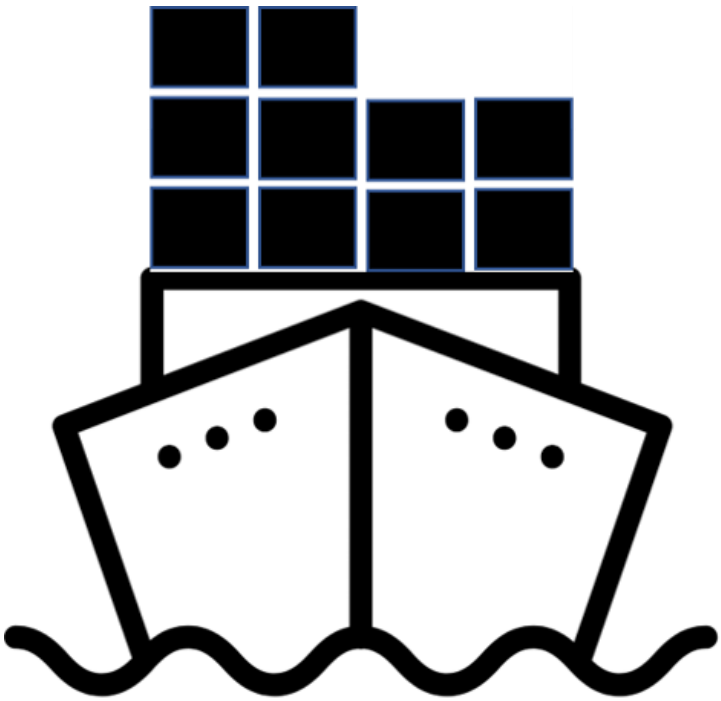
Taiwan Marine Occurrence Statistics

2014 – 2023



國家運輸安全調查委員會

Taiwan Transportation Safety Board

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ABSTRACT

In the past decade (2014 to 2023), the number of Taiwan-registered merchant vessels with over 100 gross tonnage (GT) reached a peak of 317 in 2021 and 2022, then slightly decreased to 315 in 2023. The total registered GT and deadweight tonnage (DWT) of vessels reached their peak in 2020 and have shown a downward trend year by year since.

The number of Taiwan-registered motor fishing boats remains between 12,101 and 12,353, without significant change in the past decade, of which the majority are below 100 GT, accounting for more than 90%. The number of motor fishing boats with GT of 100–199.9, 200–499.9, and above 1,000 has seen gradual increase year by year.

The Taiwan Transportation Safety Board (TTSB) is responsible for investigating major marine occurrences and classifies cases into three levels based on the severity of the occurrence. From its establishment on August 1, 2019, to December 31, 2023, TTSB received a total of 922 reports of marine occurrences, filed 212 cases for investigation, and closed 185 cases. Among the 212 cases filed: Level 3 occurrences were the most numerous, totaling 152 and accounting for 72%, followed by Level 2 with 50, accounting for 24%. The most common occurrence type was Collision, accounting for 43 cases, or 20.3%, followed by Fire/Explosion, accounting for 42 cases, or 19.8%. The most common type of vessels involved in occurrences were fishing boats, with 158 cases, accounting for 74.5%, followed by general cargo ships, with 15 cases, accounting for 7.1%. In addition, among the 212 cases filed, 34 were fatal occurrences, accounting for 26%. The types of fatal occurrences were mostly work safety occurrences (14) and capsizing occurrences (8). The most common type of vessels involved in fatal occurrences were fishing boats with 29 cases, followed by freighters and general cargo ships, with 2 cases each.

In addition, for major marine occurrences, from the establishment of TTSB on August 1, 2019, to December 31, 2023, a total of 235 transportation safety recommendations were made, of which 163 had relevance to government

agencies/institutions, accounting for the largest proportion of 69.4%. Regarding vessel types, freighters received the highest proportion of recommendations, approximately 64.3% (151 items). The proportion of safety recommendations put forward for fishing boat occurrences was the second highest, accounting for 23% (54 items). As of December 31, 2023, there were 89 safety recommendations for major marine occurrences that had not been closed, of which 61 still had sub-implementation plans under the control of the Executive Yuan, and 28 were pending the submission of processing reports by relevant government agencies/institutions on the safety recommendations. After summarizing the relevant safety issues, they can be divided into three categories: pilotage operations and management, vessel traffic service system operations and management and fishing boat operation safety.

Introduction

The first part of this report is an overview of the operation of vessels and fishing boats registered in Taiwan. The data is courtesy of the Maritime and Port Bureau (MPB) of the Ministry of Transportation and Communications (MOTC) and the Fisheries Agency of the Ministry of Agriculture (MOA). It provides a general perspective of merchant vessels and motor fishing boats with more than 100 GT over the past 10 years (2014 to 2023).

The second part is a statistical analysis of major marine occurrences. It first describes the scope of major marine occurrences, then explains the classification of major marine occurrences. Additionally, it presents a statistical analysis of the number and types of major marine occurrences filed and investigated by the TTSB.

The third part consists of the follow up and control of transportation safety recommendations proposed by the TTSB in its investigation of major marine occurrences, and summarizes the safety issues of major marine occurrences.

This report was compiled using maritime transport technical terms and statistical terms commonly used by the International Maritime Organization; relevant definitions and descriptions are provided in the appended glossary. For major marine occurrences filed for investigation by the TTSB in 2023, please refer to Appendix 2, and for transportation safety recommendations put forward, please refer to Appendix 3.

I. Operational Overview of Taiwan-Registered Vessels

1.1 Taiwan-registered vessels with over 100 GT

Compared with the number registered in 2022, the number of merchant vessels registered in Taiwan with over 100 GT[1] in 2023 decreased by 2, totaling 315 ships. The GT decreased to 4,567,393 tons compared with 2022, and the DWT decreased to 6,372,798 tons, as shown in Table 1.

The trend of the number of vessels registered in Taiwan with over 100 GT from 2014 to 2023 is shown in Figure 1: The number of vessels reached the lowest in the past 10 years in 2018 at 267. It then showed an upward trend, reaching 317 vessels in 2021 and 2022, the highest in the past 10 years, and slightly decreased to 315 vessels in 2023. GT and DWT have been increasing year by year since 2016, reaching their highest point in 2020; however, there was a slight annual decline from 2021 to 2023, as shown in Figure 2.

Table 1 Number of Taiwan-registered vessels, GT, and DWT from 2014 to 2023

Year	Number of vessels (units)	GT	DWT (tons)
2014	304	3,635,946	5,284,951
2015	313	3,847,758	5,481,654
2016	278	3,463,074	4,958,454
2017	283	3,578,719	5,120,324
2018	267	4,173,822	6,136,249
2019	285	4,723,929	7,110,663
2020	300	4,913,161	7,571,142
2021	317	4,773,765	7,228,788
2022	317	4,800,890	6,816,889
2023	315	4,567,393	6,372,798

Source: MOTC's Annual Transportation Report, compiled by this report

[1] The GT of a vessel refers to the total volume of all enclosed spaces in the vessel. Register tonnage is not expressed in units.

