for the prevention of accidents.

10. Listing of ferry ARIAKE

(publicized on February 25, 2011)

It is probable that the accident occurred, while the ship was proceeding and being hit by following waves, when the ship listed about 25° and cargos collapsed.

It is desirable that the ship operator reaffirm the mission appointed to it to ensure the safety of human life and transport at sea, describe, in its safety management regulations (operational standards), risks of navigation while being hit by following waves, which had been described in its operational guidance in heavy weather, and provides safety education to the persons who engage in shipping operation in order to inform them of risks of navigation in such a situation. It is desirable, furthermore, that in order to prevent the container from sliding due to hull listing, the company should consider effective cargo-lashing measures, and at the same time consider painting the car-compartment deck-floor with slip-proof paint and installing slip-protection gear, such as beams and removable cones.

11. Collision between chemical tanker SANSHUN MARU and cargo ship SHIN KISSHO

(publicized on February 25, 2011)

It is probable that, in the night hours, the accident occurred in the North Traffic Route west of Ushi Shima (Ushi Island), while SANSHUN MARU (Ship A) and SHIN KISSHO (Ship B) were proceeding west south-westward one after another, when Ship A, trying to overtake Ship B on Ship B's portside, proceeded ahead, approached and collided with Ship B, because Officer A, failing to keep proper lookouts, let Ship A proceed without noticing that Ship A was close to Ship B.

The accident occurred because, although the bridge watch keepers of both ships had recognized the other ship, no proper lookouts were executed on either ship after such recognition; they should at all times maintain a proper lookout by utilizing radar with ARPA features and others in addition to visual lookouts, and they should use signals for overtaking when a vessel is overtaking another vessel in the passage.

Furthermore, the accident occurred, while both the ships were proceeding in the passage designated by the Maritime Traffic Safety Act, after both the masters handed over the bridge watch-keeping and left the bridge during navigation. The masters should take command during navigation in the route, keeping in mind the purpose of the Mariners Act, because Bisan-Seto was congested with vessel traffic at midnight when the accident occurred, and, in addition, fishing vessels were fishing inside the route.

12. Injury to passengers on passenger ship AN-EI GO No.98

(publicized on March 25, 2011)

It is probable that the accident occurred when the two passengers, sitting in the front passenger room, were lifted up and then dropped onto their seats, each suffering a compression fracture in the lumbar spine due to the free-fall shock when the Ship's bow rode on the wave crest and fell down to the wave bottom, because the master, proceeding east-south-east ward along the reefs in the north east offing of Iriomote Shima (Iriomote Island) while hitting consecutive waves of about 1.5 to 2 meters high from east-north-east on the port bow and failing to recognize the big wave approaching until just before its arrival kept her proceeding at the original speed.

It is somewhat likely that Company A's failure to provide its seamen with proper safety education on Company A's safety management regulations contributed to the occurrence of the accident.

It is desirable, therefore, that the Okinawa Passenger Boat Association keeps informed and guides in training courses, the association hosts, the passenger boat service

operators in Yaeyama Retto (Yaeyama Islands) to firmly execute their safety management regulations.

13. Collision between cement carrier FUYO MARU No.3 and fishing vessel SHOFUKU MARU No.18

(publicized on March 25, 2011)

It is probable that the accident was caused by SHOFUKU MARU No.18 (Ship B), that is, due to the fact that the Master, on lone bridge watch keeping, fell asleep.

Many of the fishing vessel accidents caused by navigation during drowsiness are accompanied by casualties of crew members in addition to hull damage. Although fishing vessels, sometimes forced to fish for a long duration in order to get a sufficient catch and to have a single crew member do bridge watch keeping, effective sleep-prevention measures have not been taken in such fishing vessels. On the other hand, in cargo ships, watch alarm system has been installed, and their effectiveness has been proven. It is desirable, therefore, that, in fishing vessels, such watch alarm system should be installed.

14. Capsizing of fishing vessel KOFUKU MARU No.1

(publicized on March 25, 2011)

It is somewhat likely that the accidents occurred as follows: the vessel, in a situation where the stability was lower than that when the stern trim is smaller and the bulwark submerge angle is small, was hit by wind and high waves in the starboard abeam; the vessel listed to portside at an angle exceeding the bulwark submerge-angle, causing a lot of water to flood onto the deck; the accumulated water and the port bulwark submerged in water caused resistance to reduce the stability; in such a situation, the vessel was hit by more wind and waves, and capsized.

It is desirable, therefore, that, in order to preserve the safe navigation of fishing vessels of similar types operating in the waters where this accident occurred, the following measures, which are fundamental requirements for capsize-protection, should be taken: vessels should return to port when the weather is expected to worsen: heavy gear or materials such as a large amount of sinkers should be stored as low as possible under the deck; taking a large rudder angle and unreasonable steering should be avoided. It is desirable, in addition, that the vessel owners of similar types maintain their vessels and supervise their seamen, and that the fishing vessel crew members navigate and load the

fishing gear, taking the following into account:

1. A vessel lists to the greatest extent when proceeding while being hit by wind and waves abeam, and when hit by a high wave in such a situation, the vessel is likely to list severely and becoming difficult to stabilize due to water coming over the bulwark and flooding the deck.
2. A fishing vessel, with fishing gear loaded unevenly on the stern or with fuel left unconsumed in the stern fuel tank, due to the increased stern trim, decreases stability and is likely, due to the reduced bulwark submerge-angle, to let water come over the bulwark and flood the deck. Therefore, it is necessary to pay attention in order to prevent a vessel from having an excessive stern-trim.

15. Sinking of fishing vessel SUWA MARU No.58

(publicized on April 22, 2011)

It is somewhat likely that the accident occurred in the following sequence: while in a situation where the vessel's center of gravity was high, the vessel, after initial heel to the starboard side, was hit by a big wave on the starboard bow side, enabling water to flood the deck from the starboard midship and accumulate on the bow deck, causing the bow to go down; the vessel then listed further when hit by consecutive waves at the starboard side; the starboard side submerged, stability was lost, and the vessel tumbled over.

It is desirable, therefore, that the Fisheries Agency and other authorities concerned provide guidance to net-fishery vessel owners and crew of the following; in addition, taking the following into consideration, the owners should manage their vessels and supervise their crew; also, the crew should operate a vessel and carry out maintenance, taking the following into consideration:

1. A vessel's weight increases when fishing nets are repaired or soaked with water, and the hull's center of gravity climbs higher when fishing gear, ropes, and other items are loaded on the steering-room canopy.
2. Initial heel occurs because the unevenly loaded fishing gear slides due to hull's rolling or pitching.
3. In order to prevent scuppers capacity from being degraded, pay attention to the arrangement or structure of wood deck-panels or brace members for pipes, and keep fishing nets, ropes, and other items away from around the scuppers.
4. In a situation where a vessel has to drift using a parachute anchor when the fishing operation has been cancelled due to heavy weather, a seaman, such as the master, with plenty of navigation knowledge and experience, should stand on bridge

to look out for water flooding, hull list, and wind or waves, and keep the main engine in its stand-by state so that prompt attitude adjustment is possible so as to prevent water from flooding in. Furthermore, in a situation where such hull-attitude-adjustment is difficult or the weather or sea conditions are expected to worsen, the vessel should suspend parachute drifting and take refuge in a safe area.

