MA2017-11

MARINE ACCIDENT
INVESTIGATION REPORT

November 30, 2017

JTSB Japan Transport Safety Board

The objective of the investigation conducted by the Japan Transport Safety Board in accordance with the Act for Establishment of the Japan Transport Safety Board is to determine the causes of an accident and damage incidental to such an accident, thereby preventing future accidents and reducing damage. It is not the purpose of the investigation to apportion blame or liability.

Kazuhiro Nakahashi
Chairman
Japan Transport Safety Board

Note:

This report is a translation of the Japanese original investigation report. The text in Japanese shall prevail in the interpretation of the report.

MARINE ACCIDENT INVESTIGATION REPORT

Vessel type and name:	Cargo ship SWIFTNES
IMO number:	9708930
Gross tonnage:	22,468 tons
Vessel type and name:	Work boat Fuji Maru
Vessel number:	200-12424 Hokkaido
Gross tonnage:	13.23 tons
Accident type:	Capsize
Date and time:	Around 07:29, January 30, 2017 (local time, UTC +9 hours)
Location:	Tomakomai Port, Tomakomai city, Hokkaido Around 052° true bearing, 2.6 nautical miles from the Tomakomai Ko West Break Water Lighthouse (approximately 42°38.6'N, 141°40.2'E)

November 30, 2017
Adopted by the Japan Transport Safety Board
Chairman Kazuhiro Nakahashi
Member Yuji Sato
Member Kenkichi Tamura
Member Toshiyuki Ishikawa
Member Makiko Okamoto

SYNOPSIS

< Summary of the Accident >

During its service to help the cargo ship SWIFTNES dock at Tomakomai Port, Tomakomai city, Hokkaido, work boat Fuji Maru, with a coxswain and a workman on board, the mooring ropes being veered out from the aft deck of SWIFTNES entangled the propeller of SWIFTNES, and was drawn toward the propeller of SWIFTNES around 07:28 on January 30, 2017 then capsized around 07:29.

The coxswain of Fuji Maru died and the work man was wounded.

SWIFTNES suffered damage on her propeller.

< Probable Causes >

It is probable that the accident occurred when, its service to help SWIFTNES (hereinafter referred to as "Vessel A") dock at Tomakomai Port, in a circumstance in which the four stern lines which Fuji Maru (hereinafter referred to as "Boat B") was towing was veered out from the aft deck of Vessel A, due to Vessel A's engine was used, the four stern lines was entangled the propeller of Vessel A, toward which Boat B was pulled and then capsized.

It is probable that the reason why Vessel A's engine was used was the master and the pilot had

not shared the information as for the four stern lines, had expected each other securing propeller clear which had not been conducted.

It is probable that the reason why the master and the pilot had not shared the information as for the four stern lines were, the pilot did not request a the master to report the progress of the docking work on the bow and the stern, the master did not report the pilot the progress of the docking work on the bow and the stern, the master and the officer communicated about directives and advices with Tagalog temporarily without following the Safety Management Manual.

It is probable that the reason why the master and the pilot expected each other securing propeller clear when advising a use of the engine were, the pilot considered the master being responsible for securing propeller clear when advising a use of the engine, the master thought that the pilot gave an advice to use of the engine after securing propeller clear when advising a use of the engine.

It is somewhat likely that the fact that the master did not understand the outline of the Pilotage, the workman send a signal to veer the mooring lines of the aft deck, the master thought he received an advice to send the four stern lines contributed Boat B towed the four stern lines.

It is somewhat likely that the fact that the pilot information card had no information about the first line to be sent to the Berth and the manner how to send, in addition the pilot did not update the outline of the Pilotage notwithstanding modifying the initial advice, contributed the master did not understand the outline of the Pilotage.

1 PROCESS AND PROGRESS OF THE INVESTIGATION

1.1 Summary of the Accident

During its service to help the cargo ship SWIFTNES dock at Tomakomai Port, Tomakomai city, Hokkaido, work boat Fuji Maru, with a coxswain and a workman on board, the mooring ropes being veered out from the aft deck of SWIFTNES entangled the propeller of SWIFTNES, and was drawn toward the propeller of SWIFTNES around 07:28 on January 30, 2017 then capsized around 07:29.

The coxswain of Fuji Maru died and the work man was wounded.

SWIFTNES suffered damage on her propeller.

1.2 Outline of the Accident Investigation

1.2.1 Setup of the Investigation

The Japan Transport Safety Board appointed an investigator-in-charge and two other marine accident investigator to investigate this accident on January 31, 2017.

1.2.2 Collection of Evidence

February 1, 2 and 3, 2017: On-site investigations and interviews

February 11 and 12, March 6 and 7, April 12, May 15, 16, 17 and 18, 2017: Interviews

February 14, March 10, May 25 and 29, 2017: Collection of questionnaire

1.2.3 Comments from Parties Relevant to the Cause

Comments on the draft report were invited from the parties relevant to the cause of the accident.

1.2.4 Comments from the Substantially Interested State

Comments on the draft report were invited from the substantially interested state of the SWIFTNES.

2 FACTUAL INFORMATION

2.1 Events Leading to the Accident

2.1.1 Ship's position information according to the Voyage Data Recorder, etc.

According to the data record of the Voyage Data Recorder*1 (hereinafter referred to as "VDR") of the SWIFTNES (hereinafter referred to as "Vessel A"), the Vessel A's navigation track from 07:21:04 to 07:33:05 on January 30, 2017 was as shown in Table 2.1-1 below.

Table 2.1-1: VDR Record of Vessel A (Excerpt)

Time (HH:MM:SS)	Ship's position*		Course Over the Ground* (°)	Heading* (°)	Speed Over the Ground (knots [kn])
	Latitude (N) (°- ′- ″)	Longitude (W) (°- ′- ″)			
07:21:04	42-38-39.2	141-40-13.2	197.2	243	0.6
07:22:04	42-38-38.6	141-40-12.6	215.5	242	0.7
07:23:04	42-38-38.1	141-40-12.1	222.5	242	0.4
07:24:04	42-38-37.8	141-40-11.9	201.8	243	0.2
07:25:04	42-38-37.7	141-40-11.7	210.5	243	0.2
07:25:15	42-38-37.6	141-40-11.7	211.3	243	0.2
07:25:24	42-38-37.6	141-40-11.6	212.5	243	0.2
07:25:35	42-38-37.6	141-40-11.6	212.7	243	0.2
07:25:44	42-38-37.5	141-40-11.5	213.9	243	0.2
07:25:54	42-38-37.5	141-40-11.5	215.1	243	0.2
07:26:04	42-38-37.5	141-40-11.5	216.8	243	0.2
07:26:15	42-38-37.5	141-40-11.5	217.9	242	0.2
07:26:24	42-38-37.4	141-40-11.5	219.2	242	0.2
07:26:35	42-38-37.4	141-40-11.4	219.3	242	0.2
07:26:44	42-38-37.4	141-40-11.4	217.9	242	0.2
07:26:54	42-38-37.3	141-40-11.4	214.0	243	0.2
07:27:04	42-38-37.3	141-40-11.4	211.8	243	0.2
07:27:15	42-38-37.3	141-40-11.3	210.6	243	0.2
07:27:35	42-38-37.2	141-40-11.3	207.6	244	0.2
07:27:44	42-38-37.2	141-40-11.3	207.8	244	0.2
07:27:53	42-38-37.1	141-40-11.3	207.3	244	0.2
07:28:04	42-38-37.1	141-40-11.3	205.6	245	0.1
07:28:15	42-38-37.1	141-40-11.3	205.6	245	0.1
07:28:35	42-38-37.1	141-40-11.4	205.6	245	0.1
07:28:44	42-38-37.0	141-40-11.5	205.6	245	0.1
07:28:53	42-38-37.0	141-40-11.5	205.6	245	0.1
07:29:04	42-38-37.0	141-40-11.5	137.7	245	0.1
07:29:15	42-38-37.0	141-40-11.6	137.7	245	0.1
07:29:24	42-38-37.0	141-40-11.6	137.7	245	0.1
07:29:35	42-38-36.9	141-40-11.7	133.3	244	0.2

*1 Voyage Data Recorder (VDR) is an instrument that is able to record the position, course, speed, and other information about navigation, communication by VHF radio telephone, and voices in the bridge.