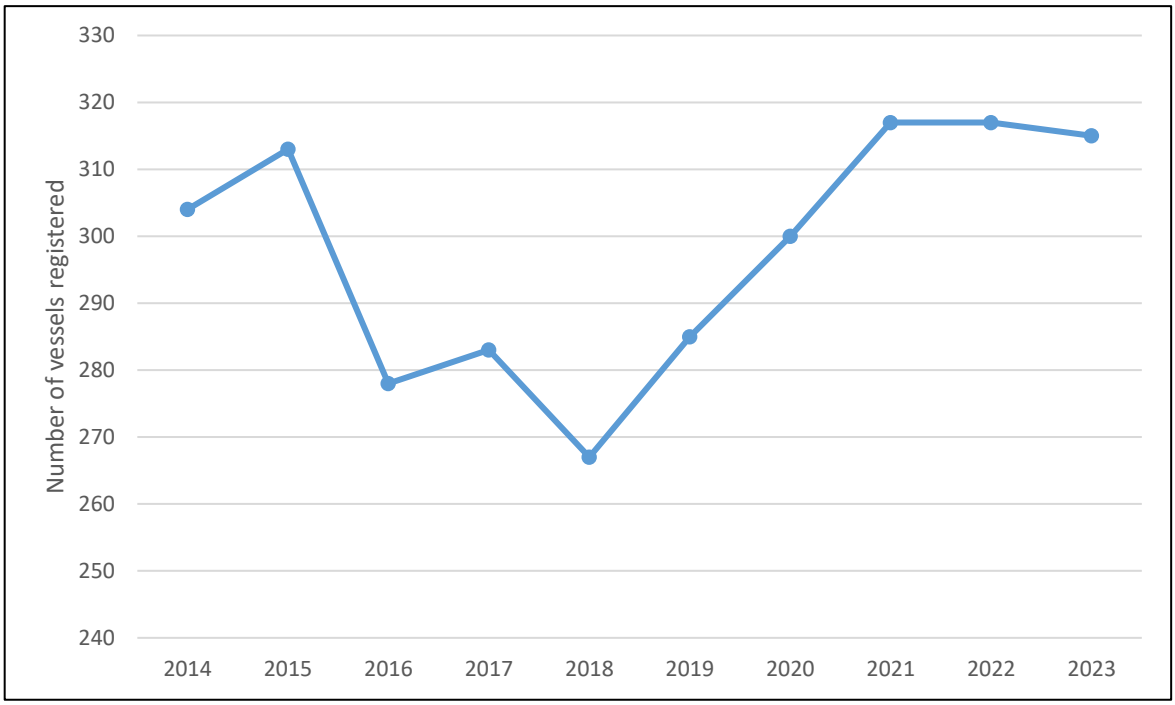


Figure 1 Number of Taiwan-registered vessels from 2014 to 2023

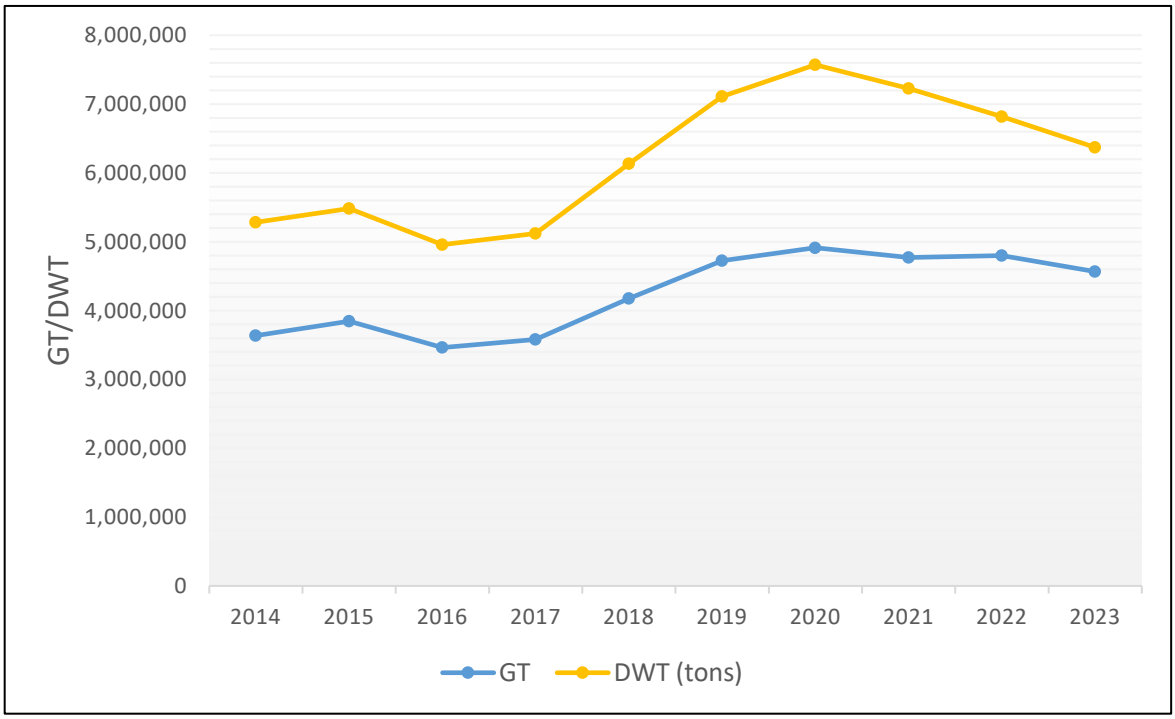


Figure 2 GT and DWT of Taiwan-registered vessels from 2014 to 2023

The total number of Taiwanese vessels registered in 2023 was 315, of which general cargo ships accounted for the majority, 87, followed by passenger ships, 85, as shown in Table 2.

The trend of changes in number of Taiwan-registered vessels according to different types from 2014 to 2022 is shown in Figure 3: In the past three years, the number of registered general cargo and passenger ships has increased year by year; bulk carriers, container ships, and oil tankers have declined in number slightly.

Table 2 Number of Taiwan-registered vessels of all types from 2014 to 2023

Year	General cargo ship	Bulk carrier	Container ship	Oil tanker	Passenger ship	Other	Total
2014	90	20	50	20	71	53	304
2015	92	20	51	20	77	53	313
2016	73	14	51	18	73	49	278
2017	69	16	53	21	76	48	283
2018	60	18	59	19	72	39	267
2019	63	25	61	18	77	41	285
2020	78	27	60	18	72	45	300
2021	85	25	63	18	78	48	317
2022	86	20	65	17	81	48	317
2023	87	17	64	15	85	47	315

Source: MOTC's Annual Transportation Report, compiled by this report

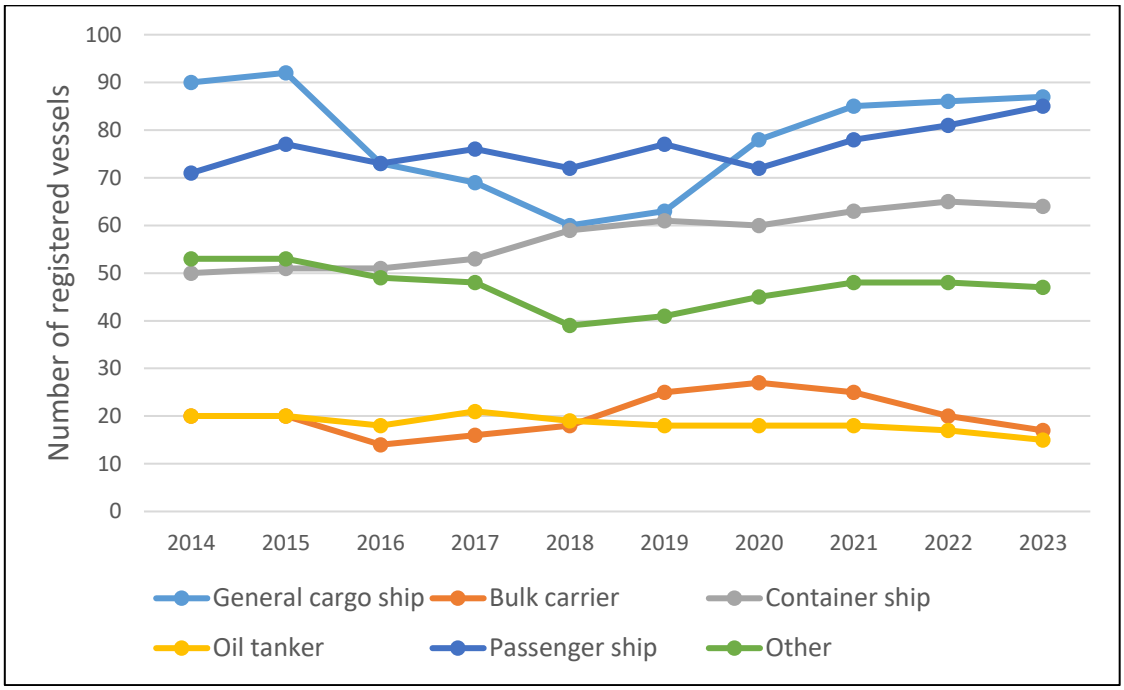


Figure 3 Number of Taiwan-registered vessels from 2014 to 2023 - By vessel type

The total registered DWT of Taiwan-registered vessels in 2023 was 6,372,798 tons, of which the largest belonged to container ships with 2,723,285 tons, and the second largest tonnage to bulk carriers with 2,094,662 tons, as shown in Table 3.

The trend of changes in DWT of Taiwan-registered vessels according to different types from 2014 to 2023 is shown in Figure 4: The DWT of container ships increased year by year after 2020, reaching 2.75 million tons in 2022, the highest in the past 10 years. It then dropped to 2.72 million tons in 2023; the DWT of passenger ships increased and reached the highest point in the past 10 years in 2022, then declined slightly to about 10,000 tons in 2023; the DWT of bulk carriers, general cargo ships, and oil tankers has shown a slight downward trend since 2020.

Table 3 DWT of various types of Taiwan-registered vessels from 2014 to 2023

Year	General cargo ship	Bulk carrier	Container ship	Oil tanker	Passenger ship	Other	Total
2014	338,620	1,984,317	1,712,685	198,855	8,183	1,042,291	5,284,951
2015	354,548	1,984,282	1,892,457	198,855	9,221	1,042,291	5,481,654
2016	329,237	1,484,214	1,891,672	197,541	9,170	1,046,620	4,958,454
2017	307,705	1,515,483	1,946,903	294,866	9,292	1,046,075	5,120,324
2018	284,378	2,343,364	2,170,916	293,785	8,932	1,034,874	6,136,249
2019	278,177	3,224,593	2,260,372	249,332	9,511	1,088,678	7,110,663
2020	380,957	3,690,718	2,248,852	208,459	9,345	1,032,811	7,571,142
2021	378,085	3,273,705	2,324,613	207,350	8,747	1,036,288	7,228,788
2022	344,281	2,504,691	2,750,865	204,753	11,440	1,000,859	6,816,889
2023	343,448	2,094,662	2,723,285	200,712	10,981	999,710	6,372,798

Source: MOTC's Annual Transportation Report, compiled by this report

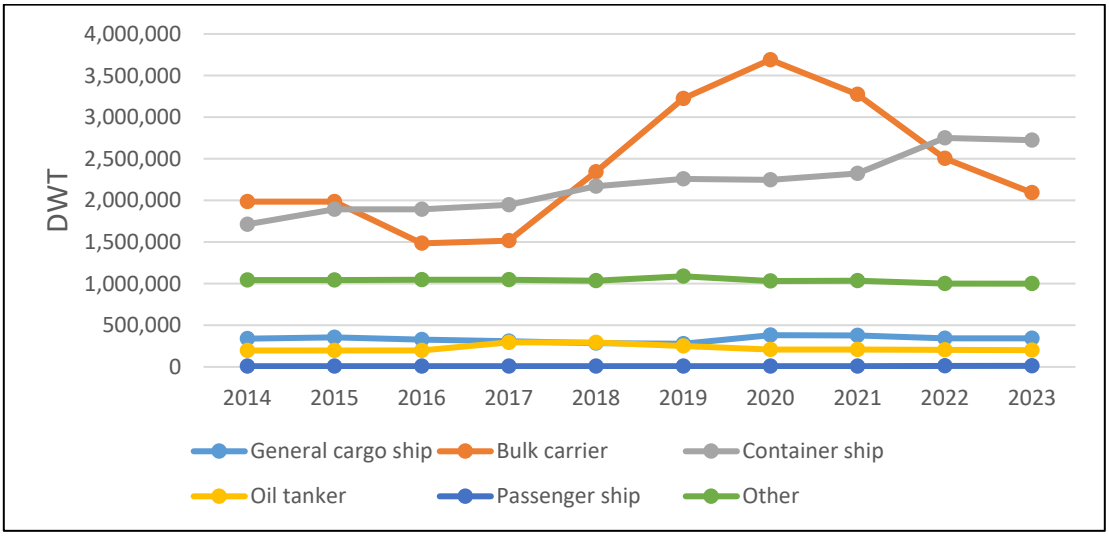


Figure 4 Registered DWT of Taiwan-registered vessels from 2014 to 2023 - By vessel type

In 2023, the majority of Taiwan-registered vessels were those over 20 years old, totaling 128. Next came vessels less than five years old, 62 in total, as shown in Table 4.

