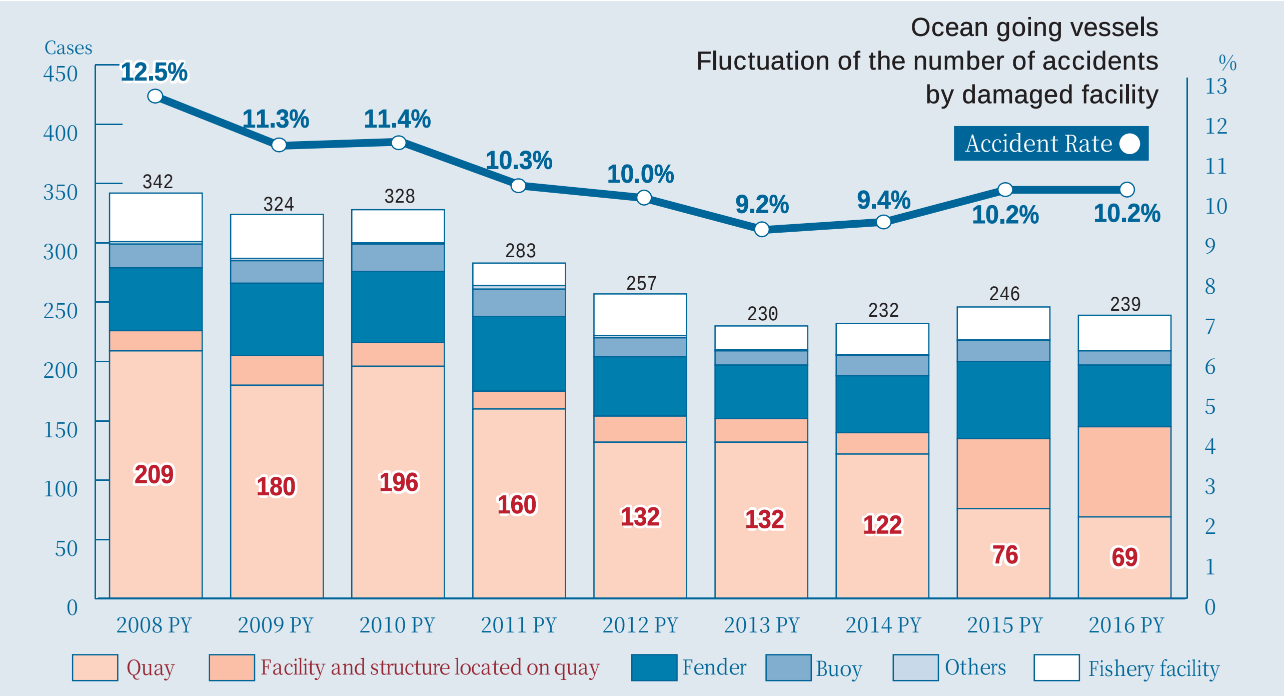
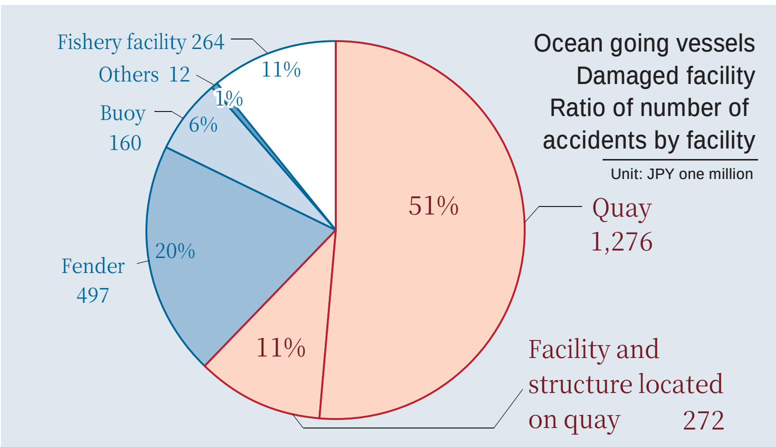


Graph 41 Ocean going vessels Fluctuation of the number of accidents (by damaged facility)

Unit of insurance money: JPY one million

	2008 PY	2009 PY	2010 PY	2011 PY	2012 PY	2013 PY	2014 PY	2015 PY	2016 PY	Total	%
Quay	209	180	196	160	132	132	122	76	69	1,276	51%
Facility and structure located on quay	17	25	20	15	22	20	18	59	76	272	11%
Fender	53	61	60	63	50	45	48	65	52	497	20%
Buoy	20	19	23	23	16	12	17	18	12	160	6%
Others	2	2	1	3	2	1	1	0	0	12	1%
Fishery facility	41	37	28	19	35	20	26	28	30	264	11%
Total	342	324	328	283	257	230	232	246	239	2,481	100%
Number of entered vessels at the beginning of the policy year	2,745	2,866	2,880	2,757	2,576	2,500	2,475	2,406	2,333	23,538	
Accident rate (Number of accidents divided by number of entered vessels ×100%)	12.5	11.3	11.4	10.3	10.0	9.2	9.4	10.2	10.2	10.5	

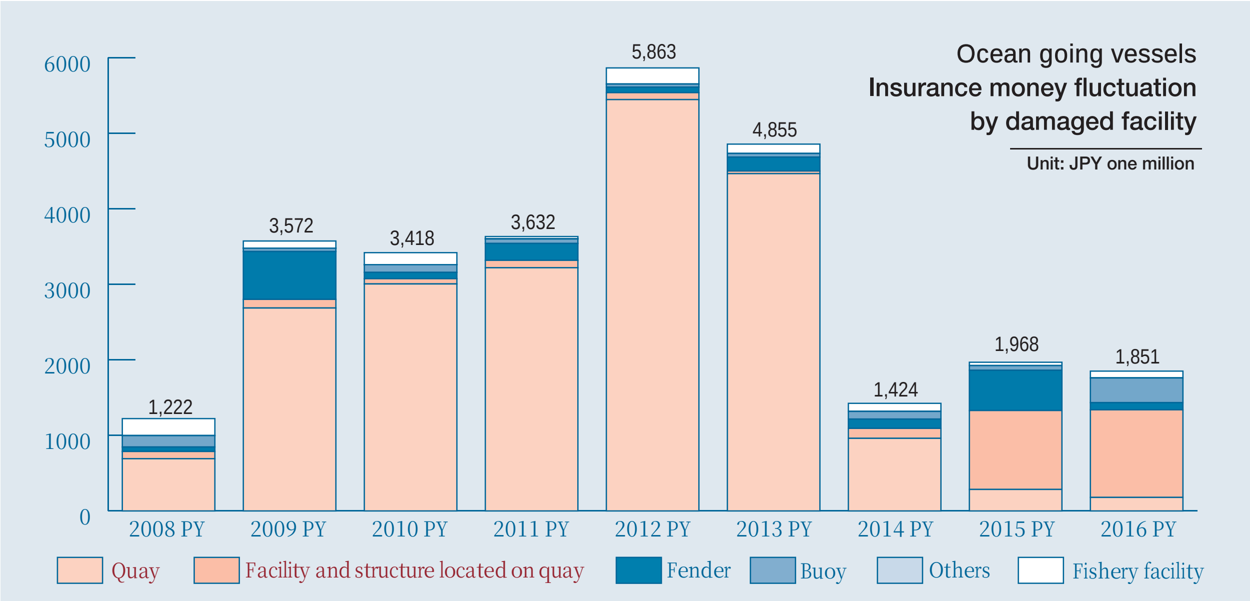
Table 42 Ocean going vessels Fluctuation of the number of accidents (by damaged facility)



Graph 43 Ocean going vessels Damage facility Ratio of number of accidents (by facility)

Similar to coastal vessels, regarding the number of accidents by damaged facility in ocean going vessels including accidents that occurred outside of Japan also, the sum total of quay damaged accidents (51%) and structure damage accidents including quay facilities (11%) occupy more than half of the total number of accidents. However, fender damage accidents account for a large percentage (20%) which is different to that of coastal vessels.

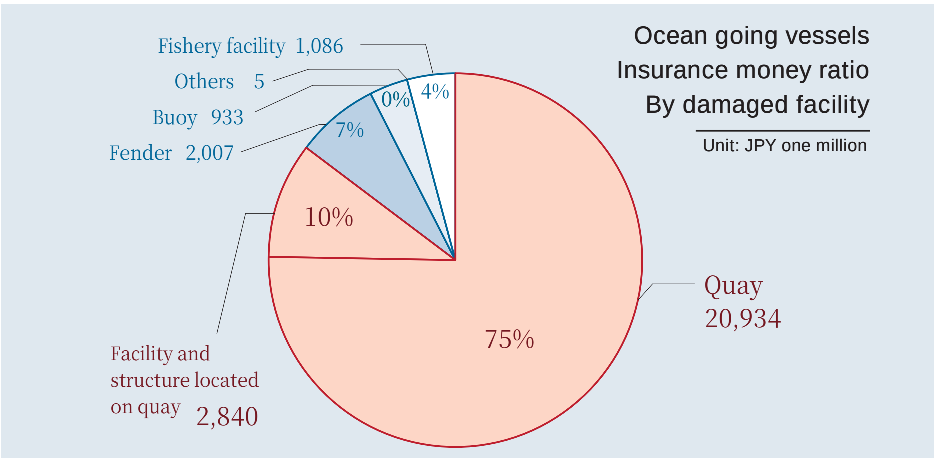
Regarding fender damage accidents, it includes fender accidents which occur as a result of wear and tear. It is not fair to include all of these causes with vessel miss-maneuvering. Especially, if the aged fender is damaged at a public quay, then renewal by repair may be all that is needed. This kind of work is troublesome.