07:29:44	42-38-36.9	141-40-11.7	133.3	244	0.1
07:29:53	42-38-36.9	141-40-11.7	133.3	244	0.1
07:30:05	42-38-36.9	141-40-11.7	135.1	245	0.2
07:31:05	42-38-36.9	141-40-11.7	136.3	244	0.1
07:32:05	42-38-36.9	141-40-11.7	167.9	244	0.1
07:33:05	42-38-36.9	141-40-11.7	167.9	245	0.0

*: The vessel position indicates the position of the GPS antenna installed above the bridge, and the courses over the ground and headings indicated in true bearings (hereinafter the same).

2.1.2 The voice record of Vessel A's VDR

According to the voice record of Vessel A's VDR, the voice of the master (hereinafter referred to as "Master A"), the officers (hereinafter referred to as "Officer A", "Officer B" and "Officer C"), the pilot (hereinafter referred to as "Pilot A") ,the directives to two tug boats (hereinafter referred to as "Vessel C" and "Vessel D", respectively) being deployed to assist, between 07:24:37 and 07:29:09 were as shown in Table 2.1-2.

The record indicates that there was no directive on the work boat (hereinafter referred to as "mooring boat") which was towing the end of lines toward the wharf.

The inaudible conversations, the directives are omitted.

The conversations parenthesized in {} are translated from Tagalog.

Table 2.1-2 the voice record of Vessel A's VDR

Time (HH:MM:SS)	Speaker	Receiver	Content	Language	Communication or Conversation
07:24:37	Master A	Pilot A	This time is heaving line*2 or mooring boat? I think mooring boat are going to the aft.	English	On bridge
07:24:40	Pilot A	Master A	Ok, heaving today.	English	On bridge
07:24:45	Master A	Officer A	Pooper, you give spring line*3, think if you can throw.	English	Transceiver
07:24:45	Pilot A	Master A	Propeller ca.	English	On bridge
07:24:56	Mater A	Officer A	Mooring boat is there, if you can throw the line.	English	Transceiver
07:25:10	Master A	Officer C	Keep tight your head line. Not too much. Yes, pick up.	English	Transceiver
07:25:16	Master A	Officer C	Throw your headline.	English	Transceiver
07:25:20	Pilot A	Vessel D	Ready to pull.	Japanese	Transceiver
07:25:21	Vessel D	Pilot A	Yes, ready to pull.	Japanese	Transceiver

*2 A "heaving line" is a long, thin rope tied to the eye of a mooring tope to be toss overboard to ground service men for the purpose of veering out the mooring line.

*3 A "heaving line" is a mooring rope taken forward from the bow at berth.

07:25:28	Pilot A	Master A	Captain, tighten spring a little bit.	Japanese or English	On bridge
07:25:31	Master A	Officer C	Tighten your spring forward.	English	Transceiver
07:25:31	Pilot A	Master A	A little.	English	On bridge
07:25:40	Master A	Officer C	Keep tight your spring forward. Welcoming alongside. Welcoming alongside.	English	Transceiver
07:26:00	Officer A	Master A	Sir, astern line stand by using by line boat?	English	Transceiver
07:26:02	Master A	Pilot A	Astern line first?	English	On bridge
07:26:04	Pilot A	Master A	Astern, Ok.	English or Japanese	On bridge
07:26:05	Master A	Officer A	Ok, astern line first. BIGAY ISA ISA. BIGAY ISA ISA. {Send lines, one by one. Send lines, one by one.}	English or Tagalog	Transceiver
07:26:10	Officer A	Master A	Yes, Sir. Astern line stand by.	English	Transceiver
07:26:18	Pilot A	Vessel D	Vessel D, pull dead slow.	Japanese	Transceiver
07:26:20	Vessel D	Pilot A	Vessel D, pull dead slow.	Japanese	Transceiver
07:26:44	Master A	Officer C	Keep tight your spring forward.	English	Transceiver
07:26:47	Pilot A	Vessel D	Vessel D, stop.	Japanese	Transceiver
07:26:58	Vessel D	Pilot A	Vessel D, stop.	Japanese	Transceiver
07:27:01	Master A	Officer C	Keep tight your spring forward.	English	Transceiver
07:27:10	Master A	Officer A	Second, ah, third. To start over board. How your astern line?	English	Transceiver
07:27:14	Officer A	Master A	Sir, HINGI SILA NG 4 astern lines. {The workman is requesting 4 astern lines.}	English or Tagalog	Transceiver
07:27:15	Master A	Officer A	Pooper, NGA KALA KO BA BINIGAY NYO NA BIGAY NYO ISA ISA. {You haven't sent 4astern lines yet, have you? I've already advised you. Send the lines, one	English or Tagalog	Transceiver

			by one.}		
07:27:16	Officer A	Master A	BIGAY, Sir. {I'm sending the lines}	English or Tagalog	Transceiver
07:27:20	Master A	Officer A	Ok.	English	Transceiver
07:27:21	Pilot A	Master A	Captain, spring don't tight. Don't slacken. Don't slacken.	English	On bridge
07:27:21	Master A	Officer C	Don't slacken your spring forward. Keep tight your spring forward.	English	Transceiver
07:27:31	Master A	Officer A and Officer C	We're coming in position. Coming in position.	English	Transceiver
07:27:35	Pilot A	Master A	Dead slow astern.	English	On bridge
07:27:35	Master A	Officer B	Dead slow astern.	English	On bridge
07:28:01	Vessel C	Pilot A	The stern lines entangled the propeller.	Japanese	Transceiver
07:28:07	Pilot A	Vessel C	What?	Japanese	Transceiver
07:28:12	Pilot A	Master A	How come the stern lines entangled the propeller? Captain, propeller.	Japanese	On bridge
07:28:36	Pilot A	Master A	Stop, stop, and stop.	English	On bridge
07:28:48	Officer B	Pilot A	Ok, stop.	English	On bridge
07:28:58	Pilot A	Vessel C	I didn't give any advice using the engine.	Japanese	Transceiver
07:29:02	Vessel C	Pilot A	The mooring boat capsized.	Japanese	Transceiver
07:29:09	Pilot A	Master A	Captain, what did you do about the lines?	Japanese	On bridge

2.1.2 Events Leading to the Accident according to the Statements

According to the statements of Master A, Officer A, Pilot A, Boat B's workman (hereinafter referred to as "Workman B"), Vessel C's coxswain, the diver (hereinafter referred to as "Diver B") rescuing Boat B's coxswain (hereinafter referred to as "Coxswain B"), the events leading to the accident were as follows.

(1) Vessel A

At around 06:00 on January 30, 2017, Vessel A departed her anchorage at Third District Tomakomai Port, heading toward the chuo minami wharf (hereinafter referred to as "the Berth")in the same port under pilotage by Pilot A embarked at around 06:25, for the purpose of unloading, with Master A, Officer A, and 17 crew members (15 nationals of the Republic of the Philippines and two nationals of the Socialist Republic of Vet Nam) on board, the course of 028°(true bearing, same shall apply hereinafter), with the engine revolution at about 74RPM at the speed of about 10.0 kn at Half ahead.

Master A made an assignment, for the preparation of docking to the berth, in that: the chief officer was assigned to the bridge to operating the engine telegraph*4, following Pilot A's advice on engine operation (hereinafter referred to as "the Engine Telegraph Position"); the second officer was assigned to the forecastle deck (hereinafter referred to as "the Bow Position"); Officer A was assigned to the stern deck (hereinafter referred to as "the Stern Position").

Officer A positioned the Stern Position and prepared mooring lines as planed with two able seaman and an ordinary seaman.

Master A was showed the pilot information card*5 (hereinafter referred to as "the PIC") and was given a brief on the outline of the pilotage on the PIC (hereinafter referred to as "the Initial Advice"), port side alongside, mooring Vessel A to the Berth with four of the headlines*6, two of the forward spring lines, two of the back spring lines and four of the stern lines*7 in order of, and then gave a direction on the Initial Advice to the second officer and officer A.

While, Master A noticed that the PIC had the information about the course and the mooring line arrangement but had no information about the first line to be sent to the Berth and the manner how to send lines to the Berth, Master A thought to wait for Pilot A's advice, as Pilot A described he would give Master A the advice on how to send the lines judging from how the situation is.

Vessel A was proceeding, the course of 065°, with the engine revolution at about 54 RPM at the speed of about 7.0 kn at Slow ahead, took tug lines the bow starboard and the stern starboard from Vessel D and Vessel C respectively at around 06:50, turned to the course of 200 – 240°, with Starboard and Hard starboard rudder, and reduced the engine revolution at about 42 RPM at the speed of about 2.0 kn at Dead slow ahead, when Vessel A was about 300 – 400 m off the Berth at around 07:00.