The distribution data of the number of Taiwan-registered vessels of various ages with over 100 GT from 2014 to 2023 is shown in Figure 5: Registered vessels over 20 years old have long been the majority, but their number has declined slightly since 2022. The number of registered vessels under five years old showed a rising trend between 2017 and 2021; however, after 2022, the number of Taiwan-registered vessels began to decline year by year.

Table 4 Number of Taiwan-registered vessels of all ages from 2014 to 2023

Year	Less than 5	5–9	10–14	15–19	20 and more	Total
2014	30	24	37	66	147	304
2015	36	23	29	70	155	313
2016	30	22	33	56	137	278
2017	29	18	43	53	140	283
2018	39	22	38	40	128	267
2019	46	38	30	44	127	285
2020	61	48	26	30	135	300
2021	75	44	28	32	138	317
2022	69	45	30	39	134	317
2023	62	47	42	36	128	315

Source: MOTC's Annual Transportation Report, compiled by this report

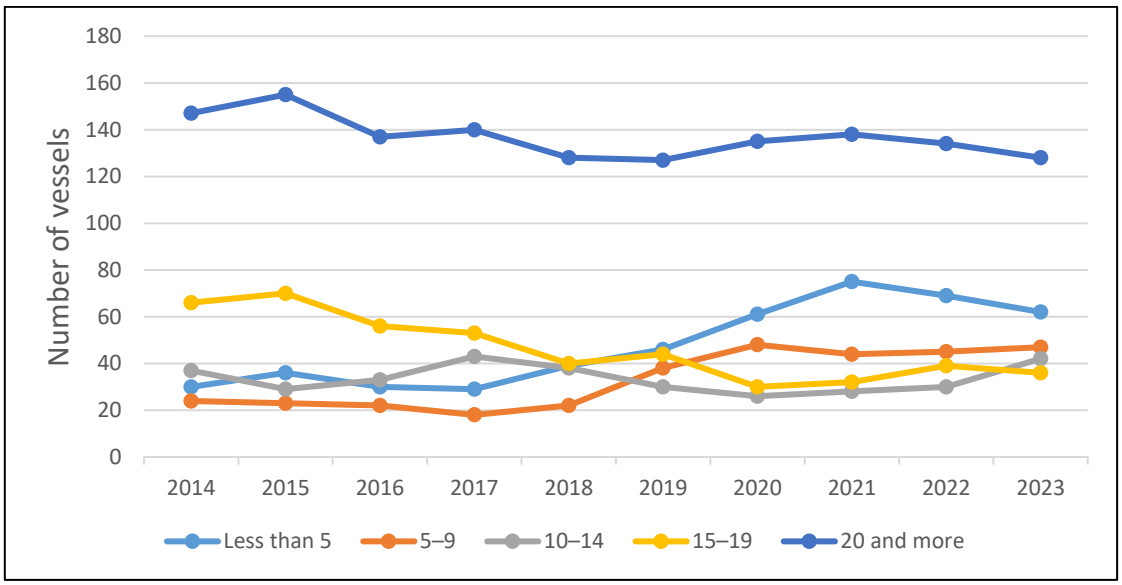


Figure 5 Number of Taiwan-registered vessels from 2014 to 2023 - By vessel age

In 2023, among all age groups, vessels aged 10–14 years accounted for the most DWT, totaling 2,085,676 tons. Next came vessels under five years old, totaling 2,039,679 tons; in addition, the registered DWT of vessels aged 15–19 years decreased to 300,491 tons, a drop of 59%, the most pronounced among vessel group ages this year. See Table 5 for details.

The trend of changes in DWT of Taiwan-registered vessels of different ages from 2014 to 2023 is shown in Figure 6: The DWT of vessels aged 10–14 years rose year by year between 2020 and 2023. The DWT of vessels aged less than five years and 15–19 years began to decline after 2022. The DWT of vessels aged 5–9 years and over 20 years has been declining year by year since 2020.

Table 5 DWT of Taiwan-registered vessels of all ages from 2014 to 2023

Year	Less than 5	5–9	10–14	15–19	20 and more	Total
2014	1,994,068	868,583	705,538	861,856	854,906	5,284,951
2015	2,123,121	698,902	546,250	1,286,817	826,564	5,481,654
2016	1,678,054	1,028,301	802,168	589,025	860,906	4,958,454
2017	1,069,007	1,282,226	990,257	938,176	840,658	5,120,324
2018	1,401,569	2,004,072	988,142	772,470	969,996	6,136,249
2019	1,795,764	2,675,277	965,097	738,164	936,361	7,110,663
2020	2,353,386	3,094,820	881,440	219,109	1,022,387	7,571,142
2021	2,087,679	2,642,273	1,029,012	457,694	1,012,130	7,228,788
2022	2,296,127	1,591,138	1,309,311	724,524	895,789	6,816,889
2023	2,039,679	1,100,413	2,085,676	300,491	846,539	6,372,798

Source: MOTC's Annual Transportation Report, compiled by this report

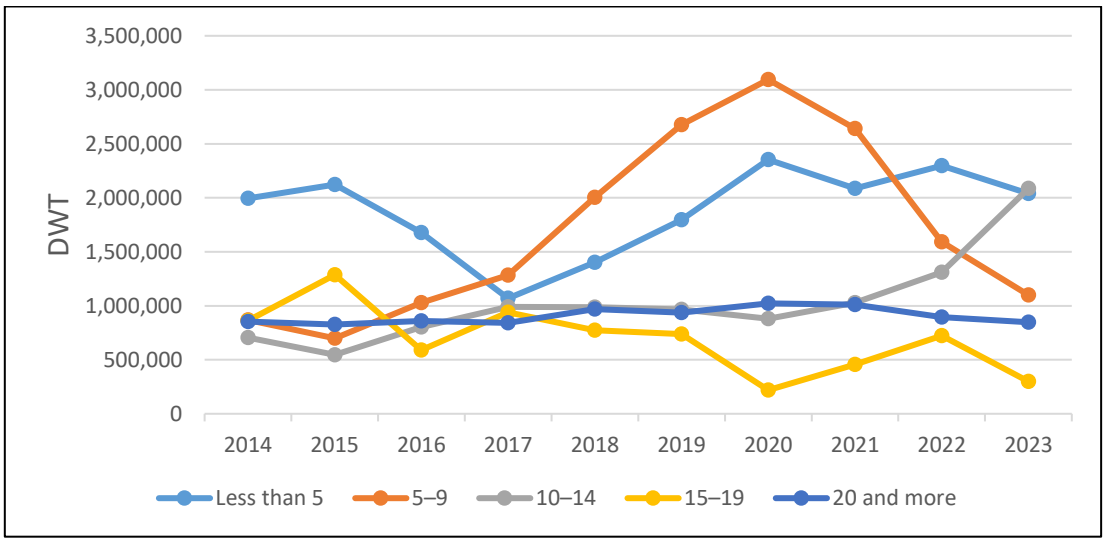


Figure 6 Registered DWT of Taiwan-registered vessels from 2014 to 2023 - By

vessel age

Among all vessel types in 2023, general cargo ships and other special-purpose ships had the highest average age, at 19 years. Next came oil tankers and passenger ships at 16 years, as shown in Table 6.

The trend of changes in the average age of Taiwan-registered vessels from 2014 to 2023 is shown in Figure 7: The average age of container ships and other special-purpose ships has been on the rise since 2021. In addition, the average age of oil tankers and passenger ships in 2023 showed a slight drop compared to 2022.

Table 6 Average age of Taiwan-registered vessels from 2014 to 2023

Year	General cargo ship	Bulk carrier	Container ship	Oil tanker	Passenger ship	Other
2014	29	17	13	20	17	21
2015	30	18	12	21	17	22
2016	25	14	13	21	16	22
2017	26	15	13	18	16	23
2018	27	11	13	18	16	21
2019	24	10	13	17	16	20
2020	21	9	14	17	17	20
2021	26	11	13	17	16	18
2022	19	10	14	17	17	18
2023	19	10	15	16	16	19