Graph 44 Ocean going vessels Insurance money fluctuation (by damaged facility)

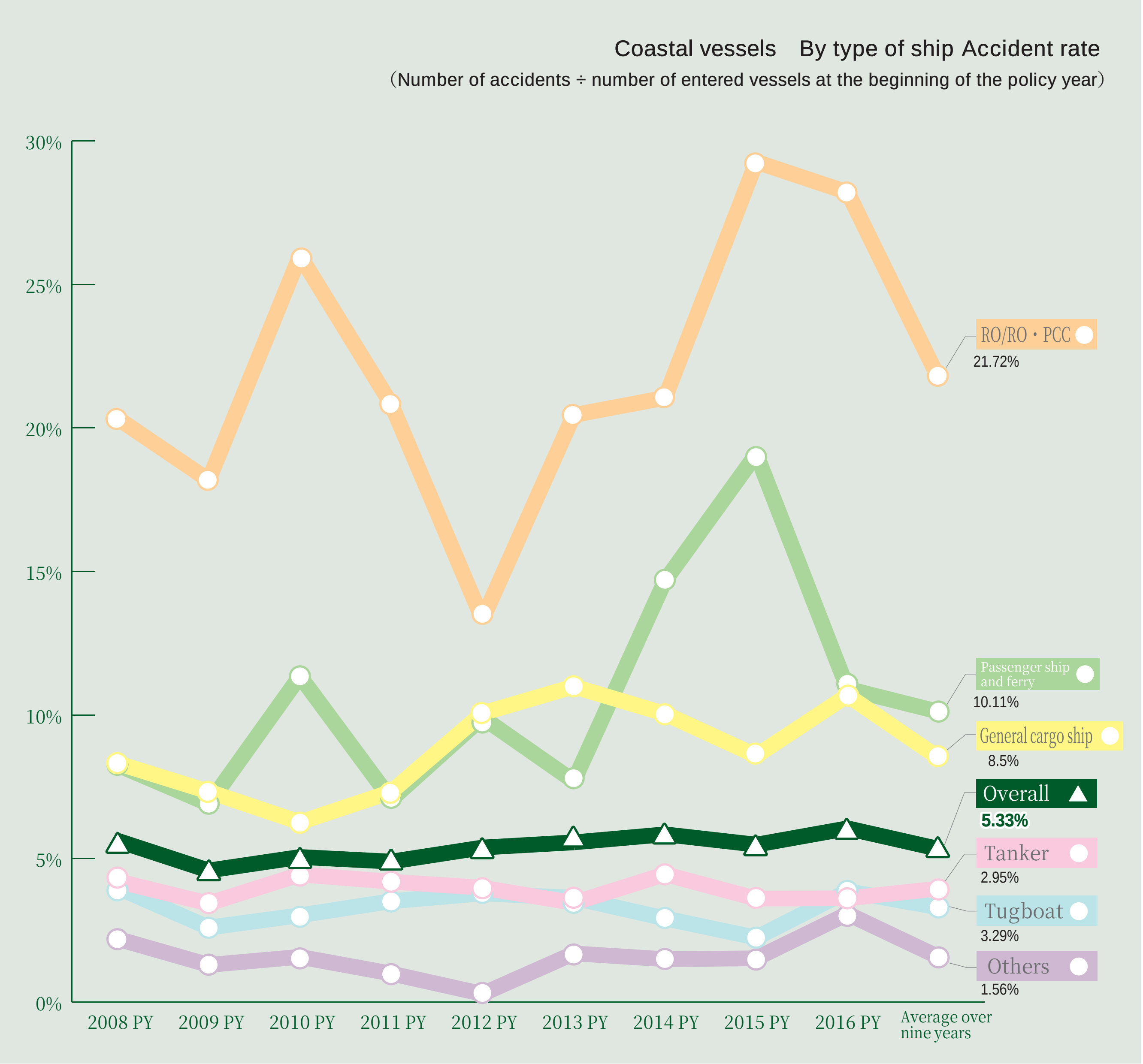
	2008 PY	2009 PY	2010 PY	2011 PY	2012 PY	2013 PY	2014 PY	2015 PY	2016 PY	Total	%
Quay	692	2,686	3,004	3,219	5,444	4,464	961	285	179	20,934	75%
Facility and structure located on quay	95	114	70	98	92	35	132	1,045	1,160	2,840	10%
Fender	59	633	83	223	73	184	123	533	95	2,007	7%
Buoy	151	44	102	59	40	47	101	62	326	933	3%
Others	1	0	0	3	1	1	0	0	0	5	1%
Fishery facility	224	95	159	29	213	124	107	44	91	1,086	4%
Total	1,222	3,572	3,418	3,632	5,863	4,855	1,424	1,968	1,851	27,805	100%
%	4%	13%	12%	13%	21%	17%	5%	7%	7%	100%	

Table 45 Ocean going vessel Insurance money fluctuation (by damaged facility)



Graph 46 Graph 46 Ocean going vessels Insurance money ratio (by damaged facility)

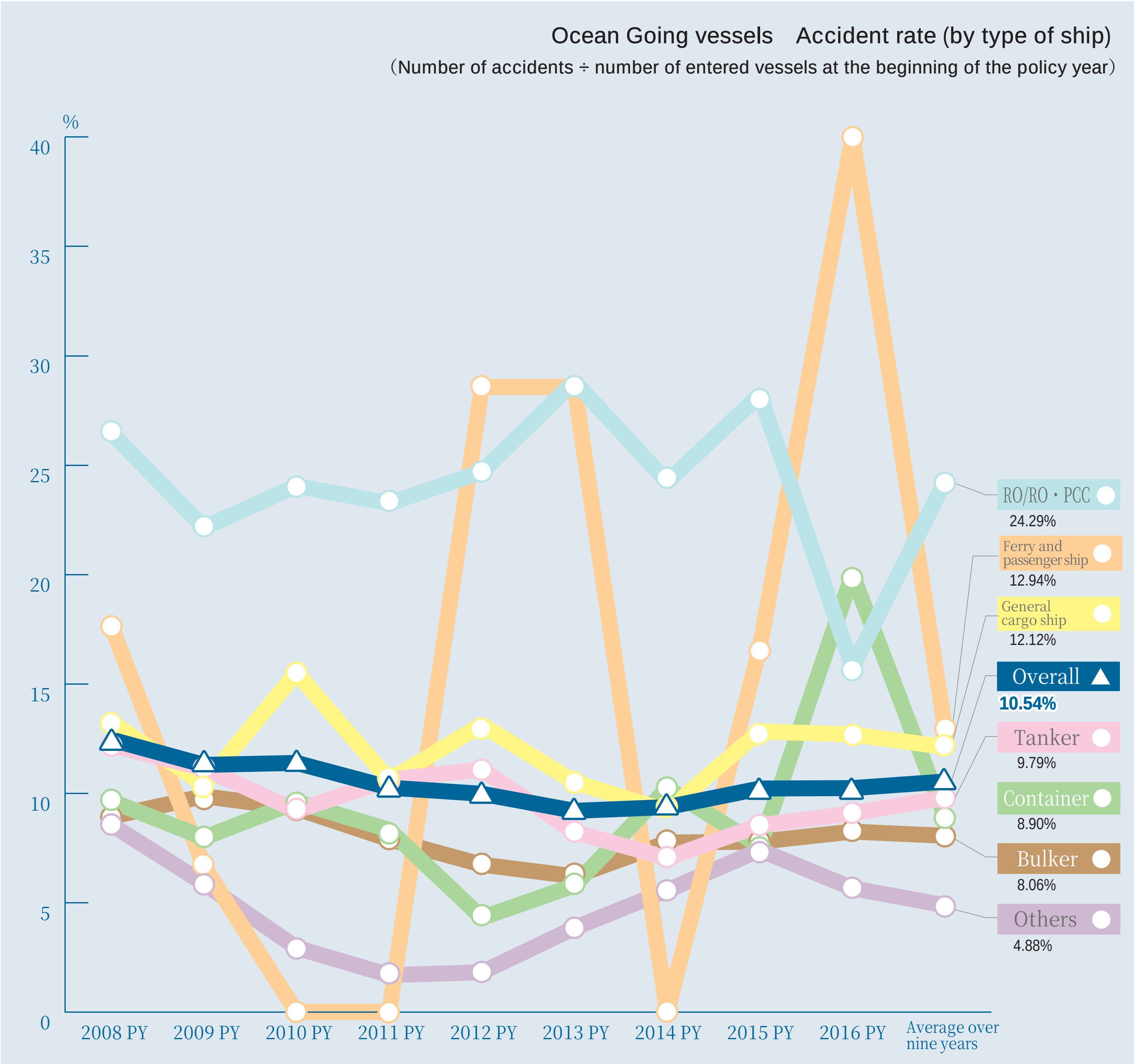
§ 3－5　Statistics on the number of accidents by ship type



Graph 47　Coastal vessels　By type of ship
accident rate (Number of accidents ÷ number of entered vessels at the beginning of the policy year)

Looking closely at the accidents regarding harbour and fishery facilities of coastal vessels by ship type along with accident rate, the following characteristics are found.