Master A left the steering room with Pilot A, and headed to the port wing to standby for directing the docking operations, when Vessel A was about 100 – 200 m off the Berth at around 07:18,with the engine revolution at about 45 RPM at the speed of about 0.5 kn at Dead slow astern.

Master A thought Pilot A modified the Initial Advice, as given the advice to send the forward spring line first, and then ordered the second officer and Officer A to veer the forward spring line first.

Master A questioned Pilot A how to send the rest of the headlines and was advised to send them by the heaving line, as recognizing Boat B proceeding from around the bow of Vessel A toward around the stern of Vessel A, after Boat B carried the end of a forward spring line and the end of a head line to the Berth, and the mooring workmen on the Berth moored them onto the bollard*8.

As Master A assumed that Pilot A transferred Boat B from around the bow of Vessel A to around the stern of Vessel A to have Boat B carry the back spring lines and the stern

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* 4 An "engine telegraph" is an apparatus that sends engine operation directions from the bridge to the engine room .

* 5 A "pilot information card" is a document to be handed by a pilot to the master of a ship, describing information on ports, maneuvering and tug-boats.

* 6 A "head line" is a mooring rope taken forward from the bow at berth.

* 7 A "stern line" is a mooring line taken backward from the stern at berth.

* 8 A "bollard" is a vertical piece of iron, fixed to berth, to which a ship's mooring lines are made fast when alongside.

lines, Master A gave a direction Officer A to veer the back spring lines, if possible.

Hearing that Pilot A seemed to say "propeller, OK", Master A assumed that Pilot A advised Master A to send the back spring lines by Boat B, and gave a direction Officer A to send the back spring lines by Boat B.

Since, Officer A observed Workman B showing four fingers and waving his arm up and down at the foredeck of Boat B positioning on the starboard stern side of Vessel A, thought that Workman B send a signal to veer four stern lines, and then Officer A questioned Master A to send stern lines using Boat B.

Hearing that Pilot A answered "Astern OK" after questioning Pilot A whether it's first to send the stern lines or not, Master A assumed that Pilot A had modified the Initial Advice again and had given Master A advice to veer stern lines first, and then Master A gave a direction Officer A to veer stern lines (hereinafter referred to as "the four stern lines") first, one by one.

Receiving a report from Officer A that Workman B requests to veer four stern lines after questioning Officer A how stern lines are, Master A assumed Officer A had not veered the stern lines at all, cross-questioned a reason why Officer A Officer A had not veered the stern lines at all and received a report from Officer A veering the stern lines.

Assuming to be received a directive to veer four stern lines, Officer A ordered the abled seamen to veer the four stern lines thorough fairleads on the poop deck to the surface of water, standing around the starboard aft side of poop deck and the abled seamen gave Boat B the four stern lines.

Master A was advised dead slow astern by Pilot A.

Master A ordered the Chief Officer dead slow astern without securing propeller clear, as assuming that Pilot A advising dead slow astern after receiving a report securing propeller clear from Boat B.

Vessel A ran the main engine with the engine revolution at about 54 RPM

Since Pilot A advising stop engine and saying the propeller and the stern lines in a panic, Master A assumed an accident occurred around the aft deck, ordered the chief officer stop engine and send him there to report the state of there.

As recognizing Boat B capsizing and Workman B drifting around the stern of Vessel A, The chief officer threw a life ring toward Workman B and reported Master A the situation of there.

(2) Pilot A

Pilot A collected the information over weather and sea conditions at the Tomakomai Pilotage District office and prepared the PIC printed the course and the mooring line arrangement on it, however he did not fill out the first line to be sent to the Berth and the manner how to send lines to the Berth on it, due to being enable him to change the PIC.

Pilot A embarked Vessel A at around 06:25, confirmed the characteristics of Vessel A using the pilot card*9, and then briefed Master A on the outline of the pilotage on the PIC.

Pilot A ordered Vessel D on standby for around the bow starboard of Vessel A and Vessel C on standby for around the starboard of Vessel A to take tug lines.

After advising Master A with Starboard and Hard starboard rudder when Vessel A was about 300 – 400 m off the Berth at around 07:00, Pilot A advised Master A left the steering

*9 A "pilot card " is a document to be handed by a master of a ship to a pilot, describing information on the loading condition, propulsion and maneuvering characteristics.

room with Master A and headed to the port wing to standby for directing the docking operations, when Vessel A was about 100 – 200 m off the Berth at around 07:18.

There was a northerly wind of 7 – 8 m from Vessel A's starboard quarter, expected that the headway of Vessel A could be reduced by adding slight tension to the forward spring line, Pilot A modified the PIC and advised Master A to send a forward spring line to the Berth first and informed Vessel C and Vessel D his revised advice, Vessel C informed Boat B the advice.

Pilot A recognized Boat B proceeding from around the bow of Vessel A toward around the stern of Vessel A, after Boat B carried the end of a forward spring line and the end of a head line to the Berth, and the mooring workmen on the Berth moored them onto the bollard.

As being asked how to send the rest of the headlines, Pilot A advised Master A to send them by the heaving line.

Pilot A advised Master A "propeller, carefully" with intention to have Master A secure the propeller clear, when hearing Master A give a direction Officer A to veer the back spring line first.

Pilot A was not able to catch the conversations between Master A and Officer A in Tagalog.

Pilot A acknowledged by watching the Berth that Vessel A was making way forward with a speed of about 0.2 kn and was almost alongside the Berth, gave the advice Dead Slow Astern with the intention of reducing the way forward of Vessel A.

Pilot A did no advice to take precautions against getting entangled with the four stern lines and gave no other advice regarding the handling of mooring ropes. Moreover, Pilot A did not request Master A to report the progress of the docking work on at the bow and the stern.

Receiving a report from Vessel C that Vessel A's propeller entangled with the four stern lines , Pilot A advised Stop, and received a report from Vessel C that Boat B capsized at around 07:29.

Receiving a report from Vessel C that Vessel C is rescuing Boat B, in a situation where there is no support from Vessel C, Pilot A continued docking with the only support of Vessel D. After completing the docking and heading to the starboard wing, Pilot A recognized Boat B capsized and Vessel C rescuing Boat B.

Pilot A was not able to recall a situation in where Pilot A answered "Astern OK" after being questioned by Master A whether it's first to the send stern lines first or not, even though Pilot A listened the voice record of Vessel A's VDR.

Pilot A considered Master A being responsible for securing propeller clear when advising a use of the engine.

(3) Boat B

Boat B arrived around the Berth at about 07:00. Receiving the order to send the forward spring first at about 07:18, Coxswain B at the wheel house of Boat B maneuvered Boat B toward around the port bow of Vessel A, Workman B hooked the eye of a forward spring line and the eye of a head line veered from the fairlead on the port bow of Vessel A onto a bitt equipped on the forward deck of Boat B (hereinafter referred to as "the Bitt"), and then Boat B carried the end of a forward spring line and the end of a head line to the Berth

respectively.

Since following headlines were not veered, Workman B discussed to do the stern mooring work first, and then Boat B moved around the stern of Vessel A.

After sending a signal to veer mooring lines for Officer A with waving his arm up and down, Workman B witnessed Officer A communicating with a transceiver.

And Workman B received the four stern lines veered by Officer A from the fairlead on the stern of Vessel A and hooked the four stern lines onto the Bitt and send a hand signal for Coxswain B, Boat B proceeded back ward away from the stern of Vessel A towing the four stern lines.

When witnessing that the propeller of Vessel A began to revolve and the four stern lines entangled with it, Workman B tried to take it off from the Bitt but couldn't, because the four stern lines was tightened.

When Workman B fled from the bow to the stern, Boat B capsized in the starboard direction, and was thrown from Boat B to the sea. Workman B in a lifejacket floating was picked up by Vessel C.

While tied with Vessel C to avoid drifting, Boat B sunk.

Although, Coxswain B in a lifejacket was found in the wheel house closing the doorway of Boat B and rescued by Diver B, Coxswain B was confirmed dead by a doctor at the hospital he was taken to.

The date and time of occurrence of the accident were at around 07:29 on January 30, 2017, and the location was at around 2.6 M at 052° true bearing from the Tomakomai Ko West Break Water Lighthouse.

(See Attached Figure 1 Outline Map of the Accident Location)

2.2 The Death or Injuries to Persons

(1) Vessel A

According to Mater A, there was no death nor injuries.

(2) Boat B

A postmortem examination concluded that the cause of death of Coxswain B was suffocation by seawater inhalation.

According to the statement of Workman B, he was severely injured on his left No. 8 rib.