Source: MOTC's Annual Transportation Report, compiled by this report

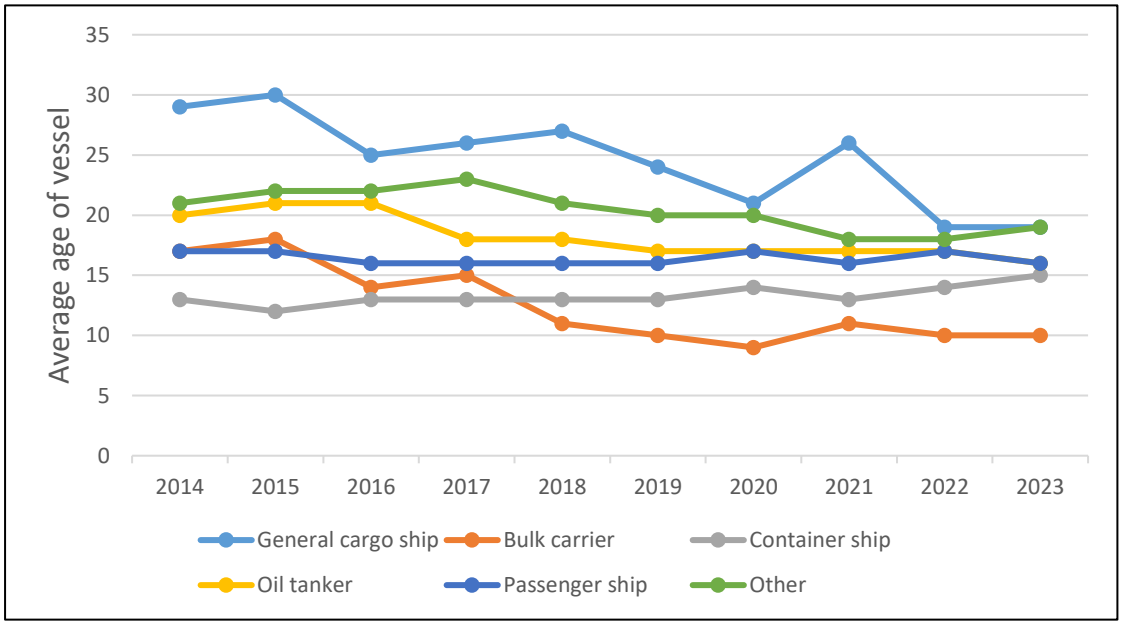


Figure 7 Average age of Taiwan-registered vessels from 2014 to 2023

1.2 Motor fishing boats

Table 7 and Figure 8 show the number of motor fishing boats in each GT class from 2013 to 2022. Overall, the total number of fishing boats has not changed significantly over the years. Fishing boats with less than 100 GT accounted for more than 90%, of which fishing boats with a 0–4.9 and 5–9.9 GT have shown a slight increase since 2018 and 2019, respectively. The number of fishing boats with over 100 GT including those of 100–199.9, 200–499.9, and more than 1,000 have all shown a rising trend year by year over the past five years.

Table 7 Number of motor fishing boats in each GT class from 2014 to 2023

GT class	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
0–4.9	6,478	6,555	6,605	6,672	6,635	6,659	6,729	6,752	6,783	6,807
5–9.9	804	795	791	786	762	754	766	769	770	777
10–19.9	1,430	1,452	1,441	1,441	1,406	1,403	1,404	1,401	1,396	1,390
20–49.9	1,535	1,533	1,565	1,572	1,565	1,533	1,546	1,534	1,487	1,453
50–99.9	1,226	1,210	1,200	1,183	1,128	1,098	1,077	1,033	1,010	959
100–199.9	151	154	156	158	156	154	161	191	226	286
200–499.9	233	244	253	251	235	219	219	226	232	246
500–999.9	270	267	257	235	223	213	208	201	182	174
Over 1,000	47	50	50	55	63	68	71	75	92	96
Total	12,174	12,260	12,318	12,353	12,173	12,101	12,181	12,182	12,178	12,188

Source: Taiwan Fisheries Yearbook, compiled by this report

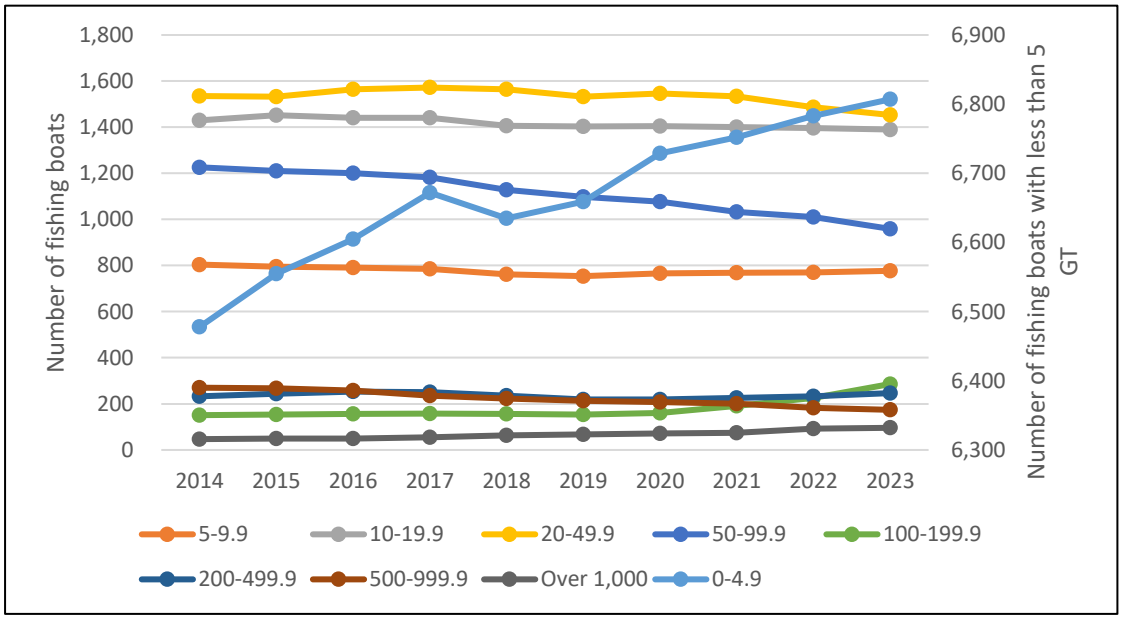


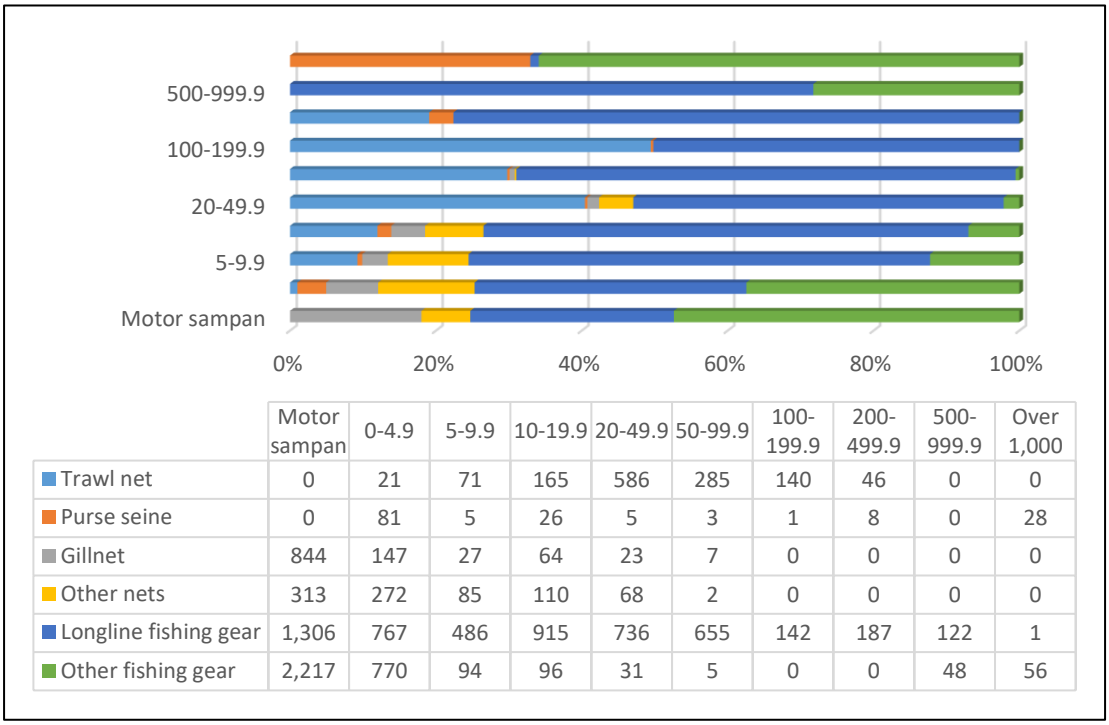
Figure 8 Distribution of motor fishing boats in each GT class from 2014 to 2023

Table 8 and Figure 9 show the number of motor fishing boats of each GT class in 2023 based on the Taiwan Fisheries Yearbook of the Fisheries Agency of MOA. Among them, fishing boats with less than 100 GT accounted for the majority, especially longline fishing boats, followed by those with other fishing gear, trawl nets, gillnets, other nets, and purse seines. In addition, motor sampans numbered the most, totaling 4,680, which includes those with other fishing gear, longline fishing gear, gillnets, and other nets.

Table 8 Number of motor fishing boats in each GT class in 2023 - By fishing gear type

GT	Trawl net	Purse seine	Gillnet	Other nets	Longline fishing gear	Other fishing gear	Total
Motor sampan	0	0	844	313	1,306	2,217	4,680
0–4.9	21	81	147	272	767	770	2,058
5–9.9	71	5	27	85	486	94	768
10–19.9	165	26	64	110	915	96	1,376
20–49.9	586	5	23	68	736	31	1,449
50–99.9	285	3	7	2	655	5	957
100–199.9	140	1	0	0	142	0	283
200–499.9	46	8	0	0	187	0	241
500–999.9	0	0	0	0	122	48	170
Over 1,000	0	28	0	0	1	56	85
Total	1,314	157	1,112	850	5,317	3,317	12,067

Source: Taiwan Fisheries Yearbook, compiled by this report



	Motor sampan	0-4.9	5-9.9	10-19.9	20-49.9	50-99.9	100-199.9	200-499.9	500-999.9	Over 1,000
Trawl net	0	21	71	165	586	285	140	46	0	0
Purse seine	0	81	5	26	5	3	1	8	0	28
Gillnet	844	147	27	64	23	7	0	0	0	0
Other nets	313	272	85	110	68	2	0	0	0	0
Longline fishing gear	1,306	767	486	915	736	655	142	187	122	1
Other fishing gear	2,217	770	94	96	31	5	0	0	48	56

Figure 9 Number of motor fishing boats in each GT class in 2023 - By fishing gear type

II. Statistical Analysis of Major Marine Occurrence Data

According to Article 6 of the Transportation Occurrences Investigation Act, TTSB shall be responsible for the following transportation occurrence investigations: Major transportation occurrences within Taiwan's territory; major transportation occurrences that occur on international waters, are not within the territory of any country, or occur in an uncertain place involving Taiwan-registered vessels or vessels operated by Taiwanese nationals; and major transportation occurrences caused by Taiwan-registered vessels, vessels operated by Taiwanese nationals, or designed or manufactured by Taiwan, which occur outside Taiwan's territory, and the investigation authority at the place of the occurrence does not investigate or entrusts TTSB to conduct the investigation.