16. Fatality to workmen involved with container ship KUO CHANG

(publicized on April 22, 2011)

It is desirable that manufactures of mooring ropes establish guidelines to replace or discard their products by examining their appearance and provide users of the ropes with the guidelines.

It is desirable that line handling service providers provide their mooring workers with information on extension of the snap-back hazardous zones of ropes when broken under tension, and give them instructions such as to avoid working inside the zone unless necessary and to complete the work swiftly and leave from the snap-back hazardous zones as promptly as possible.

17. Collision between cargo ship SENEI MARU and fishing net of fishing vessels TOSHI MARU No.2 and TOSHI MARU No.3

(publicized on April 22, 2011)

It is probable that, in the offing of Kamegakubi, Kurahashi Shima (Kurahashi Island), the accident occurred when SENEI MARU (Ship A), thinking wrongly that TOSHI MARU No.3 (Ship C) was alone on trawl fishing and failing, because of not keeping proper lookouts, to recognize that TOSHI MARU No.2 (Ship B) and Ship C were trawl fishing, proceeded forward in between Ship B and Ship C and collided with the fishing gear.

It is desirable that, although a vessel navigates far enough as possible away from a group of fishing vessels that are fishing, in a situation where the vessel has no other way but to approach a group of fishing vessels, a bridge watch-keeper on the vessel—required to judge whether the group of fishing vessels are on operation in a coordinated way, from sufficiently far away from the group, by confirming the vessels' positions and behavior, the fishing-gear buoys, and the fishing methods that the vessels are using, as well as the vessels' shapes or lights—should at all times maintain a proper lookout by binoculars,

radars and others.

It is desirable, in addition, that bridge watch-keepers should, on a regular basis, try to get knowledge on fishing methods and the vessels' behavior, because, in the waters around Japan, fishing vessels use different fishing methods according to the season or region, such as the two-boat trawling fishery of this case, where two vessels, in order to catch fish in the upper layer of water, were trawling a fishing net close to the sea surface unlike the generally known fishing method of bottom trawling.

18. Fatality to operator on personal water craft SHIBUZO No.2

(publicized on June 24, 2011)

It is probable that the accident occurred, while the personal watercraft was on a recreational cruise on Lake Inawashiro, when the operator and passengers dropped in water. It is somewhat likely, however, that the fact that the personal watercraft was equipped with a stern pole contributed to the occurrence of the accident. It is somewhat likely, in addition, that the operator and passengers, taking too long to raise the personal watercraft, let too much water flood in to resume the cruise, because they had no proper communication measures, and were thus unable to request rescue. Therefore the following is desirable:

1. The operator of a personal watercraft or a motor-boat carries a water-proof mobile phone or a mobile phone in a water-proof bag.
2. The operator of a personal watercraft cruises with any stern pole dismantled, except in the case of towing a wake-board or others.

19. Collision between container ship SKY LOVE and cargo ship HAEJIN

(publicized on June 24, 2011)

It is probable that the accident occurred, while both the vessels were proceeding, although each of the vessels once had made visual contact with the other vessel, without recognizing that the other vessel was approaching because both of the vessels failed to keep proper lookouts on the other's movements.

It is desirable that a bridge watch keeper, in order to have sufficient time to assess the risk of collision with other vessels, keeps proper lookouts for ensuring safe navigation.

20. Fatality to a diver on dive boat STYLE

(publicized on July 29, 2011)

It is probable that the accident occurred, while the vessel was on anchoring operation at the second point in Agono-Ura Port, when a diving instructor, who dove in the water off the port stern to hold the anchor on the sea bed, had her upper left arm cut by the blades of the propeller rotating in reverse due to the master's failure to set the clutch-lever of the engines on both sides in the neutral position.

It is desirable that, because 15 accidents causing death or injury due to a diver's accidental contact with a diving cruise boats occurred between 1991 and 2008, the parties concerned take the following safety measures to prevent a reoccurrence of similar accidents:

1. Diving-cruise-service business-operators should have a dedicated watch-stander on board in addition to a ship-operator to confirm divers' positions and behavior.
2. Owners of diving-cruise boats should install protection equipment, such as a propeller guard on a hull to prevent divers from accidentally making easy contact with the propeller blades.
3. Operators of diving-cruise boats should stop the engines while divers are close to the propellers.

21. Collision between oil tanker EISHIN MARU No.17 and chemical tanker COSMO BUSAN

(publicized on July 29, 2011)

It is probable that the accident occurred at the crossing of North Passage and Mizushima Passage at night due to the collision of EISHIN MARU No.17 (Ship A), proceeding southward in Mizushima Passage, with COSMO BUSAN (Ship B), proceeding westward in North Passage, in a situation where the vessels were in sight of one another and approached each other in an attitude which would lead to the risk of collision.

It is probable that Master A, although intending to pass Ship B on her stern by turning to port because Ship A was the give-way vessel, when it became difficult for Ship A to turn to port due to the movements of Ship D, which had begun to proceed northward toward Mizushima Passage to get into a situation where either Ship A or Ship D would pass the other on the port side, judging from the radar information at the time of the first sight of Ship B, thought that it would be possible to cross the course of Ship B on her bow, and did not give way to Ship B, but rather tried to cross the course of Ship B on her bow.

The Act on Preventing Collisions at Sea, Article 5 (Lookout), requests vessels to

always maintain a proper lookout so as to make a full appraisal of the risk of collision with other vessels, and Article 8 of the Act (Action to avoid collision) requests that any action taken to avoid collision shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship.

It is probable that, if Ship A, when it had become difficult to turn to port to pass Ship B on her stern, had made judgments in accordance with the rules described above and based on the latest information obtained by continuous and proper lookouts instead of the radar information obtained at the time of the first sight of Ship B, Ship A would have noticed that, judging from the extent of navigable water, the only action to prevent the collision would be reducing speed or stopping, and also that Ship A would have noticed that such actions were required promptly in the situations where the ships had approached each other, and as a consequence the occurrence of the accident would have been avoided.

Therefore, it is desirable that vessels should at all times maintain a proper lookout so as to make a full appraisal of the risk of collision and that any action taken to avoid collision with other vessels should be made in ample time and the proper action be positive.

22. Fatality to crew members on chemical tanker KYOKUHO MARU No.2

(publicized on July 29, 2011)

It is probable that the accident occurred, while the ship was unloading TBA (Tertiary Butyl Alcohol), when a crew member died of suffocation due to oxygen deficiency because the crew member entered the cargo tank without measuring the oxygen density in the tank even though the tank had been filled with nitrogen gas.

Therefore, ship owners, etc. need to provide crew members of chemical tankers with safety education on the risk of occurrence of oxygen deficiency depending on the cargo characteristics or cargo-handling procedures, and guidance to make sure to measure the oxygen density prior to entering cargo tanks in a situation where the risk of oxygen deficiency is expected.