2.3 Damage to Ships

(1) Vessel A

According to the statement of Mater A, Vessel A suffered damage on her propeller.

(2) Boat B

According to the statement of a representative of Tomako Service Company (hereinafter referred to as "Company B"), Boat B suffered severely damage on her engine and was abandoned.

2.4 Crew Information

2.4.1 Vessel A

(1) Gender, Age, and Certificate of Competence

(i) Master A: male, 48 years old, national of the Republic of the Philippines

Endorsement attesting the recognition of certificate under STCW regulation

I/10: Master (issued by Japan)

Date of Issue: November 13, 2015 (Valid until January 8, 2020)

(ii) Officer A: male, 25 years old, national of the Republic of the Philippines

Endorsement attesting the recognition of certificate under STCW regulation I/10: Second officer (issued by Japan)

Date of Issue: January 23, 2017 (Valid until April 4, 2021)

(iii) Pilot A: male, 67 years old

First Class Pilotage License, Tomakomai Pilotage District

Date of Issue: March 3, 2016 (Valid until March 18, 2019)

(2) Sea-going Experience and Status of Health

According to Mater A, Officer A and Pilot A, Mater A, Officer A and Pilot A's sea-going experience and status of health were as follows.

(i) Master A

Master A became a seafarer in 1944. After serving on merchant ships as an ordinary seaman, Master A had been aboard cargo ships as a master since 2007.

Master A had been aboard Vessel A as a master since November 2016.

Master A was in good health at the time of the accident.

(ii) Officer A

Officer A became a seafarer in 2011. After serving on merchant ships as an ordinary seaman, Officer A had been aboard Vessel A as an ordinary seaman since May 2016 and assigned as a third officer commanding the aft deck.

Officer A was in good health at the time of the accident.

(iii) Pilot A

Pilot A became a seafarer in 1968. After serving as a master on merchant ships for approximately 22 years, Pilot A became a pilot of the Tomakomai Pilotage District in 2011.

Pilot A was in good health at the time of the accident.

2.4.2 Boat B

(1) Gender, Age, and Certificate of Competence

(i) Coxswain B: male, 74 years old

First class boat operator; personal watercraft operator; passenger service license

Date of license register: March 12, 1976

Date of issue: August 5, 2014 (Valid until October 4, 2019)

(ii) Workman B: male, 74 years old

(2) Sea-going Experience and Status of Health

(i) Coxswain B

According to Company B, Coxswain B's sea-going experience and status of health were as follows.

After serving as a coxswain on tugboats owned by Company B for approximately 40 years, Coxswain B had been working part-time at Company B as a coxswain of mooring boats.

Coxswain B seemed to be in good health at the time of the accident.

(ii) Workman B

According to Workman B, Workman B's sea-going experience and status of health

were as follows.

After serving as a chief engineer on tugboats owned by Company B for approximately 40 years, Workman B had been working part-time at Company B as a workman of mooring boats for approximately 10 years.

Workman B was in good health at the time of the accident.

(3) Clothing, etc., Worn by Coxswain B and Workman B at the Time of the Accident

According to Company B and Workman B, Coxswain B and Workman B's clothing, etc., at the time of the accident were as follows.

Coxswain B and Workman B were wearing a helmet and a lifejacket.

2.4 Vessel Information

2.4.1 Particulars of Vessel

(1) Vessel A

IMO Number:	9708930
Port of Registry:	Republic of Panama
Owner:	THE PREMIUM STAR & COMPNY (Republic of Panama)
Management Company:	ABOJEB COMPANY INC. (hereinafter referred to as "Company A")
Classification Society:	AMERICAN BUREAU OF SHIPPING
Gross Tonnage:	22,468 tons
L×B×D:	176.99 m x 30.00 m x 14.50 m
Hull material:	Steel
Engine:	Diesel engine x 1
Output:	6,780 kW
Propulsion:	4-blade fixed pitch propeller x 1
Date of launch:	May 11, 2015

(See Figure 2 and Photo 2)

(2) Boat B

Vessel number:	200-12424 Hokkaido
Owner:	Company B
Gross tonnage:	13.23 tons
L×B×D:	10.78 m x 3.19 m x 1.44 m
Output:	147 kW
Propulsion:	3-blade fixed pitch propeller x 1
Date of launch:	October, 2075

(See Figure 3 and Photo 3)

2.4.2 Vessel A's Load Conditions

According to Mater A, at the time of the Accident, Vessel A was loaded with approximately 5,000 tons of barley. Her draft was about 5.93 m in the bow and about 5.95 m in the stern.

2.4.3 Hull Structure and Equipment

(1) Vessel A

According to the general arrangement plan, Vessel A is a cargo ship with five cargo holds, No.1 hold through No.5 hold. At the time of the occurrence of the accident, the bridge deck

was about 20.0 m high above the sea surface, and the bridge-wing on the deck spanned the hull breadth.

There was a portion of the bridge-wing's view astern that was blocked by the funnel.

A steering stand was installed near the center of the steering room. An engine telegraph was placed on the port side of the steering stand. An electro-magnetic log speed indicator was placed on the wall above the front window. Pairs of a rudder angle indicator and a main engine revolution indicator were placed on the outside walls above the exits to the left and right wings for convenience in monitoring the rudder and the main engine on the wings.

Two electric-hydraulic winch were installed on the aft deck.

In the FITTING LIST of the Ship, it is described that the Ship is equipped with six mooring nylon ropes of 66 mm in diameter and 200 m in length.

According to Master A, at the time of the accident, there were no malfunctions or failures with the hull, engine and machineries, deck equipment, or communications devices.

(2) Boat B

According to the general arrangement plan, a steering room was placed near the center of the hull. On the foredeck was installed a bollard.

According to Workman B, at the time of the accident, there were no malfunctions or failures with the hull, engine and machineries, deck equipment, or communications devices.

2.6 Communication

2.6.1 Between Master A or Officer B and Pilot A

According to the oral statement from Mater A and Pilot A, the advice provided by Pilot A and the answer-back or the reports from Master A and Officer B were in English.

According to the oral statement from Mater A, Master A could not understand Japanese without Japanese in conversation which implies yes or no.

According to the oral statement from Pilot A, Pilot A could not understand Tagalog.

2.6.2 Between Master A and Officer A

According to the oral statement from Mater A and Officer A, and the voice record of Vessel A's VDR, the directions provided by Master A and the answer-back or the reports from Officer A were in English or Tagalog, using transceivers.

2.6.3 Between Pilot A and Vessel C or Vessel D

According to the oral statement from Pilot A, the directions provided by Pilot A and the answer-back or the reports from Vessel C and Vessel D were in Japanese, using transceivers.

2.6.4 Between Pilot A or Vessel A's crew member and Boat B

According to the oral statement from Pilot A, the representative of Company B and Workman B, the situations of the communications are as follows:

There was no direct communication tool between Pilot A and Boat B, upon the necessities to give the directions to Boat B, the directions given by Pilot A were forwarded to Boat B by Vessel C, using transceivers.

However, in normal situations, Boat B are not directed by Pilot A, and at the time of the Accident, Boat B are not directed by Pilot A.

Conventionally, crew members let Boat B know that the mooring operation has begun by

pulling down mooring ropes closely above the sea surface, or tossing heaving lines. Boat B or crew members let know each other that operation is completed through gesture, and at the time of the Accident, they did so that.

2.7 Weather and Sea Conditions

2.7.1 Weather Observations

The observations by the Tomakomai Weather Observatory located W about 10 km from the Berth were as follows:

At 07:20, January 30: Average wind speed of 4.1 m/s, N
Maximum instantaneous wind speed of 6.4 m/s, N
At 07:30, January 30: Average wind speed of 3.9 m/s, N
Maximum instantaneous wind speed of 5.8 m/s, N

2.7.2 Observations by Crew

According to Master A, the weather and sea conditions were as follows.

Weather: Clear　Wind direction: N　Wind speed: Approximately 4m/s　Visibility: Good
Water's surface: Calm
Air temperature: －4°C　Water temperature: 4°C

2.8 Information on the operation of Vessel A

2.8.1 Operation of Vessel A

According to Master A, the port call of Vessel A were as follows.

Tokyo District, Keihin Port; Kawasaki District, Keihin Port; Kashima Port; Kamaishi Port and Tomakomai Port.

2.8.2 Information on Safety Management, etc. of Vessel A

(1) Document of Compliance and Safety Management Certificate

AMERICAN BREAU OF SHIPPING, the class society in the United States, issued a document of compliance to Company A on May 22, 2015 and a safety management certificate to vessel A on March 1, 2016 respectively.