The following is a detailed description of the scope of major marine occurrences, the classification of major marine occurrences, and the statistics of investigated cases.

2.1 Scope of major marine occurrences

Major marine occurrence: Refers to marine accidents and major marine incidents.

(I) Marine accident: An occurrence involving an unintentional act during the operation of a civilian vessel or a public vessel, where any of the following circumstances occurs:

1. Fatalities.
2. Total destruction of the vessel.
3. Other situations that may significantly affect the environment, and are found necessary to be investigated by TTSB.

(II) Major marine incident: Refers to the following situations that occur during the operation of a civilian vessel or a public vessel, which may cause a marine accident and the TTSB has determined that an investigation is necessary:

1. Injury to 10 or more persons.
2. Missing crew members.
3. Vessel abandoned or lost.
4. Crew members directly related to the safe operation of the vessel are unable to perform their duties, thus posing a threat to the safety of personnel, property, or the environment.

5. Failure of vessel equipment that poses a threat to the safety of personnel, property, or the environment.
6. Urgent measures must be taken to avoid a major marine occurrence.
7. The vessel founders, capsizes, floods, runs aground, collides, catches fire, or explodes.
8. The cargo of the vessel falls into the sea, moves, or liquefies, affecting the seaworthiness.
9. Accidental release of hazardous or radioactive material on the vessel that meets the notification standards of the International Maritime Dangerous Goods Code.
10. The marine occurrence causes the leakage of residual oil on the vessel to reach more than 100 but less than 700 metric tons.
11. The vessel or waterway infrastructure is substantially damaged, or there are sufficient reasons to believe that the vessel or waterway infrastructure has suffered substantial damage.

In 2023, considering that the original definition of vessels involved in major marine occurrences did not limit GT, resulting in the number of fishing boat occurrences far exceeding expectations, TTSB revised the Regulations Governing the Handling of Investigation Procedures for Major Marine Occurrence in June 2023 to exclude ships with a gross tonnage of less than 300 GT and no passengers from the definition.

2.2 Classification of major marine occurrences

To effectively deploy human and investigation resources, TTSB divides major marine occurrence investigation operations into three levels, as follows:

Level 1

Refers to an occurrence on a civilian or public vessel that is directly related to the operation of the vessel and is not an intentional act, resulting in any of the following circumstances:

(1) Fatalities.
(2) Total destruction of the vessel.
(3) A leak or imminent leak of remaining oil of more than 700 tons on a vessel ("very serious marine casualty" as defined in CI Code).

Level 2

Refers to an occurrence on a civilian or public vessel that is directly related to the operation of the vessel and is not an intentional act, resulting in any of the following circumstances:

Other situations that may significantly affect the lives or properties of civilians or the environment, and are found necessary to be investigated by the TTSB ("marine casualty" other than "very serious marine casualty" as defined in CI Code).

Level 3

Refers to an occurrence that takes place during the operation of a vessel, which meets the scope of "major marine occurrence," but due to insufficient, lost, non-existent, or unobtainable factual information such as physical evidence and witnesses, it is difficult to collect evidential data and determine the cause of the occurrence.

2.3 Statistics of major marine occurrence investigations

From its establishment on August 1, 2019, to December 31, 2023, the TTSB received a total of 922 reports of marine occurrences, of which 212 were identified as major marine occurrences and filed for investigation, with a filing rate of 22.99%. The number of cases filed for investigation is shown in Table 9 and Figure 10. Basic information on major marine occurrences in 2023 is detailed in Appendix 2.

Table 9 Number of major marine occurrence cases filed from 2019 to 2023

Year	2019	2020	2021	2022	2023	Total
Occurrence reporting	13	256	229	233	191	922
Filing for investigation	34	56	60	39	23	212
Case filing ratio	261.54%	21.88%	26.20%	16.74%	12.04%	22.99%

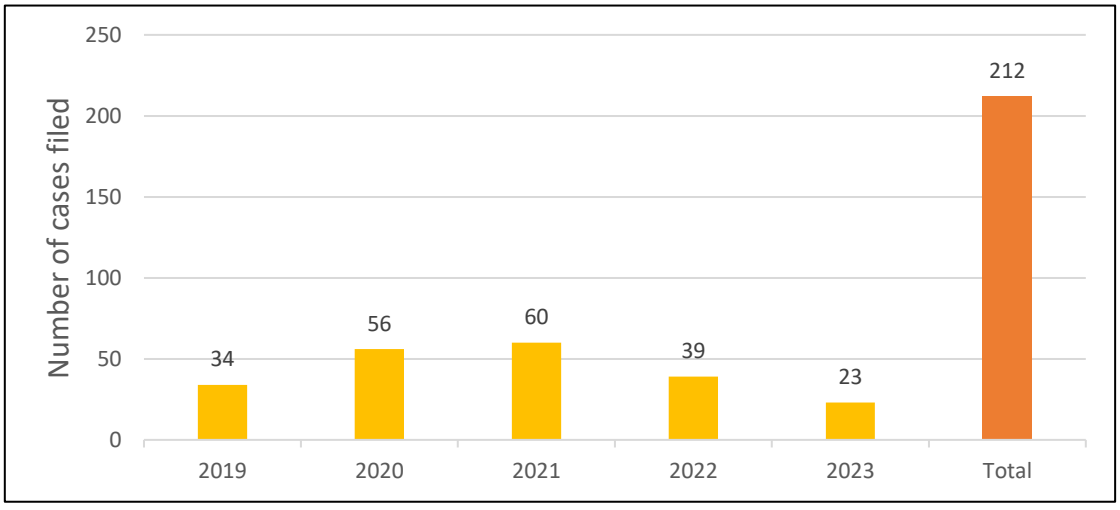


Figure 10 Number of major marine occurrence cases filed from 2019 to 2023

From August 1, 2019, to December 31, 2023, a total of 212 major marine occurrence investigations were conducted, of which Level 3 cases accounted for the highest proportion of 71.7% (152 cases), followed by Level 2 cases accounting for 23.6% (50 cases), as shown in Table 10. The number of Level 3 cases showed a downward trend between 2022 and 2023, as shown in Figure 11.

Table 10 Number of major marine occurrences by category from 2019 to 2023

Case category	2019	2020	2021	2022	2023	Total	Percentage
Level 1	3	2	0	3	2	10	4.7%
Level 2	10	14	11	7	8	50	23.6%
Level 3	21	40	49	29	13	152	71.7%
Total	34	56	60	39	23	212	100%

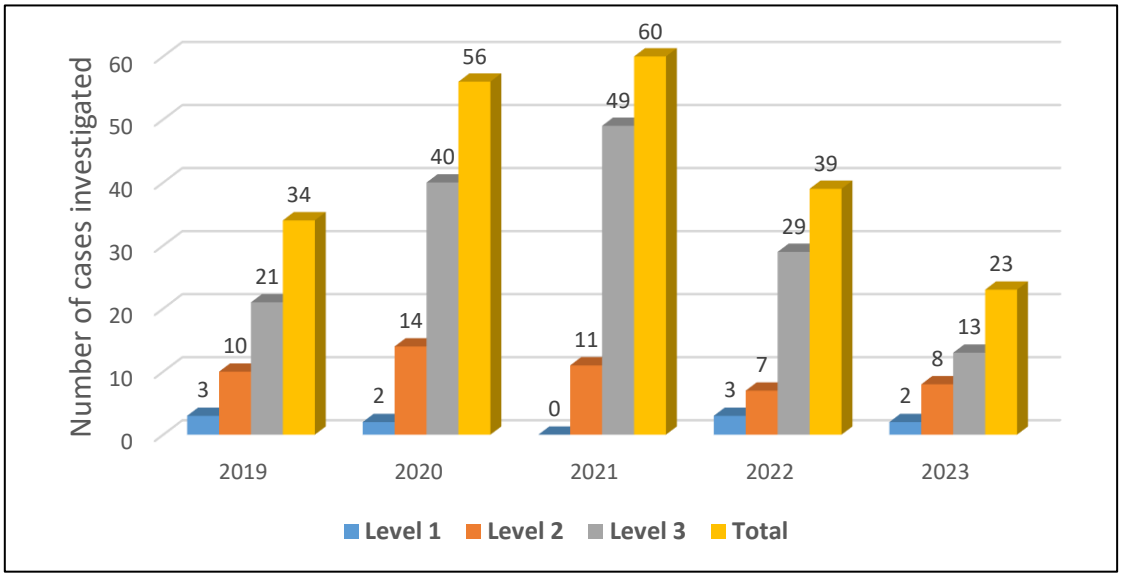


Figure 11 Number of major marine occurrences by category from 2019 to 2023

From August 1, 2019, to December 31, 2023, among the 212 major marine occurrences filed for investigation, collision cases accounted for the highest proportion of 20.3% (43 cases), followed by fire/explosion cases accounting for 19.8% (42 cases). The number of grounding, disappearance, and collision cases decreased year by year since 2021. The number of work safety and machine failure cases increased slightly, as shown in Table 11 and Figure 12.