It is desirable, because, at the time of the occurrence of the accident, the crew members other than the chief officer and the chief engineer had no recognition that the cargo tank was filled with nitrogen gas while unloading, and furthermore the chief officer likely failed to remember such fact, that cargo-handling service providers surely inform chemical tanker crew members of the fact that when filling cargo tanks with gasses that cause oxygen density to decrease.

23. Collision between chemical tanker KINYO MARU and barge MARUSEN 2 towed by tug boat KAIRYU

(publicized on July 29, 2011)

It is probable that, in the East Traffic Route in the west of Ogi Shima (Ogi Island), the accident occurred when Ship A, proceeding along the route, collided with a tug, Ship B, towing a barge (Ship B Train) entering the route from outside.

It is probable that Ship A, assuming that Ship B Train would never enter the East Traffic Route and hence making no further lookouts for Ship B Train, should have kept proper lookouts to properly judge other vessels' movement.

It is probable that Ship B Train, because it was a give-way vessel to Ship A proceeding in the route, when entering the East Traffic Route, not expecting Ship A's cooperative actions, such as reducing the speed, should have properly judged the risk of collision, and promptly taken give-way actions if the risk of collision could be expected.

It is desirable, because it is somewhat likely that the accident could have been avoided if both vessels had shared each other's intension of ship handling via VHF communications, that vessels equipped with VHF effectively utilize such equipment.

24. Collision between barge YAMAKA 57SD103 towed by tug boat FUMI MARU No.28 and fishing vessel NANKAI MARU

(publicized on August 26, 2011)

It is probable that the accident occurred, in the west exit of Kurushima Kaikyo (Kurushima Strait), while YAMAKA 57SD103 (Ship A), towing a Ship B (Ship A Train) was proceeding north-eastward, and NANKAI MARU (Ship C) was proceeding north-westward, when Ship B collided with Ship C. It is also probable that, although Ship A had two-minutes before collision, visual contact with Ship C approaching at about 500 m and causing fear of collision and pushed the whistle button, the whistle made no blasts because the power switch was off. It is somewhat likely, judging from the fact that Ship A recognized the silhouette of a person sitting on Ship C's stern deck facing rearward when Ship C approached 200 to 250 m from Ship A's starboard beam, that, if the whistle had been successfully sounded when the fear of collision arose, Ship C could have recognized the existence of Ship A Train, and the accident could have been avoided.

It is required, therefore, that vessels equipped with whistles should keep them in sound conditions by making maintenance routinely, and furthermore make it sure to inspect them prior to departure to keep them operable during navigation.

25. Fatality to a crew member on passenger ship RYUGUJO

(publicized on September 30, 2011)

It is probable that the accident occurred when Engineer A fell overboard and died while applying detergent to the passenger-cabin windows on the second floor, because Company A, not recognizing the danger of such work which was routinely executed, and failing to take safety measures required by laws and regulations for outboard-work, ordered Engineer A to do the cleaning work.

It is desirable that Company A examines the danger of the routine work on the vessels they own, reconfirms the safety measures required by laws and regulations for such work, and takes necessary measures to enhance the safety of their seamen.

26. Injury to an angler on recreational fishing vessel HANABUSA

(publicized on September 30, 2011)

It is probable that the accident occurred, while the vessel was proceeding south-southwestward by auto pilot in the southwest offing of Rukan Reef in the west of Itoman City toward a payao (floating fish reef) 20 M south of Tokashiki Shima (Tokashiki Island), and being hit by south to south-west consecutive waves about 1.5 to 2.0 m high at the bow, when, in spite of the master's action to reduce the speed upon recognizing a big wave about 2.5 m high coming just in front of the vessel, the vessel's bow rode on the big-wave's crest before the vessel was decelerated to the safety speed from about 8 to 10 kn, causing the hull to move up and down, a passenger, sitting in the front part of the bow deck, was lifted up in the air off the deck, dropped on the deck, and hit by the deck.

Similar accidents in recreational fishing vessels occurred between April 2002 and January 2010, in 11 small recreational fishing vessels, resulting in spine-compression fractures on 12 passengers, each of whom suffered on a deck while the vessel was proceeding.

It is somewhat likely, therefore, that, on small recreational fishing vessels while having passengers on the foredeck, accidents involving passengers suffering from spine-compression fractures occur because of hull oscillations, depending on the wave situation.

It is probable, judging from the results of the analysis on the accident, that, in small recreational fishing vessels, the midship or rear part is safer than the bow deck because pitch motions are smaller there.

It is required, therefore, that the master of a small recreational fishing vessel recognizes the risk of passengers suffering from lumbar spinal injuries, and, in a situation where the hull oscillates due to waves, makes sure to execute the following to preserve

passenger safety:

1. The master of a recreational fishing vessel, while proceeding, should have the passengers boarded in the mid-to-rear compartment while the vessel is proceeding in a situation where the hull oscillates because of the impacts of waves where the center of gravity of the vessel is in the rear part.
2. The master of a recreational fishing vessel while proceeding in a situation where the hull oscillates because of the impacts of waves, should alter the course to the waves in order to reduce the hull oscillation, and in addition substantially reduce the speed to the safe speed.
3. The master, in a situation where the vessel, while proceeding, is being hit by consecutive waves at the bow, should keep proper lookouts of the waves because high waves hit the vessel periodically.

27. Contact with mooring dolphin by motorboat KAISER

(publicized in September 30, 2011)

It is probable that, in night hours, the accident occurred in Section 1, Tokushima-Komatsushima Port, when the vessel, while proceeding on the way to return, collided with a mooring pile due to the master's failure to notice that the vessel was approaching the pile.

It is somewhat likely that the master's alcohol ingestion prior to the return voyage contributed to the inability of normal ship handling through affecting the master's ability of situational judgment. In addition, none of the persons on board, including the master and the eight passengers, one of which was a child under 12 and as such was required to wear a life jacket by laws and regulations, wore a life jacket, and all of them boarded on the exposed deck.

It is required that the master, in order to prevent a reoccurrence of the accident, follow the regulations in the Act on Ship's Officers and Boats' Operators with regards to the following:

1. A boat operator should avoid alcohol ingestion in a situation where he/she has to steer a boat, because alcohol ingestion could hamper the normal ship handling through its influence on mobility function, vision, concentration, and situational judgment.
2. A boat operator should instruct a child under 12 years of age on board to wear a life jacket.
3. A boat operator of a small boat should recommend the passengers on board on the exposed deck to wear life jackets.

28. Collision between fishing vessel WAKAEI MARU and small combined-use boat FUKUJU MARU

(publicized on September 30, 2011)

It is probable that, in the night hours, the accident occurred in Nagasu Fishing Port, while WAKAEI MARU (Ship A) was at anchor and FUKUJU MARU (Ship B) was proceeding south-eastward, when Ship B, while the Master B was making a port turn with an intention of passing through between Ship A and Breakwater No. 1, collided with Ship A, because of Master B's failure to keep proper lookouts.

It is probable that Master B, having thought that the water is shallow around the breakwater, intending to avoid approaching Breakwater No. 1, and paying much attention to visually confirm Ship B's approaching Breakwater No. 1 because it was not easy to see Breakwater No. 1 due to worsened visibility or worsened distance perspective, judged wrongly that Ship A had already moved away backwards and failed to keep proper lookouts.