- The accident rate for all ship types over the last nine years is 5.33% and, as for simple average, one out of twenty vessels caused an accident.
- However, ship types above this average value are Ro-Ro ships, passenger ships and general cargo ships. In particular, the accident rate of Ro-Ro ships is four times that of the mean value.



Graph 48　Ocean going vessels　 By type of ship
accident rate (Number of accidents ÷ number of entered vessels at the beginning of the policy year)

On the other hand, the total accident rate for ocean going vessels is 10.54% over an average of nine years. The ship types above this average value are, similar to those of coastal vessels, Ro-Ro ships and PCCs, which are prominent at 2.3 times (24.29%) that of the mean value.

There is a trend that general cargo ships, ferries and passenger ships are higher than the average value, however, the difference is not so dramatic when compared to coastal vessels.

= Reason as to why accident rates for PCCs and Ro-Ro ships are higher than other ship types =

The wind pressure area of PCCs and Ro-Ro ships is larger than other ships of the same length (length of hull), which require maneuvering with caution. Above all, they tend to be affected by the wind at the time of leaving the wharf and docking.

Also, the ship's hull construction is, as shown in Fig. 49, the Parallel Body (PB: the part contacting to quay) and it is short. And, if the mooring lines at fore and aft station were not rolled up evenly, the fore and aft parts may run aground on the quay (Over Hang) if the PB part loses balance during docking at this point. Consequently, it can cause damage to the edge of the quay, mooring bit, car stopper etc. According to the ship's hull construction shown below in Fig. 49-2, we can see that Over Hung (R) is approximately 1 m 38 cm. This was caused by shifting towards the quay by only one degree.

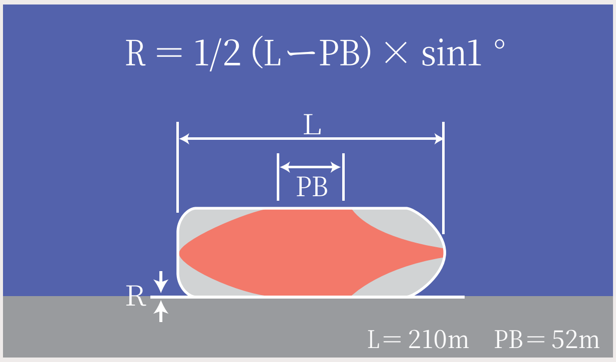


Fig. 49-1

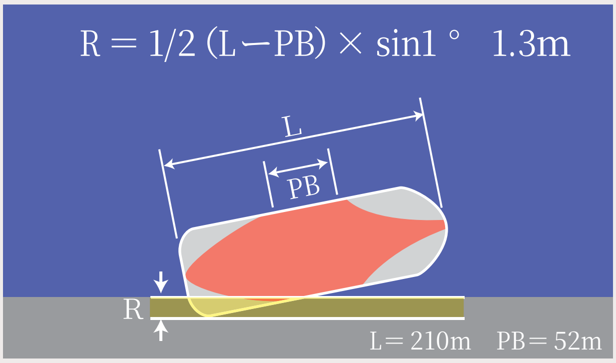


Fig. 49-2

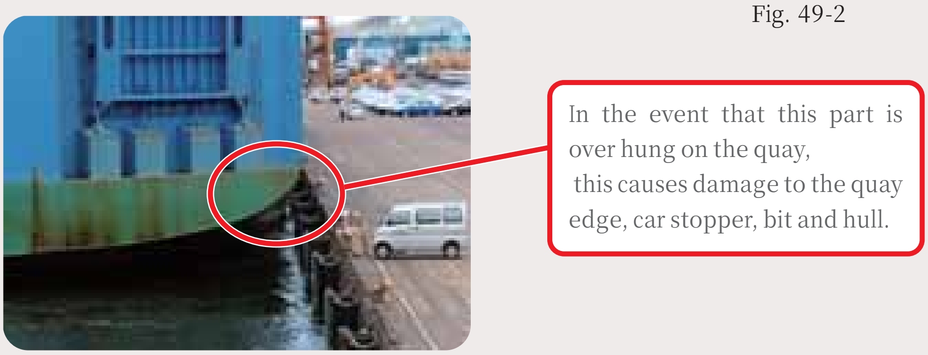


Fig. 49-3

§ 3−6　Statistics on the number of accidents by size of ship (G/T)

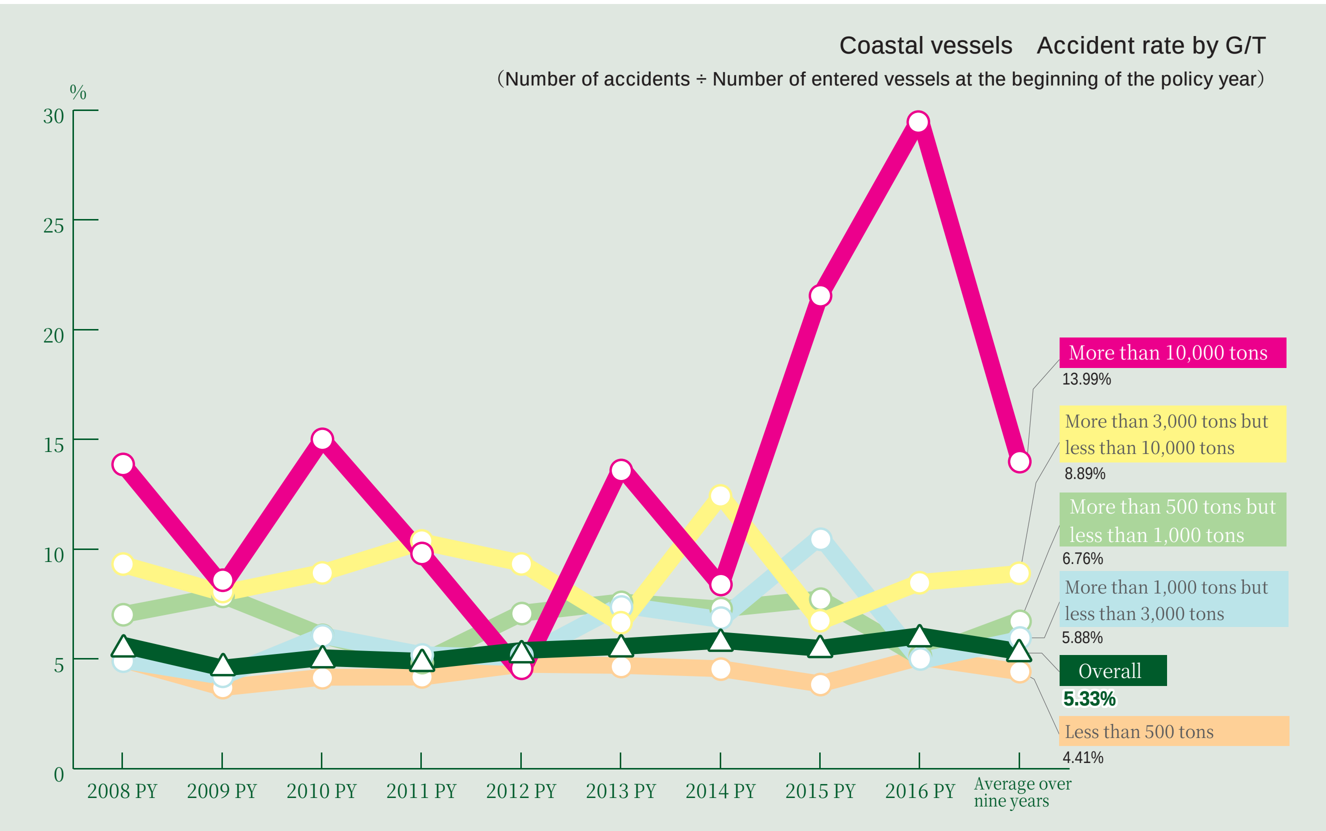
Accidents regarding harbour and fishery facilities of coastal vessels were compared according to the insurance amount.