Table 11 Types of occurrences filed for investigation from 2019 to 2023 [2]

Year \ Type	Grounding	Missing	Fire/ explosion	Collision	Work safety	Machine failure	Flooding and foundering	Capsizing	Contact	Other	Total
2019	3	3	10	7	2	1	6	1	0	1	34
2020	4	12	13	13	2	0	0	8	0	4	56
2021	8	10	13	12	4	0	5	7	0	1	60
2022	3	8	3	8	5	1	1	7	0	3	39
2023	1	0	3	3	7	2	2	3	2	0	23
Total	19	33	42	43	20	4	14	26	2	9	212
Percentage	9%	15.6%	19.8%	20.3%	9.4%	1.9%	6.6%	12.3%	0.9%	4.2%	100%

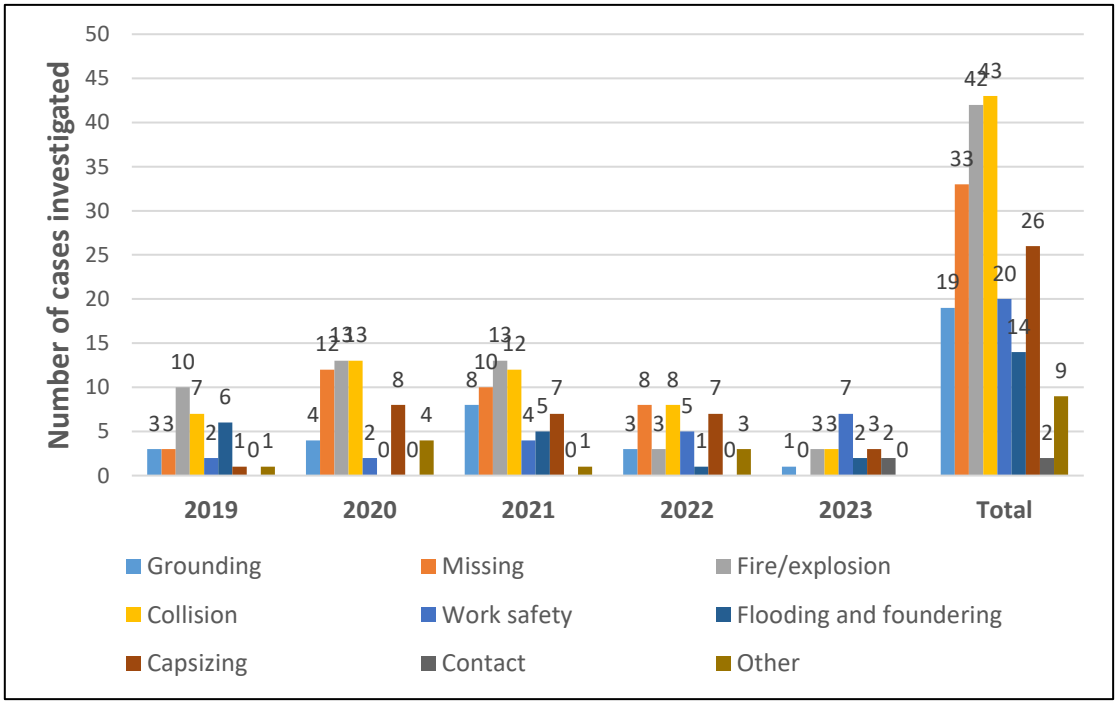


Figure 12 Number of cases filed by occurrence type from 2019 to 2023

From August 1, 2019, to December 31, 2023, a total of 212 major marine occurrence investigations were executed, of which fishing boats accounted for the highest proportion at 74.5% (158 cases), followed by general cargo ships accounting for 7.1% (15 cases). The number of fishing boat occurrences declined year by year since 2022. In addition, the number of occurrences involving freighters and passenger and cargo ships in 2023 increased slightly compared to 2022, as shown in Table 12 and Figure 13.

[2] The statistical period for occurrences in 2019 is from August 1, 2019, to December 31, 2019.

Table 12 Types of vessels involved in occurrences from 2019 to 2023

Type / Year	Freighter	Workboat	Bulk carrier	General cargo ship	Passenger and cargo ship	Passenger ship	Fishing boat	Research vessel	Other	Total
2019	0	1	1	8	1	1	22	0	0	34
2020	2	2	4	2	0	1	42	0	3	56
2021	5	0	0	4	0	0	49	0	2	60
2022	1	1	3	1	0	0	30	1	2	39
2023	3	1	0	0	2	0	15	0	2	23
Total	11	5	8	15	3	2	158	1	9	212
Percentage	5.2%	2.4%	3.8%	7.1%	1.4%	0.9%	74.5%	0.5%	4.2%	100%

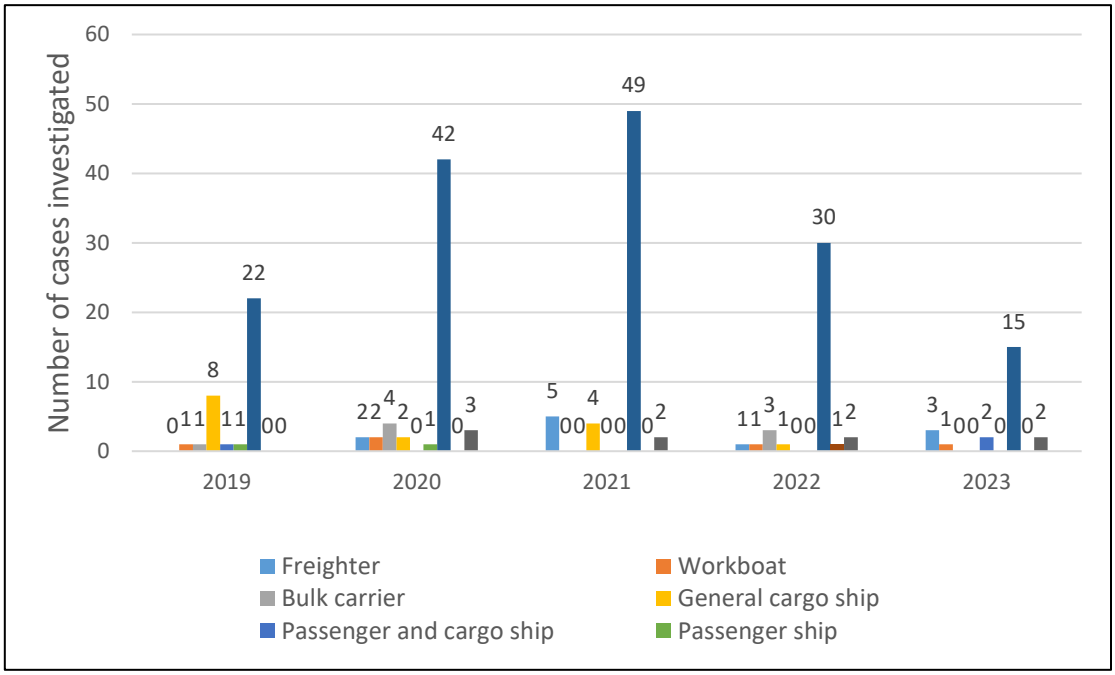


Figure 13 Number of cases filed by vessel type from 2019 to 2023

Of the 212 major marine occurrences filed for investigation from August 1, 2019, to December 31, 2023, 178 were non-fatal occurrences and 34 were fatal occurrences. The highest number of fatal occurrences was 10 in 2022, accounting for 26% of the total number of cases in that year. The number of fatal occurrence cases dropped to four in 2023, accounting for 17% of the total number of cases that year, as shown in Table 13 and Figure 14.

Table 13 Number of fatal occurrences from 2019 to 2023

Year / Occurrence category	2019	2020	2021	2022	2023	Total
Fatal occurrence	5	8	7	10	4	34
Non-fatal occurrence	29	48	53	29	19	178
Total	34	56	60	39	23	212
Fatal occurrence percentage	15%	14%	12%	26%	17%	16%

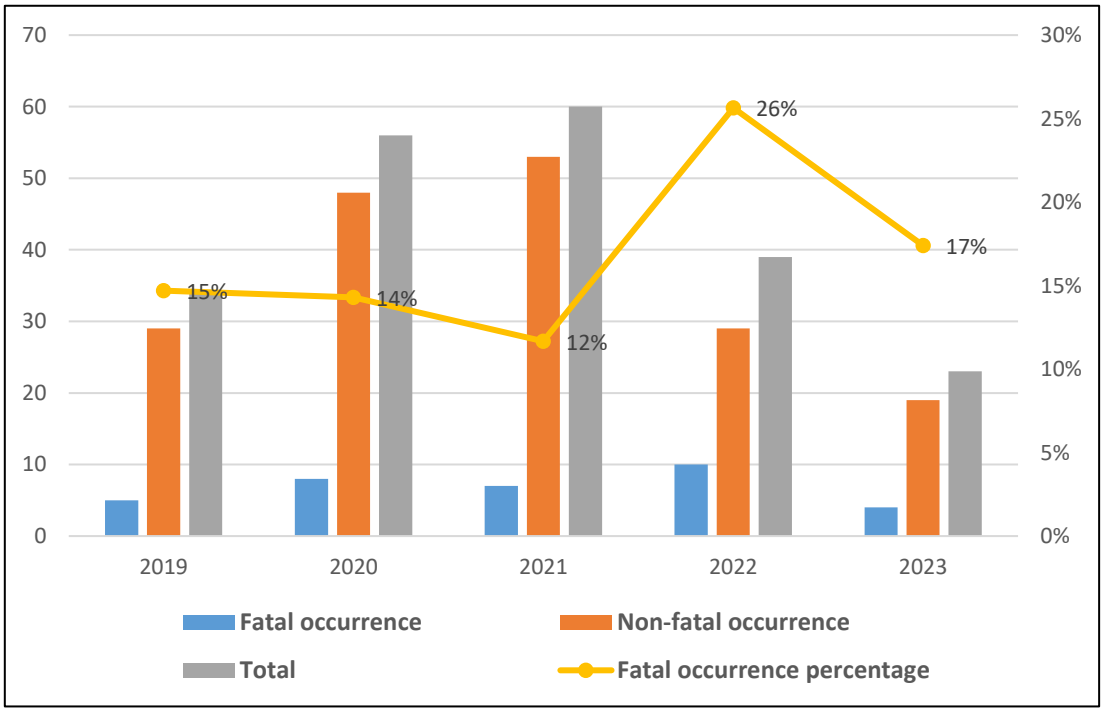


Figure 14 Percentage of fatal occurrences from 2019 to 2023

Among the 212 major marine occurrences filed for investigation, 34 were fatal, accounting for 16% of the total number of cases. Among the fatal occurrences, other types of cases accounted for the highest proportion at 80% (4 out of 5 cases occurred[3]), next came capsizing occurrences accounting for 30% (8 out of 27 cases occurred), followed by work safety occurrences accounting for 27% (14 out of 52 cases occurred), as shown in Table 14 and Figure 15.