It is probable, on the other hand, that Ship A, having no ship inspections, was not properly equipped with life saving appliances, Ship B had more passengers on board than the maximum capacity and was not equipped with sufficient life jackets, and in addition, no one on board Ship A or Ship B wore life jackets.

It is somewhat likely that, if, in such a situation, a boat had capsized or a person had fallen overboard, severe damage, such as a death, could have happened.

It is desirable, therefore, that, in order to prevent similar accidents from occurring or to mitigate damage in a case of an accident, the following measures be taken:

1. Lookouts by proper means in the night hours

   A boat operator on steering, while keeping lookouts on navigational obstructs (objects), should take into consideration that, in the night hours, the outline of an object with less contrast to the background becomes unclear and visibility decreases, and in a dark field of view containing an object, the distance to the object is hard to measure by sight due to a loss of sense of distance, and should utilize additional measures, such as a radar.

2. Preservation of passengers' safety through having boat inspection, and safety guidance

   (1) A fishing vessel used for purposes other than fishing and having passengers on board, through receiving vessel inspections, should make sure not to have passengers over its capacity and to be equipped with a sufficient number of life-preservation equipments.

   (2) The master should comply with the passenger capacity limit, and take safety

measures such as guiding passengers to wear life jackets.

(3) A fishers cooperative-association, in view of the situation where fishing vessels are used for purposes other than fishing, should provide its members with guidance effectively, for example by holding safety orientations on the occasions of fire-work festivals, etc, in order to have them surely receive vessel inspections if necessary, to have them comply with passenger-capacity limitation, and to have them preserve passengers' safety by installing required life saving appliances and wearing life jackets.

29. Collision between pleasure boat KAIKYO MARU and pleasure boat KOKURA MARU

(publicized on September 30, 2011)

It is probable that, in the west-north-west offing of Tokomasari Reef, the accident occurred, while KAIKYO MARU (Ship A) was preparing fishing gear and proceeding, failed to recognize KOKURA MARU (Ship B) in drift, and collided with Ship B, because Ship A was not keeping lookouts.

The waters around Tokomasari Reef, which is a good fishing ground, are congested with small boats fishing.

It is somewhat likely that, at the time of the occurrence of the accident, because it was difficult to detect by sight from far away Ship B, which generated no white waves to the stern because of drifting and seen off and on among the waves of about 2 m high, a single surveillance by sight would overlook the Ship B.

Therefore, the boat operators are required to keep proper lookouts not to overlook the small boats through dedicating themselves to watch-keeping.

30. Collision between recreational fishing vessel ICHIFUKU MARU and motorboat KANA MARU

(publicized on September 30, 2011)

It is probable that, near the occurrence of the accident, ICHIFUKU MARU (Ship A), although proceeding in a situation where it was difficult to detect a radar image around the center of the radar screen due to the surface reflection caused by waves, taking no visual lookouts for proceeding, failed to recognize KANA MARU (Ship B) in drift.

Near the time of the accident, Master A, wrongly thinking that there were no vessels around, made no visual lookouts by peering through the lookout-opening opened on the

steering room's ceiling, partially because Ship A was hit by wave splashes. It is required to make sure not to overlook other vessels by keeping proper lookouts even in a situation where the detection of vessel images on radar is difficult due to surface reflections, through, not fully relying on radar information since the basic lookout is conducted visually, making proper lookouts by sight, hearing, and all other available means appropriate in the situation.

31. Fire on car carrier PYXIS

(publicized on September 30, 2011)

It is probable that the accident occurred because a fire broke out in the engine bay of a car stored in the cargo hold by an unidentified cause and spread to other stored cars; CO_2 was released into Zone F, where the fire has started, as well as into Zone E and Zone D, where the fire detection system was activated; and the chief engineer died due to suffocation caused by CO_2 intoxication and was found in Zone D, DK 7.

As for the death of the chief engineer, it is probable that although the chief engineer had known of the release of CO_2 because the master repeatedly had made the announcement requesting to go to the muster station for the preparation of CO_2 release, the chief engineer entered DK 7 without carrying a transceiver, although he had been requested to carry one by the muster list.

It is desirable that Company A should inform crew members at an orientation about carrying, in an emergency, the equipment prescribed in the muster list and about the importance of following the instruction from the master to evacuate in an emergency; and as for CO_2 release, Company A should determine the procedures for safety confirmation of the place into which CO_2 will be released and instruct the ships under their management to conduct exercises simulating actual emergency situations.

Although the cause of fire in the engine bay of the car remains unidentified, the possibility that it was the electric equipment in the ship or the handling of fire such as smoking, or that the electric system of the car was involved cannot be completely denied. Therefore, it is desirable that Company A should motivate crew members to be more sensitive to fire protection, execute stricter controls on fire-handling, inspect electric equipment in cargo holds more strictly; and the automobile manufacturing company should give more consideration to fire protection starting from cars in transportation.

32. Grounding of cargo ship DONG PHONG

(publicized on October 28, 2011)

It is probable that the accident occurred because, in the situation where storm warnings had been issued, although the weather became worse to the extent that a west wind of maximum instantaneous speed greater than about 21 m/s was blowing and waves were rising to the height of about 4 to 5 m, the ship stayed on anchorage due to the master's decision, dragged anchor, tried to move after heaving-up anchor, drifted due to the wind pressure, and grounded on the coast to the north east of Ishikari-Wan Port.

It is probable that ships on anchorage in heavy weather are requested to collect weather and sea information, pay attention to the information delivered by the port authorities when heavy weather is expected, and take preventive measures against anchor dragging. In addition, it is necessary to consider moving promptly to a different anchorage point in response to the changes of weather and the sea conditions, and calmness of an anchorage area and so on.

33. Fire on fishing vessel YUKO MARU

(publicized on October 28, 2011)

It is probable that, in the east offing of Tomioka Town, the accident occurred while the gravity tank was being manually filled, when, because of the master's failure to shut-down the fuel pump, the fuel, blasting out of the air vent pipe of the gravity tank, spraying over the casing of the main engine's super-charger-exhaust, vaporized and accumulated in the engine room as inflammable gas and ignited.

It is required that the master, while refilling a tank with fuel oil by a fuel pump operated manually, always examines the state of fuel poured into the gravity tank, and in addition, uses for the gravity tank an overflow pipe with an inner diameter that allows an oil-flow equal to or larger than the flow supplied through the oil-filling pipe.

34. Collision between oil tanker TAIYO MARU No.32 and gravel carrier KATSU MARU No.38

(publicized on October 28, 2011)

It is probable that, in the night hours, in the south of Irakomisaki Lighthouse, while TAIYO MARU No.32 (Ship A) was proceeding north-westward and KATSU MARU No.38 (Ship B) was proceeding westward on autopilot, the accident occurred when the vessels collided, because Master A, not assessing the risk of collision with Ship B approaching from the starboard side and conduct of crossing-vessel continued to proceed, and in addition, Engineer B, on lone bridge watch keeping, fell asleep.