(2) Safety Management System

The requirements of the Safety Management System prepared by Company A are summarized as follows:

① Mooring Operation

VHF communications should be established early with all involved in the mooring operation. Linesmen, Boatmen, Tug masters and the Berth Operator should all be briefed on the mooring/unmooring plan and their role in it.

All internal communication should be made only in English.

A mooring boat should not be allowed under the stem or stern whilst thrusters and engines present a hazard.

When running mooring lines ashore, they should normally be passed via the mooring boat crew, unless otherwise instructed by the Master or Pilot.

The Deck Officer in charge at the aft mooring station should pay attention to keeping the propeller clear informing the bridge accordingly.

It should be a best practice to have a clear communication between the crew

stationed aft and the bridge.

The engines should never be used unless there is clear confirmation from the crew stationed in the aft that the area is free of any obstruction that might foul the propeller.

Care should be taken at all times to keep mooring boats clear of vessel propellers and tugs assisting in the mooring/unmooring operations.

The Boatman in charge of a boat should not allow it to come in close to the stem or stern without having first obtained clearance from the Master or Pilot on VHF radio.

② Navigation with pilot embarked

Despite the duties and obligations of a pilot, his presence on board does not relieve the officer on watch from his duties and obligations for the safety of the ship. The officer should cooperate with the pilot and maintain an accurate check on the position and movements of the vessel. If any confusion or doubts arise concerning the pilot's actions or intentions, the officer should clarify them with the pilot, and if the doubts are still not dismissed, immediately notice must be given to the master and necessary actions must be taken before the master's arrival at bridge.

2.9 Information on Pilotage

2.9.1 The Pilotage Act

The Pilotage Act (hereinafter referred to as "the Act") and the enforcement order of the Act (hereinafter referred to as "the Order") stipulate as follows;

(1) A pilot certified as first class is allowed to perform pilotage service for any ship (excerpted from Article 4, item 3of the Act.)

(2) A pilot, upon a request by a master for pilotage service, shall accept the request and go on board the ship unless there is good reason not to do so (Article 40 of the Act.)

(3) The master shall let the pilot take pilotage unless there is good reason not to do so (Article 41, item 1 of the Act.)

(4) The previous item shall not be interpreted as meaning that the responsibility of the master for the safe navigation of the ship can be released, or that the authority can be overridden (Article 41, item 2 of the Act.)

2.9.2 The Rules of the Tomakomai Pilotage Association

The Rules of the Tomakomai Pilotage Association stipulates as follows;

(1) Duty and Responsibility of Member (Article 26)

A member shall be engaged sincerely in the pilotage service upon the purpose of the Act.

2 Member should follow the rules, directions and recommendations stipulated by article 29 and 30, upon a request for information or reports, shall respond it immediately.

(2) The Supervision of Chairman(Article 29)

The Chairman, upon necessities to guide and supervise members, is allowed to request members for information or reports.

2 The Chairman, upon necessities for certain and smooth pilotage, is allowed to give members advices or directions.

2.9.3 The Pilotage Agreement

The Pilotage Agreement of the Tomakomai Pilot Association stipulates as follows;

(1) Duty and Responsibility of Pilot (Article 2)

A pilot is entitled to advise the master of a ship for the purpose of securing the safety of ship traffic and the same time improving the efficiency of ship operation, and is engaged sincerely in the pilotage service. The authority and responsibility of the master of the ship for safe navigation shall not be modified by a pilotage's boarding.

(2) Information from the master of the ship (Article 12)

The master of the ship shall inform the pilot, upon boarding, the following matters in regard to the ship: the gross tonnage, draft, length of ship, type of engine, speed, conditions of navigational instruments, conditions of steering, and other necessary things.

(3) Obligation for the master of the ship to cooperate (Article 13)

The master of the ship shall always monitor and secure the prompt and certain implementation of the advice on navigation provided by the pilot.

2 The master of the ship shall take the utmost effort to enhance the general watching, including extra assignments of watch on specific positions (utilize the radar on the vessel equipped a) while navigating inside a port or in specific waters, and shall inform the pilot immediately upon the acknowledgement of any abnormal situations.

2.9.4 The Pilotage Service Manual

The Pilotage Service Manual of the Tomakomai Pilot Association stipulates as follows;

(1) Before the Pilotage (Article 1)

Collect information regarding pilotage (regulations and rules, operational standards, weather and sea conditions)

Fill out PIC

Pilot shall fill out first line to be sent to the berth and order of lines to be sent on PIC.

(2) During the Pilotage (Article 2)

Show PIC and describe his pilotage plan for the master of the ship

Make sure the information on the pilot card

Implementation of the pilotage based on the regulations, rules and manuals

Utilize the BRM techniques based on the BRM training

(3) The Event of an Accident (Article 4)

Inform the Tomakomai Pilot Association the event of an accident

The pilot shall let the Tomakomai Pilot Association know the event of an accident immediately.

The pilot shall let the Tomakomai Pilot Association know how he responded the event of an accident.

2.10 Line Handling Service Company

2.10.1 Company B

According to the oral statement from the representative of Company B, Company B provides tug-boat services, un-mooring, line handling service in Tomakomai Port, passenger boat services, security boat service and marine disaster prevention services.

2.10.2 Safety Management

The "Mooring procedures and safety precautions" prepared by Company B includes work procedures and safety precautions to be taken during berthing or un-berthing, and safety precautions to be taken on berths.

The contents related to the prevention of injuries or deaths are surmised as follows:

However, prohibition of sending signals to veer mooring lines from Boat B was not included, as was no oral precaution.

(1) Concerning the aft deck mooring operation, send the back spring line and the stern line in order, one by one.

(2) While receiving the mooring lines, Boat B shall approaches the stern with precautions for vessel propellers.

(3) While towing the mooring lines, Boat B shall monitor the mooring lines, upon recognizing the mooring lines entangled, shall stop towing immediately.

2.10.3 Information on the operation of Vessel A

According to the oral statement from the representative of Japan Line handling Association, Some Line handling companies introduce manners which facilitate quick release in event of an emergency.

3 ANALYSIS

3.1 Situation of the Accident

3.1.1 Course of the Events

According to 2.1, it is probable that the following events occurred.

(1) Vessel A

① At around 06:00 on January 30, 2017, Vessel A departed her anchorage at the mouth of Tomakomai Port and sailed under pilotage for the Berth.

② At around 06:50, vessel A took tug lines the bow starboard and the stern starboard from Vessel C and Vessel D respectively.

③ At around 07:18, Pilot A advised Master A to send a forward spring line to the Berth first and informed Vessel C and Vessel D the advice, Vessel C informed Boat B the advice.

④ Vessel A moored a forward spring line and a head line sent by Boat B to the Berth.

⑤ At around 07:24, Master A and Pilot A witnessed Boat B proceeding from around the bow of Vessel A toward around the stern of Vessel A.

⑥ Officer A reported Master A that Workman B sent a hand signal to veer the four stern lines.

⑦ After receiving an advice “Astern OK” from Pilot A, Master A gave a direction Officer A to veer the four stern lines, Officer A veered the four stern lines toward Boat B.

⑧ Pilot A gave an advice Dead Slow Astern with intention of reducing the way forward of Vessel A, when Vessel A was almost alongside the Berth, and then Master A ordered the Chief Officer Dead Slow Astern.

⑨ At around 07:28, the four stern lines entangled with vessel A’s propeller.

(2) Boat B

① At around 07:00, Boat B arrived around the Berth.

② At around 07:18, Boat B received an order to send a forward spring line first from vessel C.

③ At around 07:24, Boat B moved toward around the stern of Vessel A, after carrying the end of a forward spring line and the end of a head line to the Berth.

④ After sending a signal to veer mooring lines for Officer A, Workman B received the four

stern lines veered from the fairlead on the stern of Vessel A and hooked the four stern lines onto the Bitt.

⑤ Boat B proceeded back ward away from the stern of Vessel A towing the four stern lines.

⑥ At around 07:29, Boat B was pulled up toward Vessel A's propeller and capsized, after the four lines entangled with Vessel A's propeller.

3.1.2 Time, Date and Location of the Accident Occurrence

Judging from 2.1, it is probable that the time and the date of occurrence was around 07:29 on January 30, 2017, the accident location was Vessel A's location at the time of the accident, when Vessel A was around 2.6 M at 052° true bearing from the Tomakomai Ko West Break Water Lighthouse.