Because most entered coastal vessels are mainly less than 1,000 G/T, this size of ship occupies the largest number of accidents. Ideally, we should have carried out a more detailed evaluation, by comparing the accident rate that indicates as to how many times each vessel entered and departed the port and how many damaged accidents were caused on each occasion. Also, it is unfortunate that only the comparison of number of accidents and insurance money were mainly discussed in this section, and that there was a lack of data regarding numbers of those entering / leaving ports, similar to "§3-2 Statistics on the number of accidents by accident occurrence area in Japan"

Unit of insurance money : JPY one million

Amount band (insurance)	More than 10,000 tons		More than 3,000 tons but less than 10,000 tons		More than 1,000 tons but less than 3,000 tons		More than 500 tons but less than 1,000 tons		Less than 500 tons		Total	
	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money
More than JPY 100 million but less than JPY one billion	1	929	1	101	1	154	2	409	8	1,288	13	2,882
More than JPY 50 million but less than JPY 100 million	1	94	0	0	3	251	3	211	10	719	17	1,275
More than JPY ten million but less than JPY 50 million	6	100	10	219	7	162	17	383	56	1,097	96	1,961
More than JPY ten million	8	1,123	11	320	11	568	22	1,003	74	3,104	126	6,118
% of total amount	1%	14%	1%	4%	1%	7%	2%	13%	6%	40%	10%	79%
More than JPY five million but less than JPY ten million	4	28	13	102	7	46	8	59	50	344	82	580
More than JPY one million but less than JPY five million	16	45	48	108	35	85	53	128	202	459	354	825
Less than JPY one million	40	14	101	34	62	24	90	33	436	156	729	261
Less than JPY ten million	60	87	162	245	104	156	151	220	688	959	1,165	1,666
Ratio of total amount	3%	0%	8%	0%	5%	0%	7%	0%	34%	2%	56%	3%
Total	68	1,211	173	565	115	723	173	1,223	762	4,062	1,291	7,784
Ratio of total amount	6%	16%	13%	7%	9%	9%	13%	16%	59%	52%	100%	100%

Table 50　Coastal vessels　By band of insurance amount and G/T　Number of accidents and insurance money



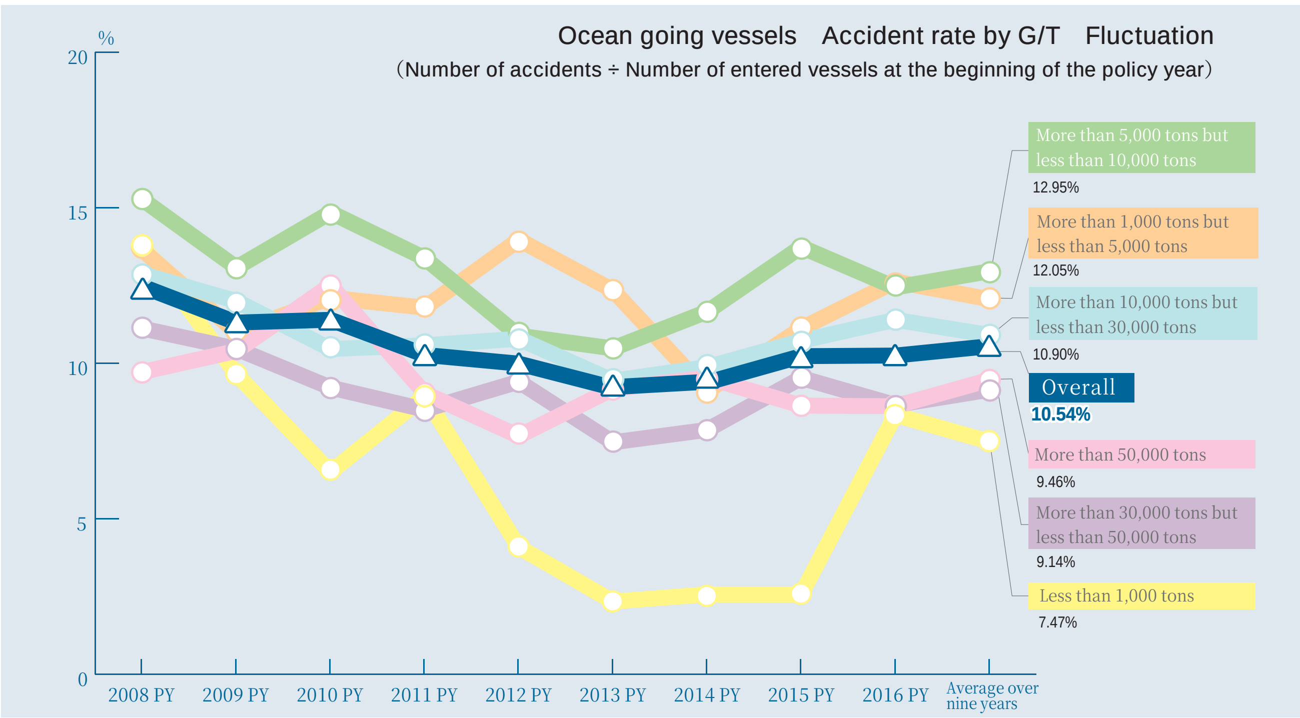
Graph 51　Coastal vessels　Accident rate by G/T

When comparing this with accident rate and the number of entered vessels denominator at the beginning of the policy year, coastal vessels of more than 10,000 G/T greatly fluctuated every Policy Year. And, we can understand that there is a tendency for the accident rate to be higher than for ships less than 10,000 G/T over a nine year average.

Unit of insurance money : JPY one million

Amount band (insurance)	More than 50,000 tons		More than 30,000 tons but less than 50,000 tons		More than 10,000 tons but less than 30,000 tons		More than 5,000 tons but less than 10,000 tons		More than 1,000 tons but less than 5,000 tons		Less than 1,000 tons		TOTAL	
	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money	Number of accidents	Insurance money
More than JPY one billion	3	9,435	1	1,096	1	1,207							5	11,739
More than JPY 100 million but less than JPY one billion	6	1,648	5	2,356	8	3,197	6	1,430	2	392			27	9,022
More than JPY 50 million but less than JPY 100 million	4	317	3	190	9	653	8	566	4	267			28	1,992
More than JPY ten million but less than JPY 50 million	21	511	20	398	37	682	27	589	27	536	1	11	133	2,727
More than JPY ten million	34	11,911	29	4,040	55	5,738	41	2,585	33	1,196	1	11	193	25,481
% of total amount	1%	43%	1%	15%	2%	21%	2%	9%	1%	4%	0%	0%	8%	92%
More than JPY five million but less than JPY ten million	17	128	23	164	29	208	23	161	25	167	4	24	121	851
More than JPY one million but less than JPY five million	73	168	77	179	110	264	84	193	74	170	13	30	431	1,005
Less than JPY one million	365	85	364	95	495	136	303	88	189	57	20	7	1,736	468
Less than JPY ten million	455	382	464	439	634	607	410	442	288	394	37	61	2,288	2,324
% of total amount	18%	1%	19%	2%	26%	2%	17%	2%	12%	1%	1%	0%	92%	8%
Total	489	12,293	493	4,478	689	6,346	451	3,027	321	1,590	38	72	2,481	27,805
% of total amount	20%	44%	20%	16%	28%	23%	18%	11%	13%	6%	1%	0%	100%	100%

Table 52 Ocean going vessels Number of accidents and insurance money (by band of insurance amount and G/T)



Graph 53 Graph 53 Ocean going vessels Accident rate by G/T Fluctuation
(Number of accidents ÷ Number of entered vessels at the beginning of the policy year)

Meanwhile, on examining ocean going vessels, it was revealed that large accidents of more than JPY 10 million of insurance money were concentrated on vessels of more than 10,000 G/T. Statistically, even if it makes contact with a quay at the same speed, a large ship will sustain huge damage.

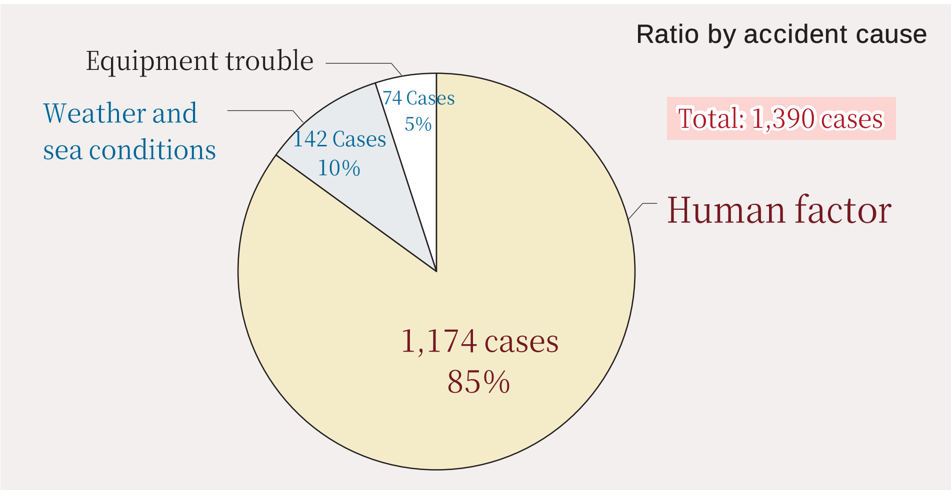
On the other hand, regarding the accident rate of vessels that are more than 1,000 G/T but less than 10,000 G/T it is greater because these vessels are larger than other large vessels. Though there is this kind of tendency, details into the causes remain unknown.