It is somewhat likely that Master A, wrongly thinking that Ship B would eventually proceed along the route because Ship B's true-speed vector was pointing to Buoy No. 2 and Ship B was in a situation where a prediction that Ship B would eventually proceed along the route seemed reasonable according to Master A's experiences so far, continued to proceed without making an assessment on the risk of collision with Ship B.

It is likely for a human to make a judgment on the basis of his experiences or conventions. However, such experiences are not always proper judgmental standards.

As a result, decisions made only by experiences may lead to human errors.

It is probable, therefore, that routinely making judgment on other vessels' movements solely based on the predictions derived from experiences or conventions will interfere with timely and proper assessment of the risk of collision.

It is required, for making a timely and proper judgment on the risk of collision, unlike the judgment insufficiently made in the accident case based on the other vessel's true speed vector pointing to Buoy No. 2, to strictly and routinely comply with the regulations in the Act on Preventing Collision at Sea, such as to make as early judgment as possible on collision or judgment on conduct of crossing-vessel.

It is required that a person on bridge watch-keeping should sleep long enough before standing on duty, and when feeling drowsy during the duty, should take actions, such as removing drowsiness with fresh air or asking the master to replace him with another crewmenber, to prevent drowsiness from causing trouble.

It is required, in addition, that Master B, while proceeding in a narrow channel, should be on the bridge and take navigation command himself, because the Mariners' Act requires a master to take navigation command him/herself while the vessel is proceeding in narrow waters.

35. Capsizing of motorboat NIKKO MARU No.2

(publicized on October 28)

It is probable that NIKKO MARU No.2 (Ship A), while proceeding at a speed of about 5 to 8 km/h on its way back to North Mooring Point located at the mouth of the Omono River toward the north of the shallow water in the river center while being hit by following waves, tumbled over in the following sequence: Ship B got over the first river-mouth-wave about 1.8 m high near the river mouth; Ship B, then increased the speed to catch up with the ascending slope of the second river-mouth-wave ahead, about 2.0 to 2.4 m high, but it failed to stay on the ascending slope of the second river-mouth-wave; Ship B was forced to slide on the descending slope; Ship B was then pushed by the first river-mouth-wave approaching behind, and hit by the wave at the starboard stern; Ship B got caught in a broaching and tumbled over.

Since 1990, 50 capsize cases have occurred near river-mouths; 26 of them—about half—were caused by following waves; the significant factor in 9 of the 26 cases was broaching. In addition, among the 34 people who died in those cases, three wore life jackets and twenty-one didn't, while it is not known whether the remaining ten did or not.

Therefore, the following is required to prevent the accidents related to capsizing at river mouths:

1. Enhancement of safety awareness

   The Ministry of Land, Infrastructure, Transportation and Tourism, and the Japan Coast Guard should continue to make efforts to enhance safety awareness by holding orientation sessions or utilizing other occasions in order to take measures to cancel leaving port when wave conditions would worsen, or to evacuate to another port when the weather suddenly changes during navigation by fully obtaining information, such as weather forecasts.

2. Promulgation of information of navigational risks

   The Ministry of Land, Infrastructure, Transportation and Tourism, and the Japan Coast Guard should, by holding orientation sessions or utilizing other occasions, provide information on the following risks: navigation in following-wave situations near river mouths is difficult, where navigable areas are limited, and incoming waves grow taller and steeper, and break; therefore, there is a chance of broaching in the case of failure to stay on the wave ascending-slope.

3. Wearing of life jackets

   The Ministry of Land, Infrastructure, Transportation and Tourism, and the Japan Coast Guard should, by holding orientation sessions or utilizing other occasions, provide information on the wearing of life jackets during navigation near river mouths because it is hazardous for passengers to go overboard during a capsize, etc. due to the current flowing out of the mouth toward the sea.

4. Research and study

The Japan Coast Guard, for the purpose of preventing a reoccurrence of similar accidents related to capsizes at river mouths, and in order to find safe navigation measurer, should study as many actual cases as possible with regard to the physical states of river mouths, such as shallow waters or navigable areas, and wave conditions, as well as empirical accident-prevention rules used by the vessels regularly navigating through such river mouths, and should promote the sharing of the results of such studies among the parties concerned.

5. Safety measures by the master

The master should, for the purpose of safe navigation near river mouths, pay attention to the following:

(1) Safety measures for the prevention of capsizing

The master should comprehend the weather conditions and collect information of shallow waters and around river mouths, and in a situation where waves are high or predicted to go higher, refrain voluntarily from departing a river because navigation in following waves is accompanied by a higher risk of capsize, and also take other actions, such as seeking a safe shelter in a nearby port when proceeding toward the river from the offing.

{2} Wearing of life jackets

The master should guide persons on board to wear life jackets as much as possible to prepare for unexpected situations.

{3} Inspections prior to departure

The master should make a check inside the vessel prior to departure to confirm that the life-saving gear, including life buoys, is ready to use.

36. Sinking of fishing vessel YAMADA MARU No.2

(publicized on November 25, 2011)

It is probable that the accident occurred when the engine room was flooded with water carried by a wave hitting the boat with a height more than twice that of the significant wave height, because the engine room exit was open.

It is desirable, therefore, that ship-owners, etc. manage their ships and provide guidance to their crew members with regard to the following points, and that the crew members navigate while keeping them in mind:

1. In some cases where a ship is proceeding and being hit by consecutive waves, a high wave is likely to come in over the board and flood the ship, although it is unexpected in a normal situation.

2. Even a small amount of flooding water could cause a reduction of stability that could lead to a hull list; due to such a hull list, waves could consecutively come over board in the ship, resulting in sinking.
3. It is required, therefore, that, during navigation, exit doors, etc. on the deck should be closed always, except for entering or leaving; the doors open in such a case should be closed promptly.

37. Fatality and injury to riders on personal water craft RED PEARL

(publicized on November 25, 2011)

It is required that a personal watercraft operator, because navigation around estuary barrages is often restricted—navigation is banned in some cases—for such a reason that currents flow faster there, should confirm the situations around estuary barrages from the management authorities in charge or marinas near-by, comprehend the precautions, and keep off the restricted areas.

It is required, at the same time, that the operator and passenger should wear a proper and fitting life jacket.

38. Fatality to a rider on personal water craft MINPA

(publicized on November 25, 2011)

It is probable that the accident occurred, in a situation where a strong wind warning had been issued, while the personal watercraft was proceeding southward around the mouth of the Sagami River, when the personal watercraft operator and the passenger were thrown into the water, because the driver continued to proceed although recognizing ahead a wave of 1 to 2 m high.

It is desirable that a personal watercraft operator, while proceeding around the mouth of the Sagami River, take the following actions:

1. Collect the latest information on wave height around the river mouth from mariners near-by or by using the Internet.
2. Keeping in mind that the preservation of a passenger's life and safety depends on the operator's judgment, cancel the navigation in a situation where waves are high.