3.1.3 Injuries to Persons

Judging from 2.1.3 and 2.2, it is probable that Coxswain B died with suffocation by seawater inhalation and Workman B was severely injured on his left No.8 rib.

3.1.4 Damage to Ships

Judging from 2.1.3 and 2.3, it is probable that Vessel A suffered damage on her propeller, Boat B suffered severely damage on her engine and was abandoned.

3.2 Causal Factors of the Accident

3.2.1 Situation of Crew Members

According to 2.4, the situations of the crew members were as follows:

(1) Master A and Officer A

It is probable that Master A and Officer A possessed a legally valid endorsement attesting the recognition of certificate under STCW regulation 1/10 and was in good health.

(2) Pilot A

It is probable that Pilot A possessed a legally valid pilot's certification and was in good health.

(3) Coxswain B

It is somewhat likely that Coxswain B possessed a legally valid fist class boat operator license and was in good health.

(4) Workman B

It is probable that workman B had ten years of experience as a workman of a mooring boat and was in good health.

3.2.2 Situations of the Vessels

According to 2.5, it is probable that Vessel A and Boat B had no malfunctions or failures with the hull, engine and machineries, deck equipment, or communications devices.

3.2.3 Weather and Sea Conditions

According to 2.7, it is probable that the weather was clear, the wind was from the north, the wind speed was approximately 4 m/s, visibility was good, the water's surface was calm, the air temperature was －4°C,and the water temperature was 4°C,at the time of the accident.

3.2.4 Situation of Vessel A handling

(1) According to 2.1.2, 2.1.3 and 2.9, it is probable that Pilot A actually was in command of Vessel A.

(2) According to 2.1.2 and 2.1.3, it is probable that Master A, being close to Pilot A, was relaying the advice from Pilot A to officers.

(3) The use of the engine

According to 2.1.2, 2.1.3 and 2.9, it were as follows:

① It is probable that Pilot A advised Master A to use the engine with intention of reducing the way forward of Vessel A.

② It is probable that Pilot A considered Master A being responsible for securing propeller clear when advising a use of the engine.

③ It is somewhat likely that Master A thought Pilot A having secured propeller clear when advising a use of the engine, due to Pilot A advised a use of the engine, after advising sending the four stern lines.

④ According to ② and ③ , it is probable that Master A and Pilot A expected each other securing propeller clear when advising a use of the engine, and the engine was used without securing propeller clear.

3.2.5 Analysis of Communications

From 2.1.2, 2.1.3, 2.5.3, 2.6, 2.8.2, 2.9, 2.10.2and 3.2.4, the deck work on Vessel A was as follows.

(1) Communication Devices

① It is probable that Pilot A and Vessel C or Vessel D used transceivers as communications devices.

② It is probable that Master A and each of the officers of Vessel A used transceivers as communications devices.

③ It is probable that Boat B and Vessel C used transceivers as communications devices.

④ It is probable that there was no direct communication tool between Pilot A and Boat B, but the communication of those via Vessel C was available.

⑤ It is probable that there was no direct communication tool between Officer A and Boat B, but the communication of those through gesture was available.

(2) Information sharing

① It is probable that Master A was able to understand the advice from Pilot A in English, however Master A was not able to understand those in Japanese without which implies yes or no.

② It is probable that Pilot A was able to understand the report and the question from Master A in English.

③ It is probable that Master A was not able to understand the communication between Pilot A and Vessel C and Vessel D in Japanese.

④ It is probable that Pilot A was not able to understand the communication between Pilot A and Officer A in Tagalog.

⑤ It is somewhat likely Master A did not understand the outline of the Pilotage, because the PIC had the information about the course and the mooring line arrangement but had no information about the first line to be sent to the Berth and the manner how to

send, in addition Pilot A did not update the outline of the Pilotage notwithstanding modifying the Initial Advice.

(3)Directions as for the four stern lines

① It is probable that Master A gave the direction Officer A to veer the four stern lines, thinking that Master A was received the advice from Pilot A.

a. Pilot A told Master A "Astern OK", when Master A questioned Pilot A whether it's first to send the stern line.

b. Officer A reported Master A that Workman B requested the four stern lines.

② It is somewhat likely that Master A and Pilot A had not shared the information as for the four stern lines.

a. Pilot A did not request Master A to report the progress of the docking work on the bow and the stern.

b. Master A did not report Pilot A the progress of the docking work on the bow and the stern.

c. Master A and Officer A exchanged the information as for the four sterns lines.

③ Give that Pilot A was not able to recall the situation in which he replied astern OK, when asked by Master A whether to send stern line first, and the situation of conversation with Master A, nonetheless he listened the voice record of Vessel A's VDR, The intention of the Pilotage could not be determined.

④ No reason were found for the discrepancy the oral statement from Officer A, that Officer A observed Workman B showing four fingers and waving his arm up and down at the foredeck of Boat B positioning on the starboard stern side of Vessel A, thought that Workman B send a signal to veer four stern lines, and the oral statement from Workman B Officer A, that After sending a signal to veer mooring lines for Officer A with waving his arm up and down, Officer A veered the four stern lines from the fairlead on the stern of Vessel A.

3.2.6 Situation of Safety Management Activities

From 2.1, 2.6, 2.8 to 2.10, 3.1.1, 3.2.4, and 3.2.5, the deck work on Vessel A was as follows.

(1) It is probable that although Pilot A had had to fill out the first line to be sent to the Berth and the manner how to send on the PIC in accordance with the Pilotage Safety Manual, Pilot A did not follow it.

(2) It is somewhat likely that it had not been enforced to fill out the first line to be sent to the Berth and the manner how to send on the PIC in accordance with the Pilotage Safety Manual.

(3) It is probable that although Master A had had to communicate with Officer A in English in accordance with the Safety Management System, Master A communicated with Officer A in Tagalog.

(4) It is somewhat likely that it had not been enforced to communicate in English in accordance with the Safety Management System in Vessel A.

(5) It is probable that Workman B send Officer A the signal to veer the stern lines.

(6) It is somewhat likely that the things that Company had not established a article prohibiting a workman to send a signal from a mooring boat, and had not given an oral instruction regarding it, contributed Workman B send Officer A the signal to veer the stern lines.

(7) It is probable that although Boat B had had to send the back spring line and the stern line in order one by one in accordance with the Mooring procedures and safety precautions, Boat B towed the four stern lines hooked onto her bitt.

(8) It is somewhat likely that it had not been enforced to follow the Mooring procedures, since Boat B towed the four stern lines hooked onto her bitt.

(9) It is probable that Master A did not give any information to use engine and any direction to secure propeller clear to Officer A, in spite of Master A understood an article of the Safety Management Manual that the engine should never been used unless there is clear confirmation from the crew stationed in the aft that the area is free of any obstruction that might foul the propeller.

(10)It is somewhat likely that it had not been enforced to follow the Safety Management Manual, since Master A did not give any information to use engine and any direction to secure propeller clear to Officer A.

3.2.7 Analysis of the Accident Occurrence

According to 2.1, 2.6, 2.8 to 2.10, 3.1.1 and 3.2.4 to 3.2.6, the analysis of the accident occurrence was as follows:

(1) Vessel A

① It is probable that Master A did not understand the outline of the Pilotage, because the PIC had the information about the course and the mooring line arrangement but had no information about the first line to be sent to the Berth and the manner how to send, in addition Pilot A did not update the outline of the Pilotage notwithstanding modifying the Initial Advice.

② It is probable that that Master A gave a direction Officer A to send the four stern lines, thinking that Pilot A gave an advice to send the four stern lines, due to that Pilot A said "Astern OK", and Officer A reported Master A that Work man B requests to veer the four stern lines.

③ It is probable that Master A and Pilot A did not share the information as for the four stern lines, Pilot A did not request Master A to report the progress of the docking work on the bow and the stern, Master A did not report Pilot A the progress of the docking work on the bow and the stern.

④ It is probable that Pilot A gave an advice Dead Slow Astern with intention of reducing the way forward of Vessel A.

⑤ It is probable that Master A and Pilot A expected each other securing propeller clear when advising a use of the engine, and the engine was used without securing propeller clear.

⑥ It is probable that at around 07:28, the four stern lines entangled with vessel A's propeller.

(2) Boat B

① It is probable that at around 07:24, Boat B moved toward around the stern of Vessel A, after carrying the end of a forward spring line and the end of a head line to the Berth. It is probable that Boat B sent a signal to veer mooring lines for Officer A, Workman B received the four stern lines veered from the fairlead on the stern of Vessel A and hooked the four stern lines onto the Bitt.