Table 14 Types of fatal occurrences from 2019 to 2023

Occurrence category / Occurrence type	Grounding	Missing	Fire/ explosion	Collision	Work safety	Machine failure	Flooding and foundering	Capsizing	Contact	Other	Total
Fatal occurrence	1	0	2	3	14	0	2	8	0	4	34
Non-fatal occurrence	19	3	40	27	38	7	11	19	13	1	178
Total	20	3	42	30	52	7	13	27	13	5	212
Fatal occurrence percentage	5%	0%	5%	10%	27%	0%	15%	30%	0%	80%	16%

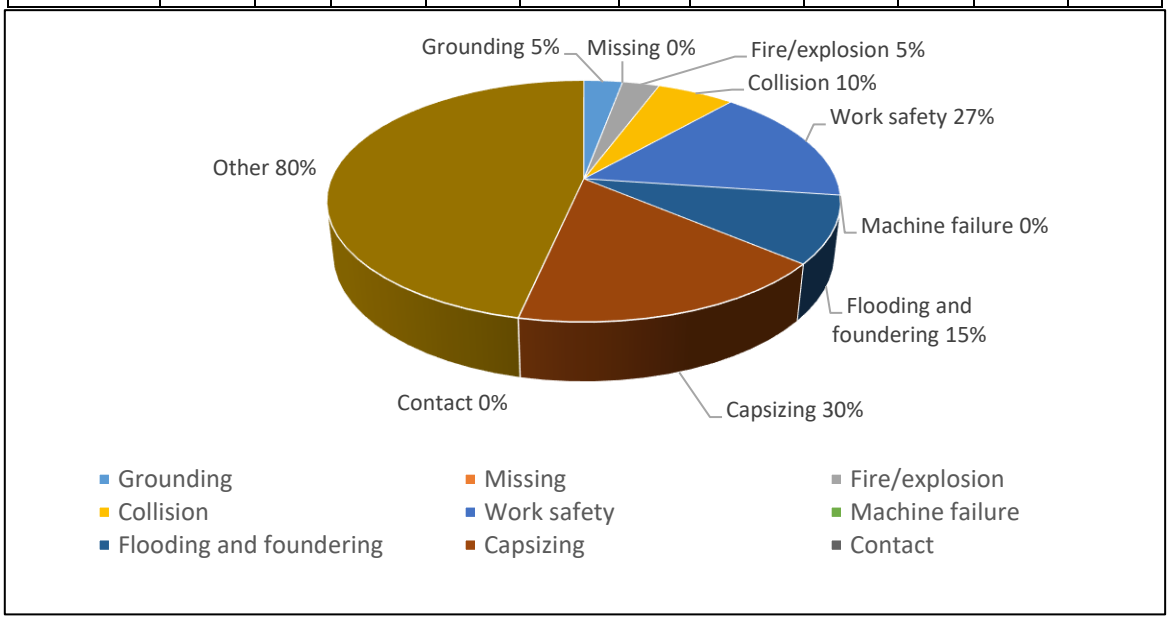


Figure 15 Percentage of fatal occurrence types from 2019 to 2023

[3] There were 4 other types of fatal occurrences from 2019 to 2023, namely the occurrence 1100103 in which crew members of the fishing boat Shiu Hung Sheng No. 6 fell into the sea and died off the coast of Qimei, Penghu; the occurrence 1111115 in which crew members of the fishing raft Nan Shi Fu No. 1725 fell into the sea and went missing off the coast of Jiangjun Fishing Harbor; the occurrence 1110729 in which crew members of the Shiao Hei sampan fell into the sea and went missing in the waters of Fuguodun; and the occurrence 1110221 in which the pilot of the container ship Blue Ocean fell into the sea and died at the Port of Taichung.

Of the 212 major marine occurrences filed for investigation, 34 were fatal, accounting for 16%. The highest number of fatal occurrences occurred on fishing boats at 29, accounting for 18% of the total number of fishing boat investigations. The second highest number of fatal occurrences occurred on freighters and general cargo ships, with 2 each, accounting for 18% and 13% of the total number of investigations, respectively. The type of vessel with the highest proportion of fatal occurrences was workboats at 20%, as shown in Table 15 and Figure 16.

Table 15 Fatal occurrences by vessel type from 2019 to 2023

Vessel type / Occurrence type	Freighter	Workboat	Bulk carrier	General cargo ship	Passenger and cargo ship	Passenger ship	Fishing boat	Research vessel	Other	Total
Fatal occurrence	2	1	0	2	0	0	29	0	0	34
Non-fatal occurrence	9	4	8	13	3	2	129	1	9	178
Total	11	5	8	15	3	2	158	1	9	212
Fatal occurrence percentage	18%	20%	0%	13%	0%	0%	18%	0%	0%	16%

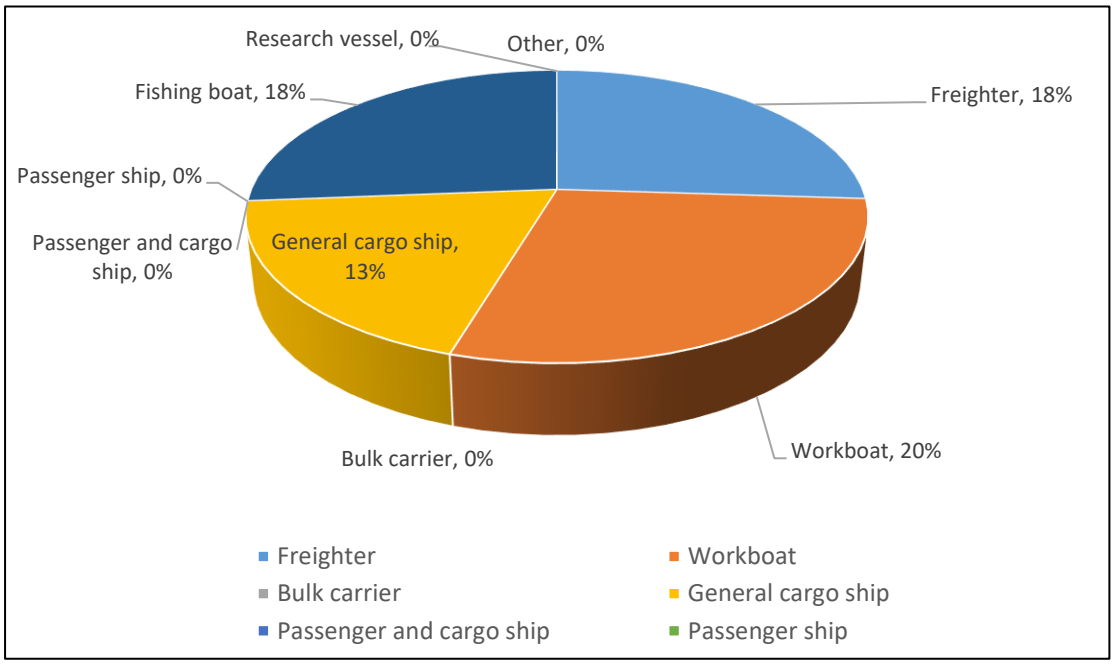


Figure 16 Percentage of fatal occurrences by vessel type from 2019 to 2023

III. Transportation Safety Recommendation Follow-Up and Control Statistical Analysis

3.1 Historical statistics on transportation safety recommendations by type

The purpose of systematically investigating transportation occurrences is to determine their causes and provide appropriate safety recommendations to relevant institutions to prevent similar occurrences. Between August 1, 2019, and December 31, 2024, the TTSB investigated 185 major marine occurrences and provided 235 transportation safety recommendations.

If categorized by the recipient, the highest proportion of safety recommendations was made to government-affiliated agencies/institutions (163 items; approximately 69.4%), followed by maritime transport businesses (53 items; approximately 22.6%). International institutions received the fewest safety recommendations (19 items; approximately 8.1%).

Regarding vessel types, the highest proportion of safety recommendations was given with regards to freighter incidents (151 items; approximately 64.3%), followed by fishing boats (54 items; approximately 23%), workboats and passenger ships (23 items, 9.8% and 4 items, 1.7%, respectively), as shown in Table 16 and Figure 17.