39. Collision between oil tanker SHINSUI MARU No.8 and fishing vessel SUMIYOSHI MARU No.8

(publicized on November 25, 2011)

It is probable that the accident occurred in the night hours when the vessels collided, because, on SHINSUI MARU No.8 (Ship A) in a two-men watch-keeping arrangement, when one of the watch keepers left the bridge for a scheduled look-around, the other watch-keeper failed to keep a proper look-out, and because, on SUMIYOSHI MARU No.8 (Ship B), Master B, alone on the steering wheel, failed to make a look-out; Master B, was wearing a life jacket and was, therefore, successfully rescued by a friend's fishing vessel.

Master B was rescued as follows: Master B, when Ship B tumbled over, evacuated Ship B though the steering room onto the water surface; Master B, while floating on the surface, on sight of the light of a vessel, blew a whistle equipped on his life jacket to inform of his existence; the master on a friend's fishing vessel, hearing the whistle, searched around, recognized the light reflected by the reflection tape on Master B's life jacket, and rescued Master B.

Because many accidents have occurred on small boats where crew and passengers fell overboard as a result of a collision with another vessel, that, for the purpose of assisting rescue operations of persons overboard and avoiding damage, crew and passengers, even if they are not obligated to wear life jackets, should wear life jackets when on the deck and as much as possible during work in the steering room, etc.

Note that the management and operating company of Ship A, in view of the fact that a situation of one-man-watch-keeping occurred even though Ship A adopted a two-men watch-keeping arrangement, has reviewed their safety management manuals, etc. to revise the scheduled look-around procedures and ensure two-men-watch-keeping, and has taken measures to improve safety operations.

It is desirable that management and operating companies of domestic vessels make efforts to improve safety operations of the vessels they manage, by making examinations on whether the bridge watch-keeping in the vessels they manage actually complies with their safety management manuals, etc, and by taking necessary remedial actions in a case where an unsafe element is found, through referral to the case described above.

40. Grounding of cargo ship KATSU MARU No.8

(publicized on November 25, 2011)

It is probable that, in the night hours, while the ship was entering Hososhima Commercial Port in rain, the accident occurred when the ship grounded on a rock near the east tip of Hososhima Saki Point.

It is somewhat likely that the radars and the GPS, although operative, were not properly used for making lookouts and that the master, following the conventional entering procedures, was proceeding with visual look-outs.

It is desirable that an operator, in the night hours or in rain, makes best efforts to precisely know the ship positions by utilizing radars and GPS plotters, in addition to visual look-outs.

41. Contact with light buoy by passenger ship EIKYU MARU No.8

(publicized on November 25, 2011)

It is probable that, while the ship proceeding west-southwestward off the south coast of Amakusa-kamishima toward the south offing of the south light buoy, the accident occurred when the ship collided with the light buoy, because the master on manual steering proceeded the ship without making lookouts, and failed to recognize that the ship was turning to starboard while putting its helm to starboard toward the south light buoy.

The findings of the investigation of the accident clearly show the following: the operator neglected to make lookouts, despite that being the basis of safety operations; in addition, Company A had been operating the ship without a chief engineer on board, although the boarding of a chief engineer is required by law; Company A had provided no safety education to its employees, and furthermore had not encouraged its employees to participate in safety orientations held by the administrative organs concerned.

It is probable, therefore, that Company A should make efforts to preserve the safety of its passenger-services through the following measures: making efforts to improve its employees' awareness of safety by encouraging its seamen to participate in safety orientations, etc. held by the administrative organs concerned, as well as providing education regarding safety operations within the company; adjusting crew-member-arrangement to ensure the arrangement of seamen required by laws and regulations, even in a case where a regularly serving seaman disembarks from the ship.

42. Grounding of dive boat SOUTHWARD PASSAGE II

(publicized on November 25, 2011)

It is probable that, while the vessel mooring at a diving point in Inanse in a situation where a thunderstorm, gale, and high-wave warning had been issued because of a typhoon approaching Ishigaki Shima (Ishigaki Island), the accident occurred in the following sequence: when a gusty wind of about 20 m/s from the bow direction hit the boat, the starboard bow anchor rope broke, and then, the port bow anchor lost contact with a rock; when the boat began to drift as it was pushed by winds toward Inanse, in order to move away from Inanse, the boat released the port stern anchor rope, put the starboard engine to ahead and the port engine to stern to make a port turn; the port stern anchor rope tangled with the port propeller, causing both the engines to become inoperable; the boat was pushed further, grounding on Inanse.

It is required, therefore, that for the purpose of preventing the recurrence of similar accidents, diving-service operators should manage their cruises paying attention to the following:

1. Operators should cancel a cruise when the heavy weather is expected because a typhoon is approaching near Okinawa Shima or because a weather advisory or warning has been issued.
2. Boats should avoid, as much as possible, anchoring where shallow waters, such as reefs, are located on the leeside.

43. Capsizing of angler tender boat SETO MARU

(publicized on November 25, 2011)

1. Compliance with operational rules

It is probable that the accident, when the vessel departed in a situation where a gale-on-sea warning had been issued, occurred in the following sequence: at about 5 to 6 m south-southeast of Suzu Shima (Suzu Island), the vessel was hit by the first big wave on the stern and was pushed toward the rock, her bow grounding on it; the vessel listed to starboard due to the backwash; immediately after, the vessel, hit by a big wave from stern, had flood water in the hull carried by the wave; the water, accumulated in the starboard side of the hull, caused further listing to the starboard side; then, the vessel tumbled over.

It is probable that the master routinely made a judgment of departure according to visual observations of winds or waves in spite of a gale-on-sea warning, which had been adopted as the criteria for cancelling a departure on operational rules. It is required, therefore, that ferry-service operators comprehend their operational rules, and comply

with them.

It is probable, in addition, that operators can preserve safety by prompting their passengers to be aware of safety by displaying their criteria for cancelling a departure or for return to their ports.

It is desirable that Wakayama Prefecture, in charge of the supervision of service-operators in Azashi Fishing Port, where the accident occurred, continues its efforts to inform and educate those operators of the preservation of passengers' safety by holding sessions or distributing leaflets, and enhance such activities by informing them of, and supervising them to comply with, the following:

(1) Service operators should collect, prior to departure, the latest weather information and sea conditions through MICS (Maritime Information and Communication System), etc. by mobile phones, etc., which is necessary to make a judgment on cancelling a cruise.

(2) Service operators should ensure the preservation of passengers' safety through examining their criteria for cruise-cancel and return-to-port on whether the characteristics of waves, winds, or geographical configurations in the destination areas are reflected in such criteria, reviewing those criteria, and taking necessary actions.

(3) Service operators, for the purpose of passengers' safety preservation, should display their criteria for cruise-cancel and return-to-port in the places for passengers to easily find, such as in the hull or in the waiting room.

It is desirable, in addition, that, in view of the findings of the investigation that some of the service operators had no knowledge of the criteria for cruise-cancel and return-to-port, or no knowledge of the operational rules, and that 6 accidents related to recreational fishing vessels occurred in the areas belonging to Wakayama Prefecture in the past 3 years, Wakayama Prefecture instructs the service operators to understand the details of the operational rules and comply with them, by such means as requesting report-submissions and executing inspections pursuant to the Article 24 of the Act for Coordination and Improvement of Recreational Fishing Guide Business.