§ 4 Accidents regarding harbour and fishery facilities Causes

§ 4—1 Statistics on accident causes

Accident Cause Classification	Cause	Ocean going vessels	Coastal vessels	Sum total	%
Equipment trouble	Mooring winch trouble	11	5	**16**	1.2%
	Onshore equipment trouble	16		**16**	1.2%
	Other ship's equipment trouble	8	6	**14**	1.0%
	Equipment trouble during cargo handling	12	1	**13**	0.9%
	Main engine and generator trouble	9	3	**12**	0.9%
	Hatch cover trouble	1		**1**	0.1%
	Other equipment trouble	2		**2**	0.1%
	Equipment trouble subtotal	**59**	**15**	**74**	**5.3%**
Human factor	Miss-maneuvering by ship	394	459	**853**	61.4%
	Miss-maneuvering by pilot	106	1	**107**	7.7%
	Other human-induced mistakes	38	53	**91**	6.5%
	Insufficient lookout	12	26	**38**	2.7%
	Miss-maneuvering of tug boat	29		**29**	2.1%
	Miss-maneuvering by other ships	25		**25**	1.8%
	Mistake by workers on shore	29		**29**	2.1%
	Falling asleep		1	**1**	0.1%
	Lack of knowledge and information	1		**1**	0.1%
	Human factor subtotal	**634**	**540**	**1,174**	**84.5%**
Weather and sea conditions	**Weather and sea conditions**	**98**	**44**	**142**	**10.2%**
Sum total		**791**	**599**	**1,390**	**100.0%**

Table 54 Statistics on accident causes



Graph 55 Ratio by accident cause

We analysed 1,390 cases where the causes of the accidents could be investigated. Consequently, human factor causes (human error) came to 84% (1,174 cases) of the total number of cases. In the figure, miss-maneuvering by crew on board (including Master) and the pilot occupies 69.1%.
Also, on analysing the accident report, 10% (142 cases) of the total number of accidents were caused by unforeseen squall and tidal streams. These are mainly caused by a lack of weather chart checking and weather information, and a lack of thorough investigation concerning tidal stream information.

Because we are experienced crew and pilots, it is possible for us to be prepared if we are privy to such information, and can predict squalls with weather lore. Thus it follows that these accidents caused by weather and sea conditions can also be regarded as human error.

Moreover, although equipment trouble (e.g. main engine stoppage and black out, etc.) induced accidents, these devices are also maintained by humans. Thus, causes of damage to harbour and fishery facilities can be said to be 100% down to human error.

Causes of damage to harbour and fishery facilities can be said

Human factor (Human error)

100%

§ 4－2　Human Error Concept

Please refer to the details which were introduced in our Loss Prevention Bulletin Vol.35 “Thinking Safety”

Twelve human characteristics

1. Human beings sometimes make mistakes
2. Human beings are sometimes careless
3. Human beings sometimes forget
4. Human beings sometimes do not notice
5. Human beings have moments of inattention
6. Human beings are sometimes only able to see or think about one thing at a time
7. Human beings are sometimes in a hurry
8. Human beings sometimes become emotional
9. Human beings sometimes make assumptions
10. Human beings are sometimes lazy
11. Human beings sometimes panic
12. Human beings sometimes transgress when no one is looking

Table 56　Twelve human characteristics

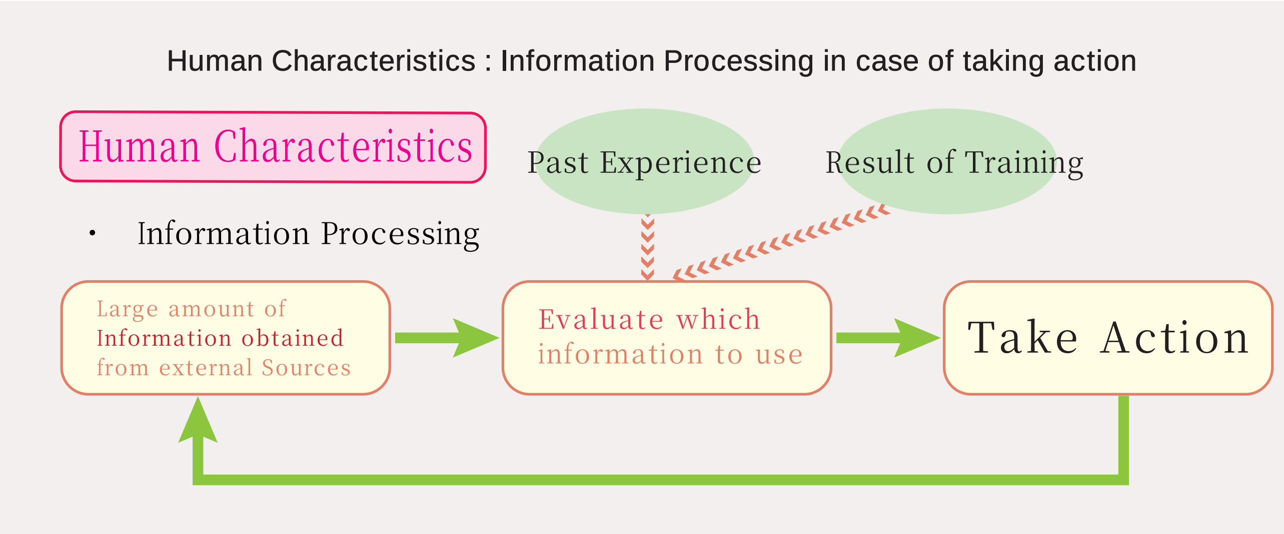
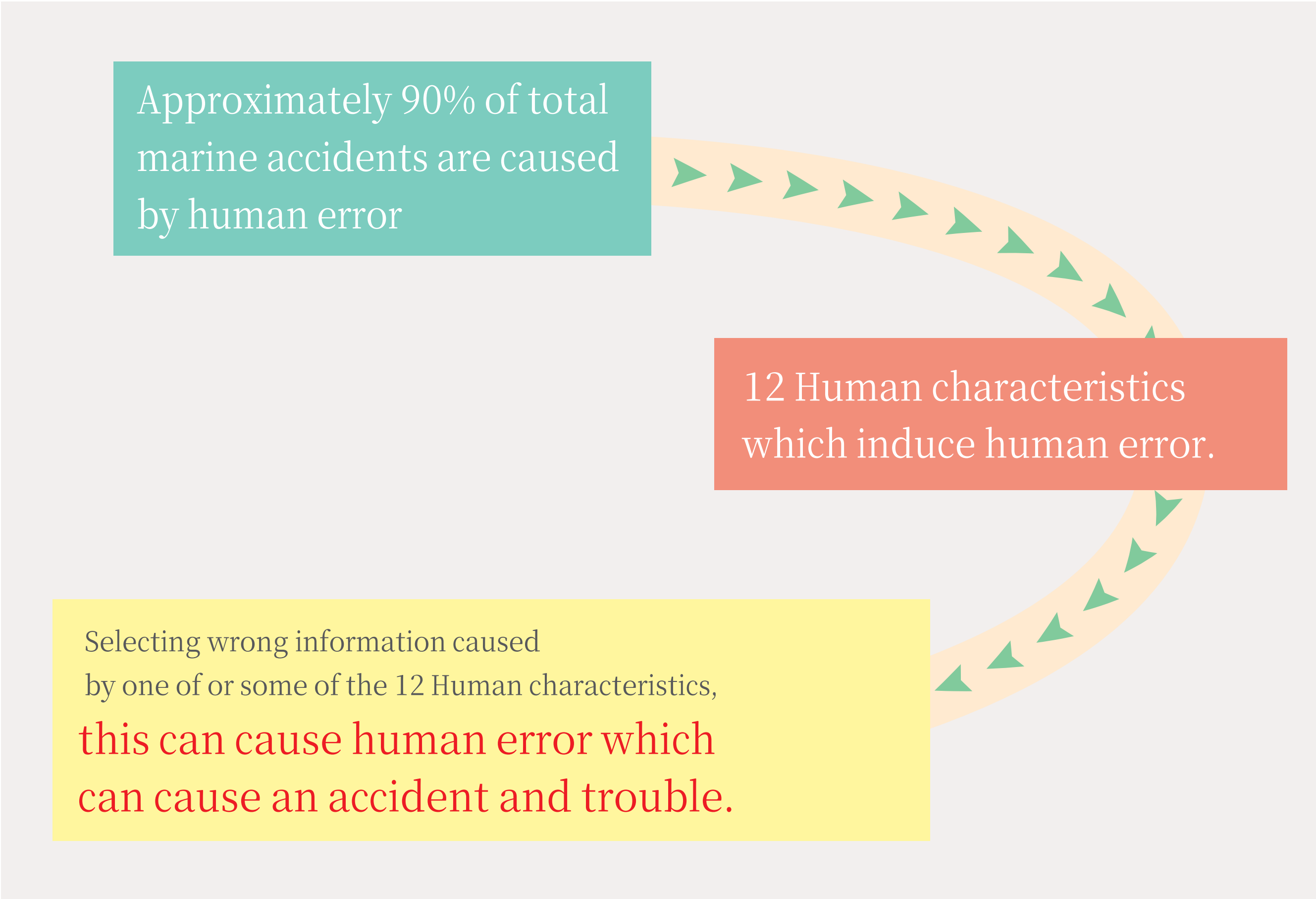


Table 57　Human Characteristics : Information Processing in case of taking action

Table 56 shows the 12 Human characteristics which may cause human errors. Everyone has these characteristics. Table 57 shows how people behave when they act.
In other words, human beings process a large amount of information using the five senses and take action depending on what information they believe should be used. In addition, because taking new action requires additional new information, the cycle repeats.
When considering how to use the information, you look back at the outcome of past experience and training. For example, in the event of attempting to walk on a rough road, we are careful so as not to fall over. Why are we cautious? One reason is that this comes from our common experience of feeling pain when we fell over and grazed our knees when we were children. And, our memory of pain is stored somewhere in the brain. Even when we have become adults, we recall that information of the rough road experience from memory automatically and a message is transmitted telling us to “please be careful”.