② It is probable that Boat B proceeded back ward away from the stern of Vessel A towing

the four stern lines hooked onto her Bitt.

③ It is probable that at around 07:29, Boat B was pulled up toward Vessel A's propeller and capsized, after the four lines entangled with Vessel A's propeller.

3.2.8 Analysis on Reduction of Damage

According to 2.1 and 2.10.3, the analysis on Reduction of damage was as follows:

(1) It is somewhat likely that if, when Workman B had executed measures which facilitate quick release the four stern lines hooked on the Bitt in event of an emergency, the accident's occurrence or the spread of the damage may have been prevented.

(2) It is somewhat likely that things that Coxswain B was wearing a lifejacket in the wheelhouse's doorway were closed hindered Coxswain B from evacuating from the wheel house. The circumstances could not be determined as there were no witnesses to those circumstances.

4 PROBABLE CAUSES

It is probable that the accident occurred when, its service to help Vessel A dock at Tomakomai Port, in a circumstance in which the four stern lines which Boat B was towing was veered out from the aft deck of Vessel A, due to Vessel A's engine was used, the four stern lines was entangled the propeller of Vessel A, toward which Boat B was pulled and then capsized.

It is probable that the reason why Vessel A's engine was used was Master A and Pilot A had not shared the information as for the four stern lines, had expected each other securing propeller clear which had not been conducted.

It is probable that the reason why Master A and Pilot A had not shared the information as for the four stern lines were, Pilot A did not request a Master A to report the progress of the docking work on the bow and the stern, Master A did not report Pilot A the progress of the docking work on the bow and the stern, Master A and Officer A communicated about directives and advices with Tagalog temporarily without following the Safety Management Manual.

It is probable that the reason why Master A and Pilot A expected each other securing propeller clear when advising a use of the engine were, Pilot A considered Master A being responsible for securing propeller clear when advising a use of the engine, Master A thought that Pilot A gave an advice to use of the engine after securing propeller clear when advising a use of the engine.

It is somewhat likely that the fact that Master A did not understand the outline of the Pilotage, Workman B send a signal to veer the mooring lines of the aft deck, Master A thought he received an advice to send the four stern lines contributed Boat B towed the four stern lines.

It is somewhat likely that the fact that the PIC had no information about the first line to be sent to the Berth and the manner how to send, in addition Pilot A did not update the outline of the Pilotage notwithstanding modifying the Initial Advice, contributed Master A did not understand the outline of the Pilotage.

5 SAFETY ACTIONS

It is probable that the accident occurred when, its service to help Vessel A dock, in a

circumstance in which the four stern lines which Boat B was towing, due to Vessel A's engine was used, the four stern lines was entangled the propeller of Vessel A, toward which Boat B was pulled and then capsized.

It is somewhat likely that the fact that the PIC had no information about the first line to be sent to the Berth and the manner how to send, in addition Pilot A did not update the outline of the Pilotage notwithstanding modifying the Initial Advice, the information as for the four stern lines was not shared, without securing propeller clear contributed Master A did not understand the outline of the Pilotage.

In addition, it is somewhat likely that if, measures which facilitate quickly release the four stern lines hooked on the Bitt in event of an emergency had been executed, the accident's occurrence or the spread of the damage may have been prevented.

Accordingly, implementation of the following measures is necessary to prevent occurrence of a similar accident.

(1) Pilot shall fill out the first line to be sent to the Berth and the manner how to send on the PIC and share the outline of the Pilotage with Master.
(2) Pilot shall explain the outline of the Pilotage and make sure Master understands it. Master and pilot shall report the outline of the Pilotage and the information of stern lines mutually. Additionally, Master and Pilot shall share the information with crew members.
(3) Master, crew members (without tug boat) and Pilot shall use language which they understand to communicate smoothly.
(4) Master and Pilot shall have an officer stationed on the aft deck to secure propeller clear before using engine.
(5) Measures which facilitate quickly release mooring lines hooked on the bitt in event of an emergency shall be introduced.
(6) Mooring Boat shall not send signals to veer mooring lines.

5.1 Safety Actions Taken

5.1.1 Safety Actions Taken by the Tomakomai Pilotage Association

The Tomakomai pilotage Association instructed all association pilots to fill out the first line to be sent to the Berth and the manner how to send on the PIC and share the outline of the Pilotage with the master.

5.1.2 Safety Actions Taken by Company A

Company A took the following safety actions and instructed all company ships following the accident.

(1) Master shall have an officer stationed on the aft deck to secure propeller clear before using engine.
(2) Master shall report the information of stern lines of which share with the pilot.

5.1.3 Safety Actions Taken by Company B

Company B took the following safety actions and instructed all company ships following the accident.

(1) Mooring Boat shall not send signals to veer mooring lines.
(2) Measures which facilitate quickly release mooring lines hooked on the bitt in event of an

emergency shall be executed.

(3) Wheelhouse's doorways shall be opened.