2. Checking prior to departure

It is desirable that passengers, for the purpose of avoiding fishing under severe conditions, themselves confirm the latest weather information and sea conditions, and understand the service operators' criteria for cruise-cancel and return-to port.

It is desirable, in addition, that passengers, to preserve safety in a case of falling overboard, wear life jackets, and clothes that retain body heat, in such a way that such gear does not slip off the body, and carry a mobile phone with GPS features in a water proof case.

3. Wave effects

It is probable that the accident occurred when the vessel, hit by the big wave at the stern, tumbled over in a situation where, near the location of occurrence of the accident, consecutive waves about 3.0 m high at most were hitting the vessel.

It is desirable, because, in shallow water, like the location of the occurrence of the accident, the shape of a wave coming in from the offing, in some cases, will deform and rapidly increase in height regardless of its significant height as small as 2.0 m, and in other cases, consecutive waves as high as the maximum height come in and hit, leading to the risk of a small vessel tumbling, like the vessel in the accident hit by a big wave on the stern, that service operators navigate their vessels in the destination areas, taking care of waves by paying attention to the waves coming in from the offing.

44. Fatality to a crew member on fishing vessel FUDO MARU No.3

(publicized in December 16, 2011)

It is probable that, while the vessel, in a supporting role with a net-support-line taken on the port side of a drawing-net boat, was pulling-up launch No. 5 into the stern hanger, the accident occurred in the following sequence: because it was difficult for the vessel to change its heading freely according to its intention, the vessel failed to reduce its pitch motion caused by waves; as a result, the vessel's stern went up and down, causing the bow of launch No. 5, which was on the slipway, to pop-up; the c-type ring of the vessel separated from the c-type ring mounted on launch No. 5; the c-type ring and the released line hit Ordinary Seaman C, who was working at the starboard side of the stern hanger not surrounded by a protection fence.

It is probable that, because the pull-up work of launch No. 5 to the stern hanger in a situation where the vessel connected with a supporting role prevented the vessel from changing its heading freely, the vessel should have turned its heading to such a direction to allow the vessel to receive waves abeam at first, and then should have started winding the line.

It is probable, in addition, that, because it is dangerous to stand in an area unprotected by a fence within a hazardous zone of a jumping-back line in cases where a c-type ring separates from a c-type ring mounted on a launch, like in this accident, such a dangerous zone on a deck should be painted to draw attention, and in addition, the winding work should be initiated after confirming that no one is in such a dangerous zone.

45. Collision between cargo ship OCEAN SEAGULL and cement carrier SUMISE MARU No.2
(publicized on December 16, 2011)

It is probable that the accident occurred in the east offing of Yokohama City Fishing Pier, Keihin Ko, when OCEAN SEAGULL (Ship A), proceeding southward, and SUMISE MARU No.2 (Ship B), proceeding westward, collided because of no proper lookout on either ship.

It is probable that persons stationed on the bridge are requested to, by strictly following the stipulation regarding lookouts in the Act on Preventing Collision at Sea, execute continuous and proper lookout inside harbors in order to make a full appraisal of the risk of collision with other vessels, because persons stationed on the bridge are requested to react promptly and properly to changes in the movements of other vessels in harbors, where vessels change their movements to a greater extent due to the movements of vessels berthing at wharfs, than in outside-harbor areas, especially when another vessel is approaching and crossing its course.

It is desirable for the persons stationed on the bridge to share information through the application of a systematic means, such as the BRM method, and at the same time make conscious efforts of proactively exchanging information via VHF with other vessels so that such information exchange will be practiced on a regular basis.

1. Marine incident (navigation obstruction) of passenger ferry OSADO MARU
(publicized on December 16, 2011)

It is probable that the incident occurred because the port side reduction gear was kept used in a situation where the metal of the bow-side shaft bushes on the output shaft was severely abraded.

It is desirable that, for the purpose of the avoidance of similar damage to the shaft bush of a reduction gear, ship owners take the following measures:

1. The temperature of shaft bushes should be monitored while the main engine is in operation.
2. Shaft bushes should be inspected regularly.
3. Gaps between shaft bushes should be measured on the occasion of inspection, and, if the gap measurement exceeds recommended value for replacement, such measures should be taken as releasing the lower metal.
4. Inspection or maintenance records should be properly kept, and effectively referred to on the next occasion of inspection or maintenance.

It is somewhat likely that the following facts contributed to the occurrence of the incident: Company A's persons concerned, although knowing that the gap between the

shaft bushes had exceeded the recommended value for replacement, had left the maintenance management to a manager of the engine department; in addition, the maintenance information or knowhow had not been properly handed-over on the occasion of a transfer of manager in charge of maintenance. It is required that all the parties concerned on ship maintenance service business, including ship owners and ship-operation managers, as well as Company A, Company B, and Company D, make efforts to improve maintenance techniques through sharing maintenance-information and knowhow by facilitating communication between seaman and managers in charge of maintenance.

Appendix 29 Actions taken in response to recommendations in 2011

Actions taken in response to recommendations were reported with regard to two marine accidents in 2011. Summaries of those reports are as follows.

1. Injury to passengers on passenger ship AN-EI GO No. 98	
Summary of 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 Shiama (Iriomote Island), Ishigaki City, Okinawa Prefecture, two passengers suffered injuries when the ship pitched (moved up and down).
Recipient of recommendations	An-ei Kanko Co., Ltd. (Recommended on March 25, 2011)
Summary of recommendations	In view of the results of this accident investigation, for the purpose of ensuring passengers' safety, the JTSB makes the following recommendations to An-ei Kanko Co., Ltd. pursuant to Article 27, Paragraph 1 of the Act of Establishment of the Japan Transport Safety Board: 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.
Response or actions taken	An-ei Kanko Co., Ltd. submitted an execution plan in response to the recommendations as shown below (December 5, 2011): 1. Execution plan of 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.) (1) The company will provide safety education with regard to the safe operation of a passenger ship. (2) The company will use the following education materials: a. DVDs Title: "Safe Operation: Learn from close-call experiences" Title: "Safe Operation: How to prevent human errors" Title: "Safe Operation: Small craft, high speed craft, and ultra high speed craft" Title: "Importance of drills," "Response to an emergency," "Customer service on a passenger ship" b. "Measures for safe operation of high speed passenger craft and safety of passengers in winter or on rough seas" dated on February 18, 2008 c. "Safe operation of high speed passenger craft in winter - for the safety and security of passengers" d. Safety Management Manual (including Navigation Standards, Work Standards, Accident-handling Standards, and others) (3) The company will hold safety sessions inviting lecturers with expertise in the maritime field and other transportation modes. (4) In order to assess the extent of the crew's understanding of safety management, the operation managers or their assistants will have interviews with the crew during a safety session to ask questions about the safety management manual. Note: {1} to {3} have already started, and {4} is scheduled to be implemented. 2. Execution plan for 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.) (1) The company will, based on the "Measures for safe operation of high speed passenger craft and safety of passengers in winter or on rough seas," develop "Safety operation manual on rough seas," with the following attached: "Safety measures for passengers' safety on rough sea," on wearing seat belts and carrying out security patrol; and "Notes for navigation on rough seas," which is a collection of the standard route maps with specific notes inserted, for example, notes for jet-boat operation, wind directions when sailing on each route, and notes for navigation in high waves. Although the company has considered numerically specifying speed and course for their navigation, setting specific numerical values may cause other problems, such as the rudder effectiveness at the specified speed may not be sufficient in a certain weather condition, so the company has decided to develop the manual by mentioning what should be taken into account for each navigation route. (2) The company uses the manual as an education material in its safety sessions provided for its crew. (3) In order to assess the extent of the crew's understanding of the manual, operation managers or their assistants will have interviews with the crew during the safety session to ask questions about the manual. 3. Due date of completion report (1) The company will submit a completion report for items (1)to (4) of section 1, some of which have already been completed, by March 31, 2012. (2) The company will submit a completion report for items (1) to (3) of section 2 by March 31, 2012. (3) Documents and photos will be attached to each completion report for the proof of execution.