It is said that the brain automatically lets us deal with almost 80% of the human behaviours unconsciously. However, if there is an error in the memory source, the wrong signal will be transmitted. That is, unconscious errors are triggered, which leads to accidents.
Also, regarding the remaining 20%, we think for a moment before taking action, or think about it deeply prior to taking action. However, the fundamental is also the same in this case, and errors that cause accidents are induced by wrong judgement, if there were mistakes in past experience and memory. This root cause is shown in the 12 Human characteristics indicated in Table 56.
Therefore, most accidents can be prevented by calmly recognizing the Human characteristics that everyone has and measures can be taken to prevent the causes of the errors.

§ 4−3 BTM (Bridge Team Management)/ETM (Engine Room Team Management)



There are various causes for marine accidents, however, in the event of a collision accident, for example, it is said that approximately 80 to 90% of all accidents are caused by a mistake made by a person, in other words, “human error” (as mentioned above) such as “Insufficient Look-out”. In addition, even though the vessel collided into a harbour and fishery facilities, not another vessel, such an accident regarding harbour and fishery facilities is also classified as an accident. The cause can be treated the same as other collision accidents, namely, that it was down to “human error”. Most of these accidents were not caused by only one error, rather, the error was part of chain of other errors.

On the premise that “human beings are error-prone”, BTM and ETM were established with the purpose of “achieving safe navigation” in order to further prevent human error chains and to bolster team ability at the bridge and in the engine room.

In other words, the utmost purpose of BTM and ETM is to eliminate “one-man error” through mutual support in order to maintain safe operation of the ship together with the all members and resources in the bridge and engine room. And, it aims “to achieve safe navigation” by improving team ability in the bridge and engine room as always.

This is shown in Table 58. The person at the centre (Liveware: person responsible for the accident) is surrounded by the following four resources.

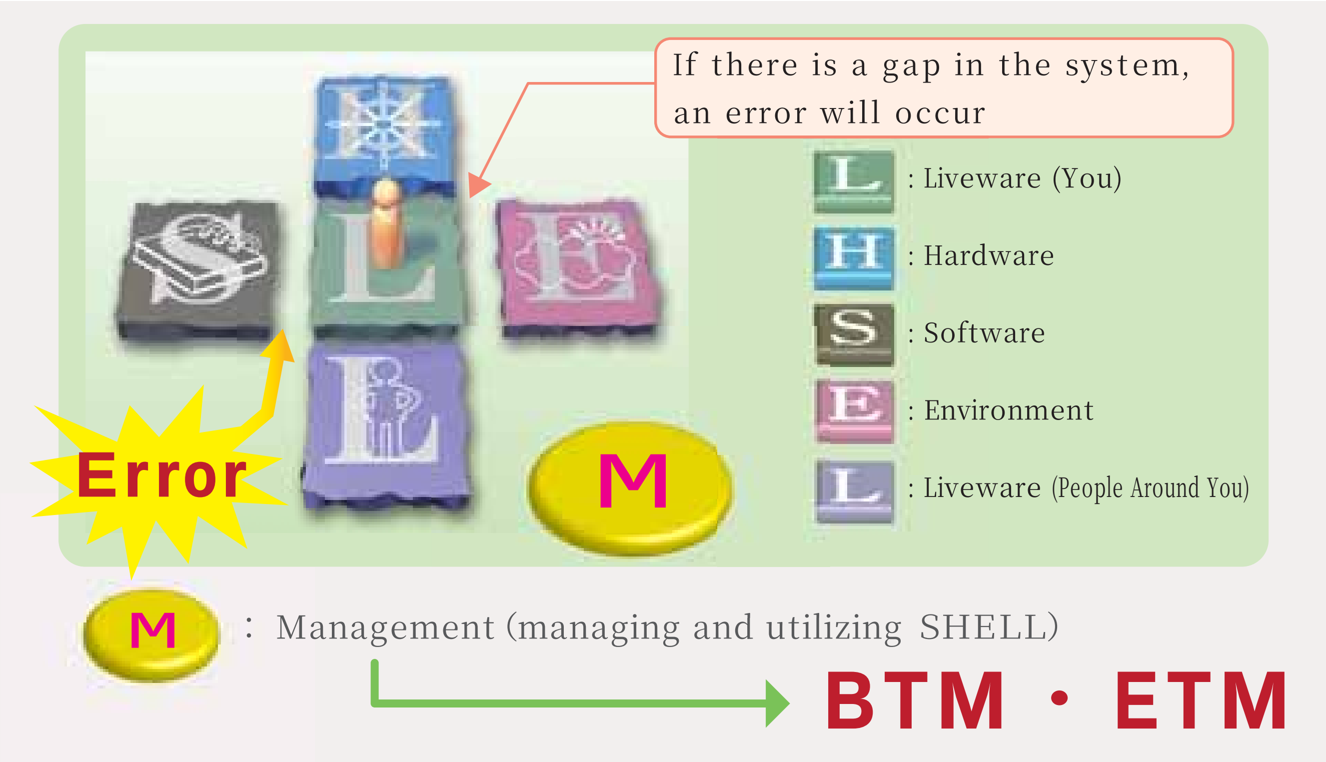


Fig. 58　M-SHELL Model

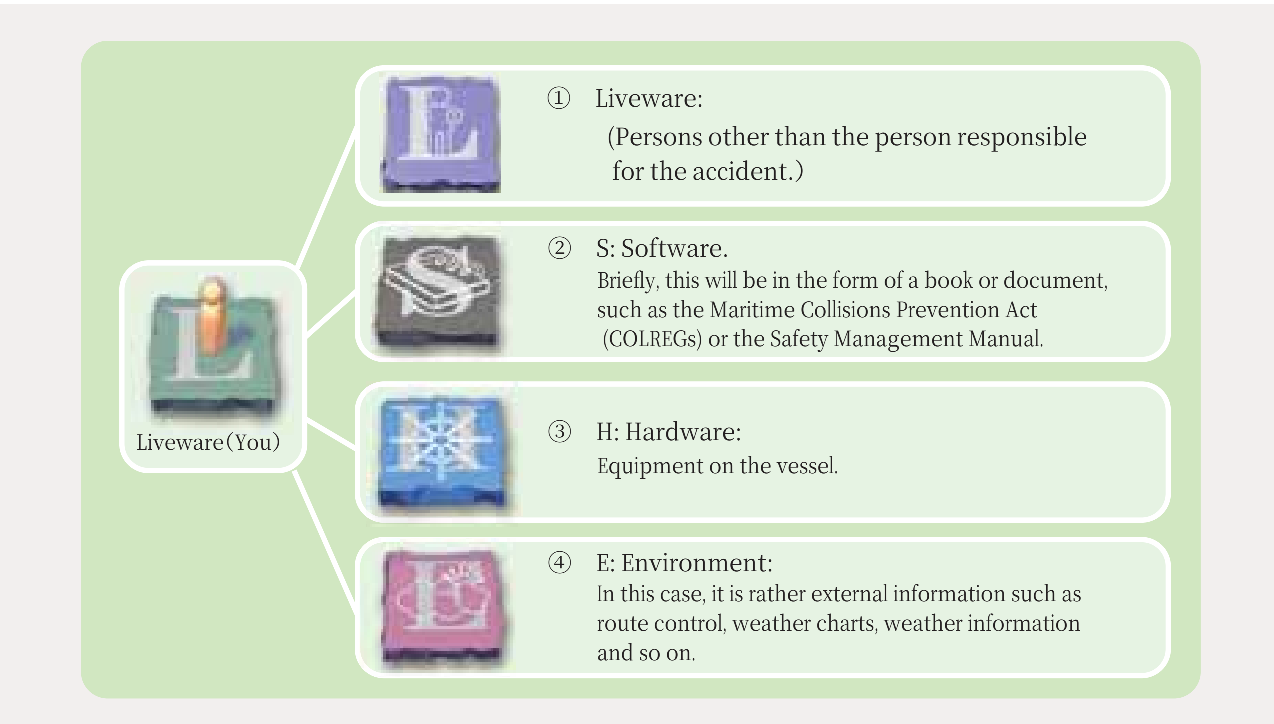


Fig. 59　Four resources.

L (you), the person at the centre of model, is required to always communicate with these resources and to manage them (management). Each initial in the model collectively form the acronym M-SHELL.

People around us communicate with each other via speaking and listening. They also communicate via other voiceless means such as books: Maritime Collisions Prevention Act (COLREGs) and the safety management manual.