Figure 1 Outline Map of the Accident Location

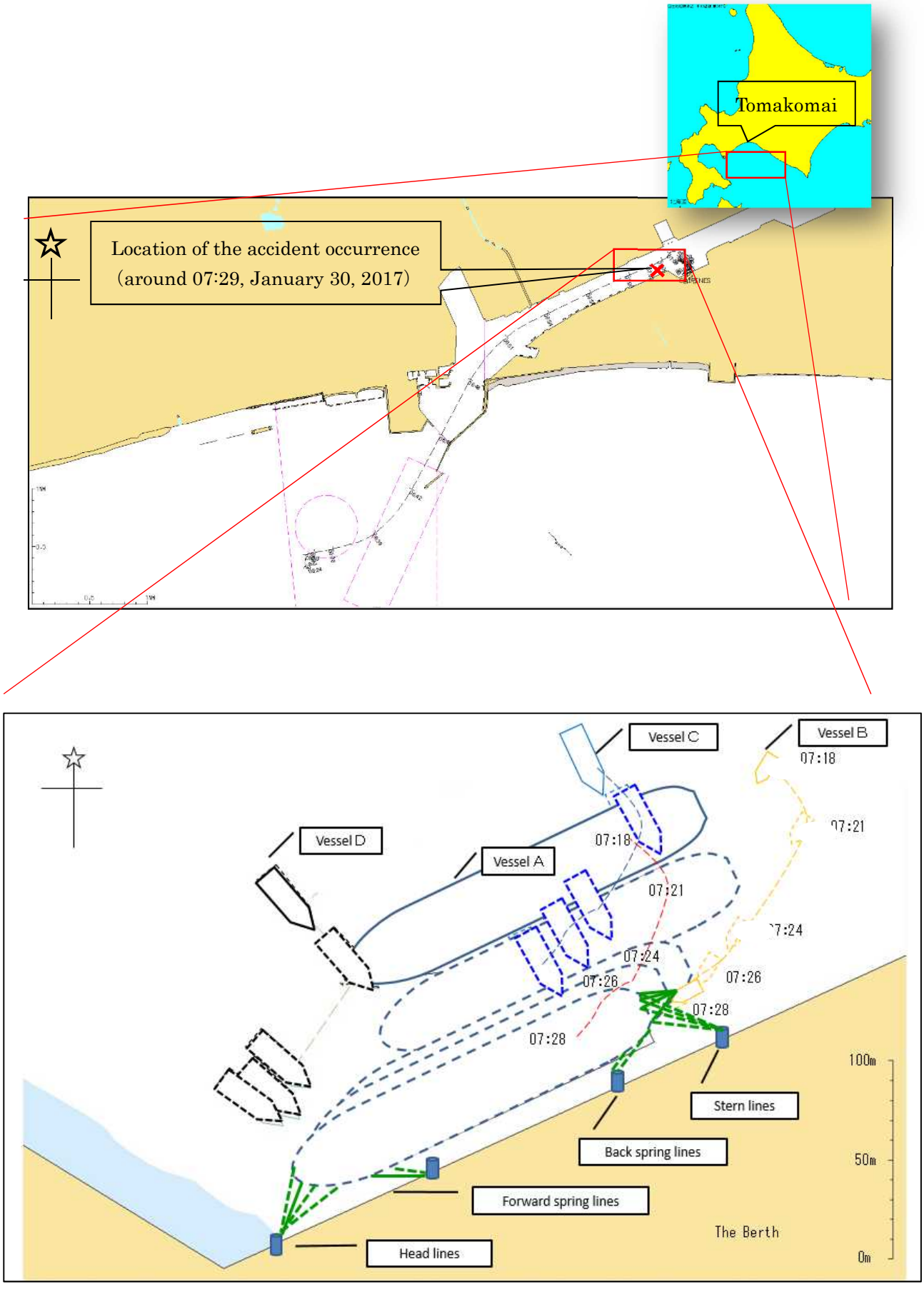

Figure 2 General Arrangement of Vessel A

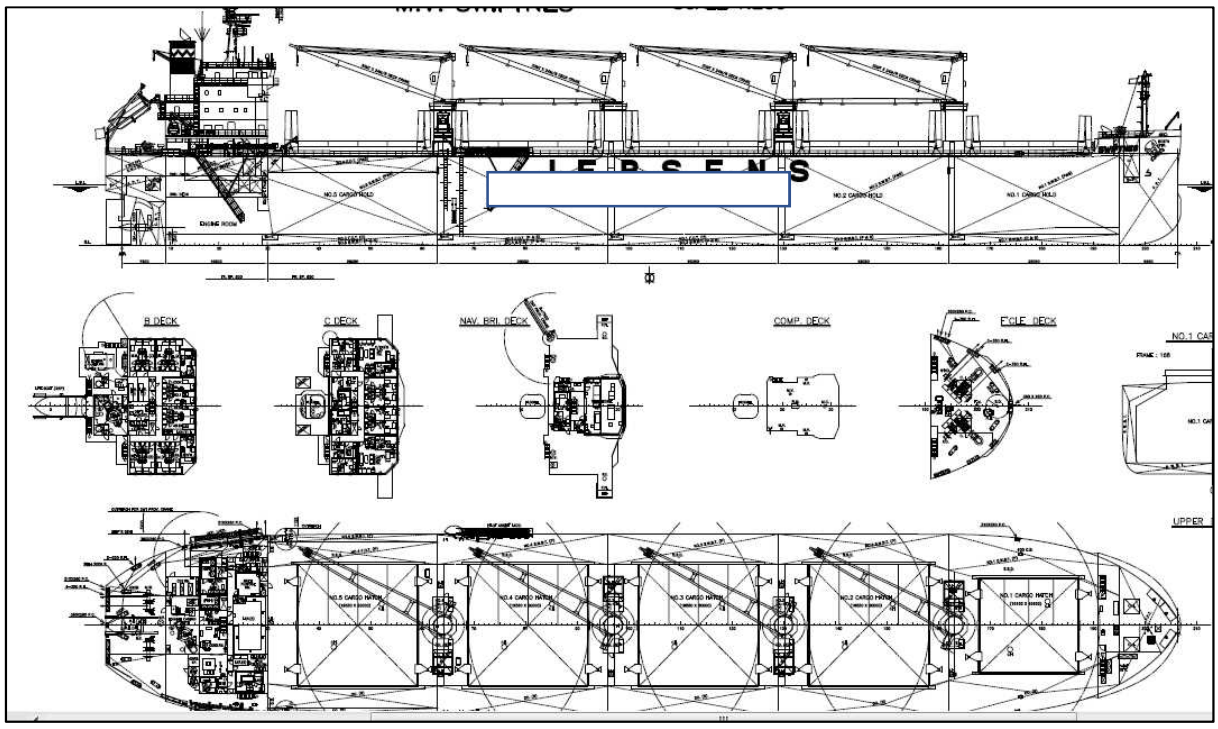

Figure 3 General Arrangement of Boat B

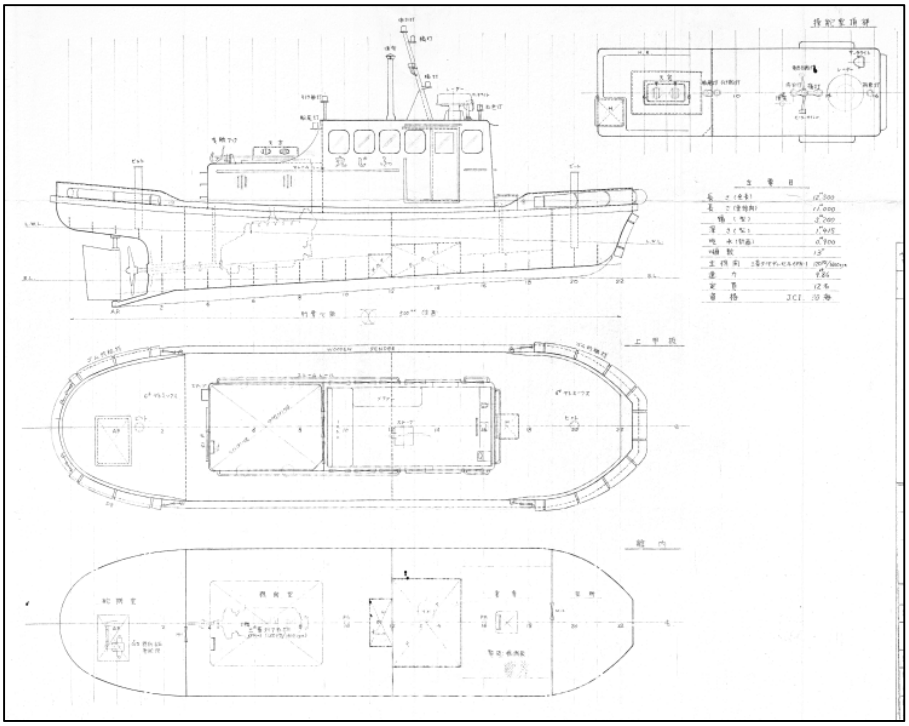

Figure 4 State of Communications

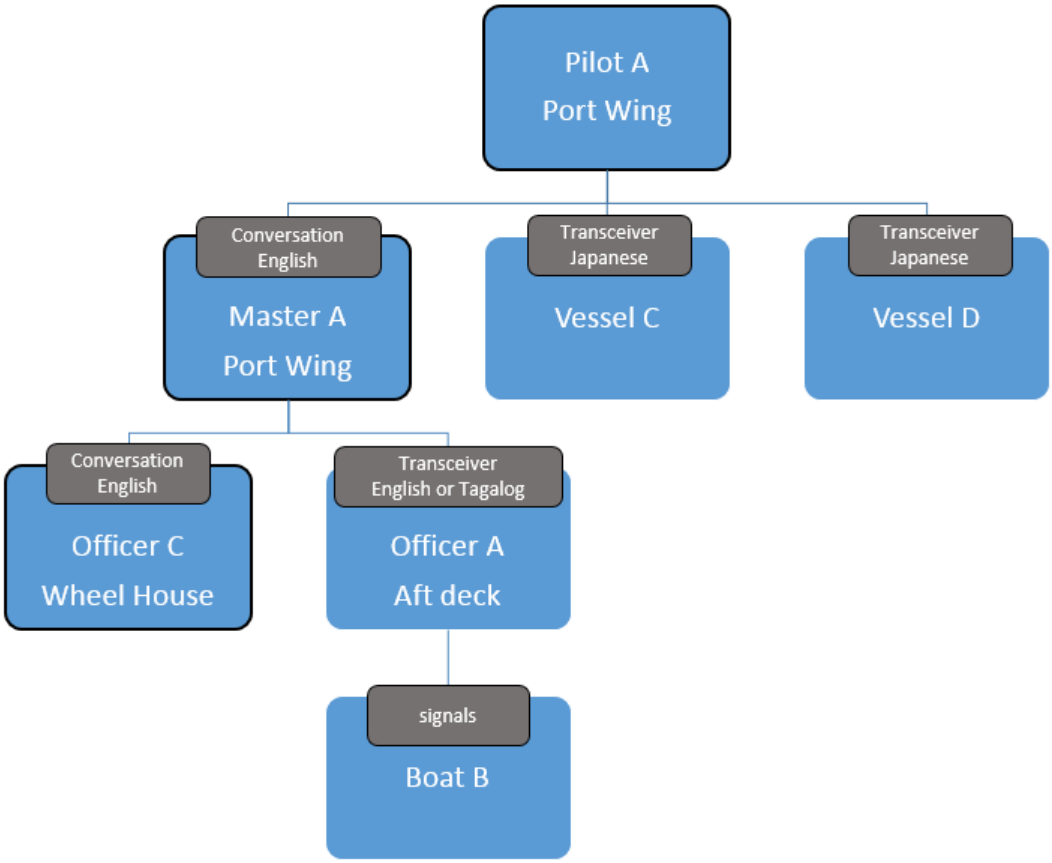

Photo 1 Propeller of Vessel A

Photo 2 Vessel A

Photo 3 Boat B