2. Sinking of recreational fishing vessel SHIBUSAKI No. 10	
Summary of accident:	At around 11:35 hrs, Saturday November 28, 2009, the vessel, boarded by a skipper with 12 passengers and a child in the skipper's family, sank when water flooded into the vessel out of an open end of a fishing pipe made through the hull bottom while proceeding near Hatsushima off the east shore of Lake Suwa west-south-westward to a surf-smelt fishing raft. All the persons on board were rescued by a sight-seeing boat cruising nearby and others; three of the passengers suffered contusions.
Recipient of recommendations:	Shibusaki Co., Ltd. (recommended on September 30, 2011)
Summary of recommendations:	In view of the results of this accident investigation, for the purpose of ensuring passengers' safety, the JTSB makes the following recommendations to Shibusaki Co., Ltd. pursuant to Article 27, Paragraph 1 of the Act of Establishment of the Japan Transport Safety Board: The company should raise their awareness of ensuring the safety of passengers and vessels, maintain the seaworthiness of the vessels it owns by having ship inspections properly, and take measures to make sure that passengers wear life jackets for their safety.
Responses or actions taken:	Summary of the completion report by Shibusaki Co., Ltd. in response to the recommendations (November 30, 2011) 1. The company should raise their awareness of ensuring the safety of passengers and vessels. (Implementation Report) (1) The company has specified important safety measures with the principle of safety first as follows: ◎The company has posted a notice of the important safety measures in the office ◎The company has circulated reports and documents about the accident among its employees to make them aware of the significance of the accident ◎The company hold a daily meeting and document it in a meeting report form. ◎The company checks its vessels prior to departure according to a checklist.

	◎ The company continue to encourage reporting incidents using a reporting form in addition to verbal reporting. (2) The company has carries out emergency drills. ◎ The company has held a discussion session on possible accidents using information publicized by the JTSB. ◎The company has held a lecture session to its employees using the booklets on the website of Japan Craft Inspection Organization, "For the safety of a recreational fishing vessel/angler tender boat," and "For prevention of capsize." ◎The company has held an emergency drill after regular work to make sure that staff members on stand-by are dispatched to the accident site and other staff members call to persons concerned using the emergency contact-list on receiving a report of accident on the lake. 2. The company should maintain the seaworthiness of the vessels it owns by having ship inspections properly. (Implementation Report) (1) Revision of the list of vessels the company owns ◎The company develop and update a list of vessels it owns, clearly showing the inspection due date of each vessel. (2) Development of vessel maintenance log ◎ The company develop a vessel maintenance log for each vessel it owns to record the history of repair or maintenance, and refer to it when the vessel is inspected. 3. The company should take measures to make sure that passengers wear life jackets for their safety. (Implementation Report) (1) Sign boards instructing passengers to wear life jackets. ◎Display sign boards in its office and at the pier entrance (2) The company instructs passengers, prior to boarding, to wear life jackets, and confirms that they have done after the completion of boarding. ◎Guidance at reception Instruction by a reception staff member Confirmation by a skipper prior to departure Confirmation and instruction on occasions of security patrols

Appendix 30　Actions taken in response to safety recommendations in 2011

Actions taken in response to the safety recommendations were reported with regard to one marine accident in 2011. A summary of it is as follows.

・Fatality to workmen involved with container ship KUO CHANG	
Summary of accident:	At about 07:36 hrs, May 20, 2009, while the ship was docking at Port Island Container Berth 18, a mooring rope moored onto a bitt on the berth broke, snapped back, and hit two workmen engaged in mooring work. Both of the workmen died.
Recipient of safety recommendations:	Marine Department, Hong Kong Special Administrative Region of the People's Republic of China (Marine Department, the Government of Hong Kong) (recommended on March 25, 2011)
Summary of safety recommendations:	The JTSB, based on the results of the accident investigation, recommends CHENG LIE NAVIGATION Co., Ltd. to consider the following and take necessary actions, and the Marine Department, the Government of Hong Kong to supervise the company mentioned above. The safety management manual prepared by CHENG LIE NAVIGATION Co., Ltd. requires inspections on the mooring equipment at berthing to confirm that such equipment is in good condition. In the case of the accident, judging from the state of wear to the forward spring line, it is highly unlikely that the line was in a “good condition,” as stated in the manual mentioned above. Therefore, it is recommended to clearly state and require to pay attention to the route of mooring ropes and the bitts for mooring them in order to prevent mooring ropes from touching corners to the extent possible, and obtain safe and effective mooring forces, as well as to place a person in charge to take command of operations in such a position from where he/she can acquire knowledge of the overall conditions of mooring ropes. At the same time, it is recommended to make all the ships under management comply with such requirements.

Actions taken in response to safety recommendations:	Summary of the response from the Marine Department, the Government of Hong Kong (Dated on May 5, 2011) Please be advised that the Administration will: (i) instruct the ship management company, Cheng Lie Navigation Co. Ltd., to take proper corrective and preventive actions for implementing the safety recommendations in order to prevent recurrence of similar accident to their fleet; (ii) conduct quality assurance inspection to the ship and the ship management company to ensure corrective and preventive actions are properly implemented; (iii) disseminate the lessons learnt from this accident to all Hong Kong registered ships and their management companies that the mooring ropes must be maintained in good condition. In addition, the crew shall pay attention to the lay out of mooring ropes during berthing operation to avoid creating sharp angles.

Appendix 31　Information provision during an investigation in 2011

There was one case (for marine accident) of information provision in 2011, which is summarized below:

・Fatality and injury to crew members on chemical tanker NISSHO MARU
(provided on August 4, 2011)

The JTSB provided the Marine Bureau, the Ministry of Land, Infrastructure, Transportation and Tourism, Japan with the following information related to a fatal accident to crew members on chemical tanker NISSHO MARU, which occurred on June 28, 2011.

(Factual Information):

The investigation is still underway and all the facts are yet to be identified, but the ongoing investigation so far has revealed that cleaning water containing hydrosulfide was poured into the slop tank with cleaning water containing acrylic acid. It is somewhat likely, therefore, that hydrogen sulfide gas was generated as a result of the mixture.

Different types of residue had been mixed in the slop tank storing cleaning water on the ship, and a similar practice was also found in chemical tankers belonging to other shipping companies.