Also, although the hardware (equipment) does not utter any words, it provides us with a variety of information. Automatic Radar Plotting Aids (ARPA) display the Closest Point of Approach (CPA) of other vessels or Time to the Closest Point of Approach (TCPA). The action of confirming this information can be said to be communicating with ARPA. Or, crew in the engine department, including the chief engineer, in the engine room confirm using their five senses to check the sound, for vibration, temperature and pressure generated by the main engine to assess as to whether or not fuel is burning at a normal state. This is also a form of communication: communication with equipment.

Moreover, Environment means external information. It can be regarded a communication when one is speaking and listening via VHF or reading a weather chart.

In addition, because each resource including the position of oneself (L) is constantly changeable, it can be represented as a fluctuating square. If cooperation between oneself (L) and each resource is not adequate, a gap between the resources is created, human error enters and safety is compromised. Then a chain of errors causes an accident.

On the other hand, if communication and cooperation is satisfactory, there will be no gap to cause error because each resource is connected. Thus, it can be said that safety has been established.

For instance, let's suppose that the Master gave a wrong steering order to the Helmsman. At that moment, if the duty officer confirms the possible mistake with the Master and the Master admits and corrects the steering order, the error "careless mistake" (wrong steering order) will no longer pose a problem there and then.

Unfortunately, if the duty officer who even felt question did not confirm this, the Helmsman, who specialises in navigating, would steer following the wrong steering order. The Master noticed this after the vessel had started turning round, but it was too late. That is, a gap into which an error could enter was generated.

§5 Case study

Through the following three cases, preventive measures will be postulated.

§ 5−1 Case ① Quay contact

Case ① Quay contact

▶ Date and time of occurrence :

On an unspecified day of March 2011, approximately 07:53 Japan time (JST))

▶ Accident site :

At an unspecified port in Tokyo Bay

▶ Vessel particulars :

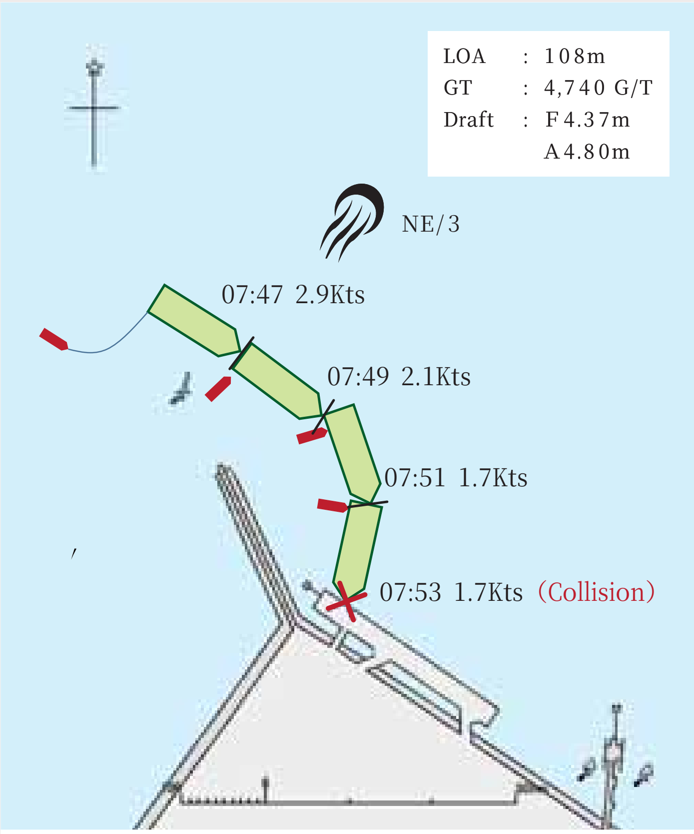
4,440GT, Loa 108 m General cargo ship
Fore draft 4.37 m Aft draft 4.80 m Loaded
Steel product with half-loaded

▶ Weather and sea conditions :

Fine, NE wind, wind force 3, No influence from tidal current, and good visibility

▶ Crew members :

Korean Master, chief engineer and other crew were Indonesian (16 members on board in total)



South Korean Master and Indonesian crew

Fig. 60

§ 5−1−1　Chain of events leading up to the accident

Time	Movement	Who
06:55	Pilot embarks. Presents Pilot Card. Confirms ship's particulars and draft. Pilot remarks that there is only one tug boat on port side alongside. There was no explanation regarding ship manoeuvring instructions. On questioning the pilot following the accident, the pilot explained "We planned a manoeuvre to turn round in front of the berth and then set parallel condition with the berth as close as possible. "	Master and pilot
07:47	Speed 2.9 kts. D.Slow ah'd、 Leeway 3°Leeward direction. The straight-line distance from the bow to quay is 320ｍeters（3L which is approximately three times that of hull length (L).	Pilot
07:49	Speed 2.1 kts. Stop Eng.. While allowing the tug boat to push on her starboard quarter, Start right turn. Linear distance is at 220 meters (approximately 2L) from bow to quay	Pilot
07:51	Speed 1.7 kts. Stop Eng.. Continues starboard turning round. Linear distance is at 120 meters (approximately 1L) from bow to quay	Pilot
07:52	Because the Master felt anxious Half Ast.Eng..is ordered.	Master
07:53	Keeps Speed at 1.7 kts. collision into quay	Master and pilot

Table 61　Chain of events leading up to the accident

Table 61 shows the chain of events leading up to the accident. The pilot let the tug boat report the distance from the bow to the quay, but did not explain this to the captain. On the other hand, the chief officer who was allocated at the bow had a duty to report the distance between the bow and the quay to the Master, but the Master did not relay this to the pilot, and he continued to entrust navigation entirely to the pilot.

The Master, now feeling anxious, ordered astern with engine only one minute before the accident was to occur and the vessel, unable to take corrective action, collided into the quay at 1.7 kts.

§ 5−1−2　Judgement and cause analysis by Marine Accident Tribunal

Judgement and cause analysis by Marine Accident Tribunal is as follows.

Main text of judgement:	Operation suspension as pilot for a month
Cause:	The pilot did not sufficiently confirm the approaching state between the bow and quay and delayed in carrying out speed reduction arrangement. In addition, he did not adequately confirm the speed, despite the fact that it was easy for the tug boat to push stronger into the half-loaded vessel which led to the situation of increasing Head way. Also, he over relied on the approaching condition reported by the tug boat.

§ 5－1－3　Analysis according to Human characteristics and Preventive Measures

＝　Analysis　＝

Accident causes were analysed along with §4-2 Human Error Concept and §4-3 BTM (Bridge Team Management)/ ETM (Engine Room Team Management).
Firstly, we dealt with the direct and indirect causes separately.

Direct cause

Miss-maneuvering by the pilot caused the following trouble. This is the same as the Marine Accident Tribunal cause analysis.

- Insufficiently confirmed approaching condition between the bow and quay.
- Did not reduce speed at a distance of 1L (approximately 100 meters) from the approaching quay.

Indirect cause

The cause was not only triggered by the pilot but by the Master also.

＝ Pilot ＝

- Did not explain berthing plan to the Master
- Used only the distance reported by the tug boat (Immediately before the collision, although the distance from the tug boat was 60 meters, the chief officer reported it as being 35 meters.)

＝ The Master ＝

- Although the chief officer (Indonesian) who was allocated at the bow had a duty to report the distance between the bow and the quay to the Master, the Master did not relay this to the pilot.
- He continued to entrust navigation entirely to the pilot.

In addition, we examined the “root cause” lurking behind the “direct cause” and “indirect cause” mentioned above against the “Human characteristics” shown in Table 56 on page 29. We conclude that the error chain was broken as a result of human error, when Human characteristics are applied. (Each number is applicable to that of Human characteristics shown in Table 56)

＝ Root cause ＝

偏　Human beings are sometimes lazy　(Master and Pilot)

After the pilot got on board, the Master continued to entrust navigation entirely to the pilot. Also, regardless of the fact that the chief officer, who was allocated at the bow had a duty to report the distance between the bow and the quay, the Master did not relay this to the pilot. Immediately before the collision, the tug boat reported the distance at 60 meters to the pilot, however, at the same time, the chief officer reported it as 35 meters. At this point in time, had they noticed that there was a conflict between the two reports, and had the Master and the pilot communicated with one another, they could have reconfirmed the correct distance to the quay.

⑤ Human beings have moments of inattention (Master and pilot)

Finally, the Master ordered Astern engine, however, time did not permit this. On confirming Head way against the log and GPS and deducing that the speed was excessive, the Master should have advised the pilot of this at that time.

⑨ Human beings sometimes make assumptions (Master)

The Master assumed that the pilot would not miss-maneuver.

Summarizing these time sequences, chiefly, the root cause can be attributed to insufficient communication between the crew on board (officer at the watch of the 3rd officer) and the pilot. We can deduce that BTM including the pilot was not functional. In addition, the 3rd officer arranged at the bridge was expected to report the hull speed and the information relayed by the chief officer, who was allocated at the bow, to both the Master and the pilot, but was negligent in doing this. Collapse of BTM caused this accident.

Lack of communication between crew on board (including Master) and pilot

BTM is not functioning.

Generally, the tug boat and the pilot were communicating in the local language (Japanese in this case) using transceivers. In particular, because the Master and pilot stand alongside at the final stage of berthing maneuvering, it is not possible to confirm visually the tug boat's movement. Also, without an understanding of the local language, it may be difficult to grasp what is going on between the pilot and the tug boat. Then, in the event that something unpredictable occurs during the operation process that is different to what the Master intended, one of the human characteristics ⑪ Human beings sometimes panic may be triggered and this can induce human error.

Another reason may be that there is not enough time for the pilot to keep interpreting the tugboat's instructions to the Master. Therefore, as a precaution, it may be wise that the chief or 2nd officers, who are allocated at the bow, briefly report when the tug boat changes movement. (A brief description such as "Started pushing (pulling) in the direction of XX o'clock" is perfectly acceptable.)

= Preventive measures =

As described above, BTM collapse including the pilot can be considered a root cause. For this reason, both the Master and the pilot should have fully recognised the importance of BTM, but again: ② Human beings are sometimes careless, ③ Human beings sometimes forget and ⑩ Human beings are sometimes lazy apply.

There should have been no problem with the ship maneuvering skills of the pilot and the Master. However, in light of the Human characteristics mentioned above that can be the root cause, forgetfulness may suggest that re-training of BTM in order to remember be one of the effective preventive measures taken.

Photograph 62 BTM training

Photograph 63 Ship handling and manoeuvring simulator

§ 5−2 Case ② Oyster raft accident that sustained damage

Case ② Oyster raft accident that sustained damage

▶ Date and time of occurrence:

On an unspecified day of December 2015, approximately 18:37 Japan time (JST)

▶ Accident site:

Near Miyajima Seto, Eastern sea area of Itsukushima, Inland sea

▶ Vessel particulars:

2,988GT
L × B × D = 118.03m × 16.60m × 11.99m
Pure Car Carrier (PCC) Fore draft 3.54m Aft draft 3.85m Loaded with 447 cars

▶ Port of departure:

Departed Uno Port, Okayama prefecture. Cleared out Kurushima Strait at approximately 15:00.

▶ Port of destination:

Ujina Port, Hiroshima prefecture

▶ Crew members:

A Japanese Master age 63, a 3rd marine officer (navigation) and crew were Japanese (10 members on board in total)

▶ Weather and sea conditions:

The weather was cloudy, WNW wind, wind force 5 and the tide was at the middle stage of ebb
At that time, gales and high wave advisory were continuously being announced for Hatsukaichi city and Edajima in Hiroshima.

= Arrangement in place when the accident occurred =

▶ Bridge:

Master operated the ship, Chief Engineer operated the engine and the 3rd Officer steered

▶ Stern:

The Chief Officer, Boatswain and Able Seaman (3 in total) were preparing for entering port.

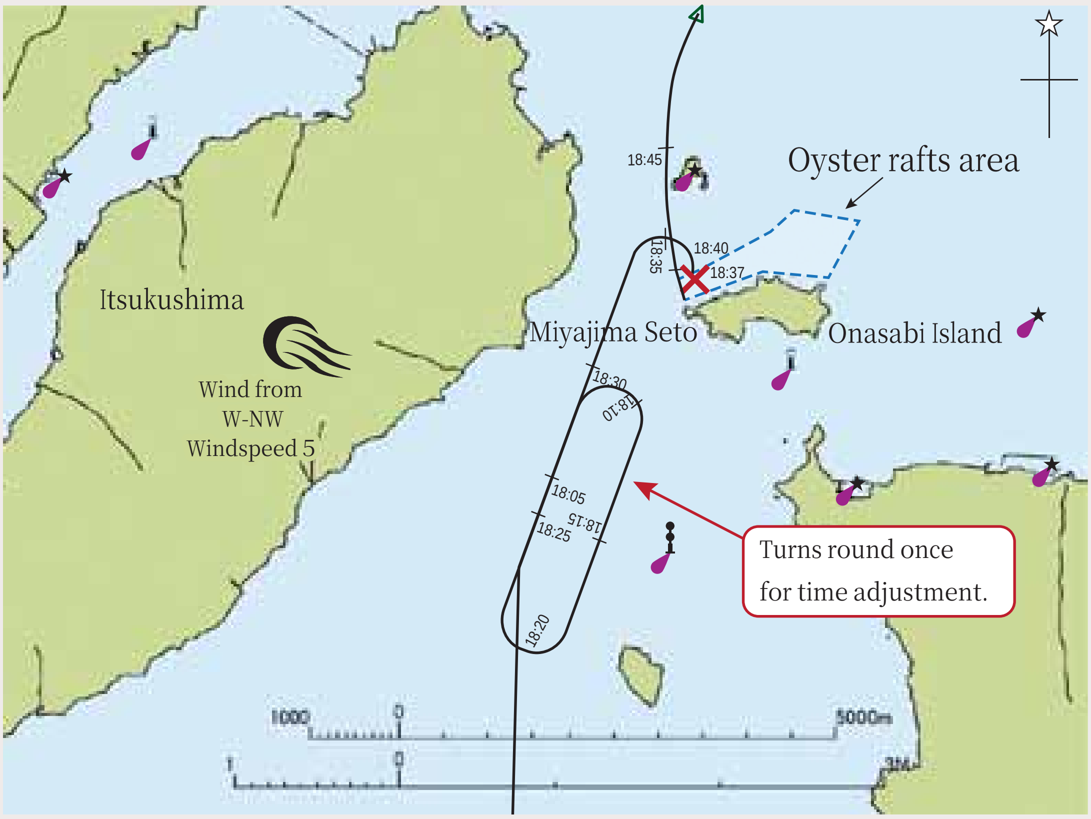

Oyster rafts area
Itsukushima
Wind from
W-NW
Windspeed 5
Miyajima Seto
Onasabi Island
Turns round once
for time adjustment.
18:45
18:40
18:37
18:35
18:30
18:10
18:05
18:15
18:25
18:20
1000
0
5000m
1
0
3M

Fig. 64

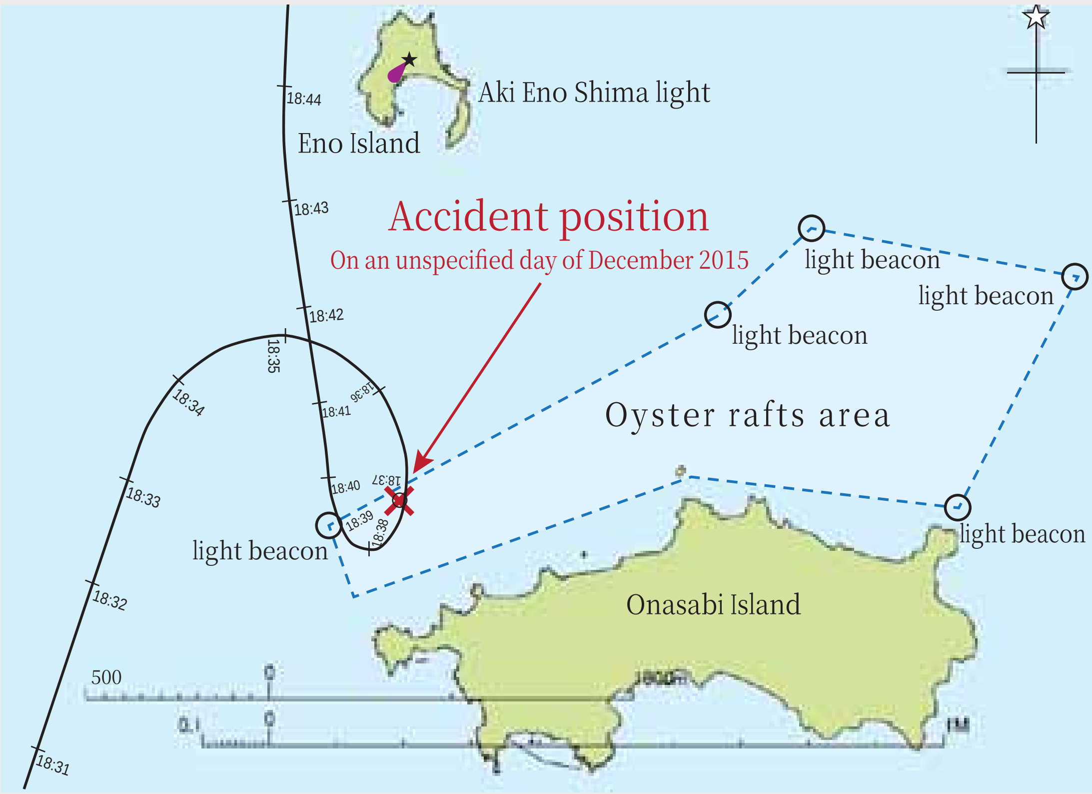

Aki Eno Shima light
Eno Island
Accident position
On an unspecified day of December 2015
light beacon
light beacon
light beacon
Oyster rafts area
light beacon
light beacon
Onasabi Island
18:44
18:43
18:42
18:35
18:34
18:41
18:36
18:33
18:40
18:37
18:39
18:38
18:32
18:31
500
0
0.1
0

Fig. 65