Table 16 Transportation safety recommendations by type from 2019 to 2023

Recipient / Operational type	International institutions	Maritime transport businesses	Government-affiliated agencies/institutions	Total	Percentage
Fishing boat	6	3	45	54	23.0%
Freighter	13	39	99	151	64.3%
Passenger ship	0	2	2	4	1.7%
Workboat	0	9	14	23	9.8%
Other	0	0	3	3	1.3%
Total	19	53	163	235	100%
Percentage	8.1%	22.6%	69.4%	100%	

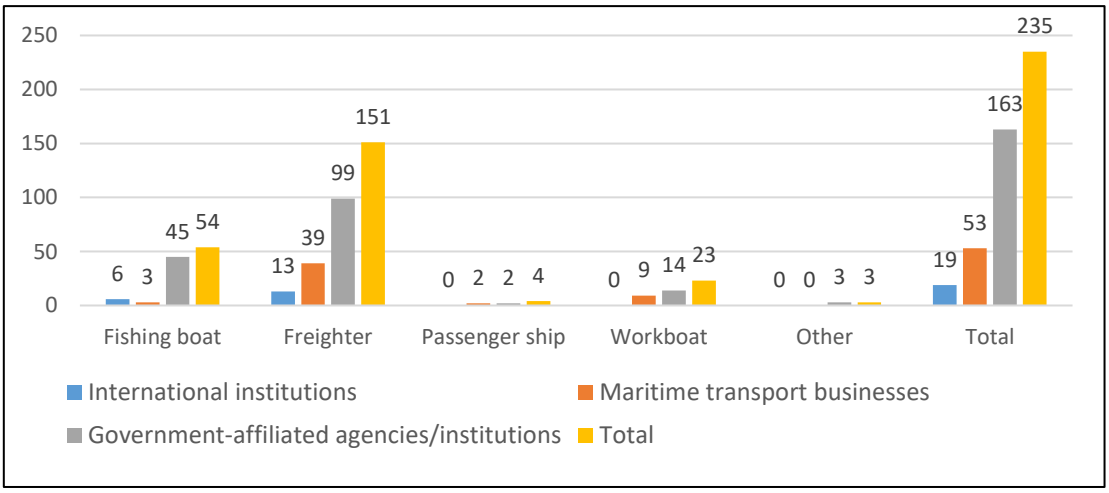


Figure 17 Transportation safety recommendations by type from 2019 to 2023

3.2 Statistics on the handling status of sub-implementation plans for transportation safety recommendations

According to Article 27 of the Transportation Occurrences Investigation Act, "The government authorities concerned shall submit a management report to the Executive Yuan within 90 days after the receipt of the transportation occurrence investigation report and send a copy to the TTSB. The management report shall contain detailed and concrete implementation plans responding to the transportation safety recommendations that are considered practicable. In response to the recommendations considered impracticable, detailed reasons shall also be stated. The execution of the detailed implementation plans, mentioned in Paragraph 1, shall be supervised by the Executive Yuan and tracked by the TTSB."

Upon being notified by government-affiliated agencies/institutions and receiving copies of their sub-implementation plans, the TTSB shall categorize these plans according to their handling statuses. The TTSB shall suggest that the Executive Yuan accept implementation plans that are concrete, actionable, and completed, and then close the case in question. For implementation plans that fail to achieve their improvement targets, the affiliated agencies/institutions will be asked to resubmit a new plan or supplemental information. If the implementation plan has a long schedule or must be completed in stages, the TTSB shall suggest the plan to be supervised by the Executive Yuan and that its handling status be tracked every six months until improvements are completed so that the case may then be closed.

From August 1, 2019, to December 31, 2023, the TTSB has made 163 transportation safety recommendations to government-affiliated agencies/institutions regarding major marine occurrences in previous years. Among them, 61 sub-implementation plans are under supervision, 74 cases have been closed, and 28 are awaiting response or processing by government-affiliated agencies/institutions, as shown in Table 17 and Figure 18.

Table 17 Transportation safety recommendation statistics from 2019 to 2023

Occurrence type	Government-affiliated agencies/institutions				Non-national government agencies supervised by their relevant competent authorities	Total
	Closed	Under supervision	Awaiting response	Subtotal		
Marine occurrence	74	61	28	163 (69%)	72 (31%)	235

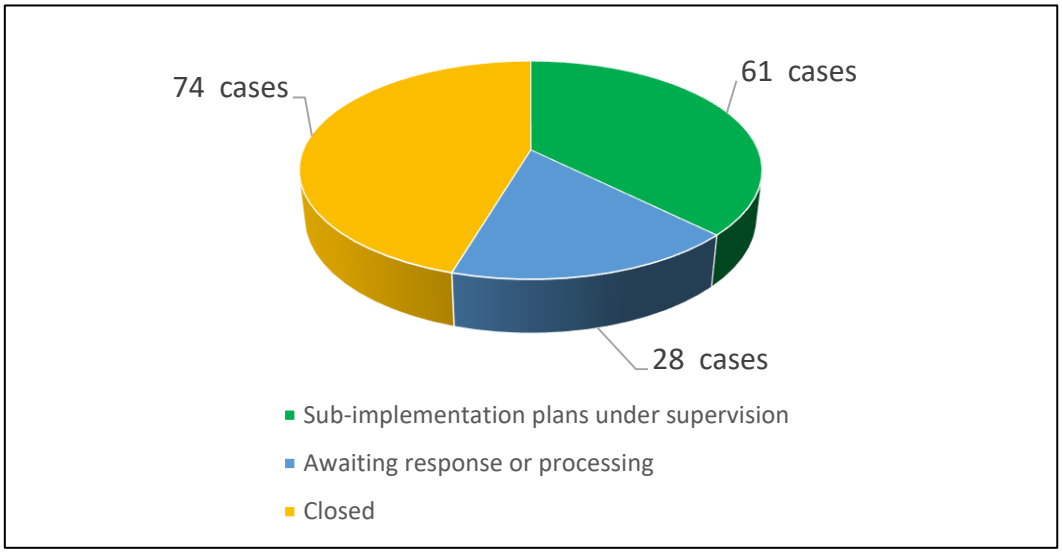


Figure 18 Statistics on safety recommendations made to government-affiliated agencies/institutions from 2019 to 2023

3.3 Analysis of safety issues of major marine occurrences

As of the end of 2023, a total of 235 safety recommendations were issued with regards to major marine occurrence investigations, of which 89 have not yet been closed, including: of the 61 projects under supervision by the Executive Yuan, 28 are awaiting the preparation of processing reports by government-affiliated agencies/institutions in response to the safety recommendations put forward by the TTSB. Based on the 89 pending safety recommendations, this study summarizes the following marine safety issues, as shown in Figure 19.

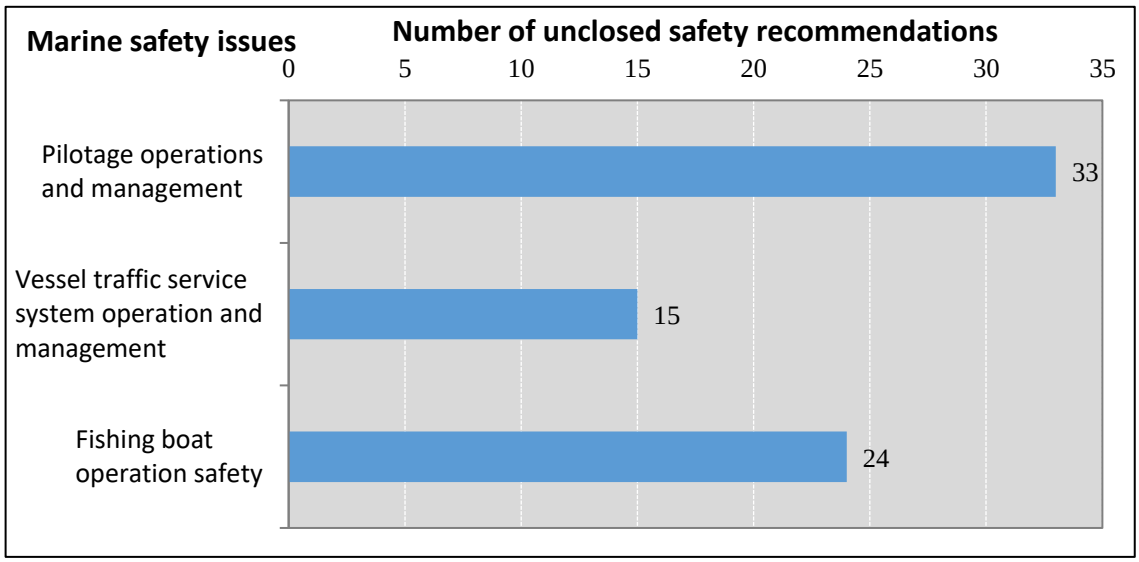


Figure 19 Statistical graph of the number of unclosed safety recommendations regarding marine safety issues

Pilotage operations and management

A pilot is a professional who guides vessels in and out of ports, coastal areas, inland waterways, and other waters. Pursuant to Article 6 and Article 16 of Taiwan's Pilotage Law, all non-national vessels with over 500 GT and all Taiwan-registered vessels with over 1,000 GT, except those excluded in Article 6, shall employ a pilot when sailing in compulsory pilotage districts or entering or leaving any ports where compulsory pilotage is required. In addition, according to Article 4 of the Regulations for Administrating Pilots, each port shall set up a pilot office to handle the procedures for vessels to request pilotage, and shall draw working rules, which shall be signed and followed by pilots and approved by the local shipping administration authority before implementation.

As vessel piloting is a highly specialized profession, to become a pilot in Taiwan one must pass a professional and technical examination and complete three months of internship to obtain a practicing certificate. The practice process must also comply with the Pilotage Law, Regulations for Administrating Pilots, Commercial Port Law, International Regulations for Preventing Collisions at Sea, and local port and shipping regulations. During the piloting process, the piloting vessel and personnel related to port operation also need to include: communication and coordination between port control officers in charge of vessel traffic service systems, pilotage vessel workers, tugboat workers, and mooring and unmooring workers. In practice, the work of a pilot involves considerable risks, especially when climbing a pilot ladder or gangway to board a large vessel in bad weather.

As of the end of 2023, 14 investigation reports on major marine occurrences were published with safety recommendations related to pilotage operations and management, accounting for 30.43% of non-fishing boat occurrences[4]. After review, there were 33 related safety recommendations that had not yet been concluded, with the main recipients being the Maritime and Port Bureau of the MOTC at 24, followed by the MOTC at three, and Taiwan International Ports Corporation (TIPC) at three. Related topics included:

- Establishment and announcement of compulsory pilotage districts and pilot boarding/disembarking points;
- Number of pilots and exit mechanism;
- Physical examination system for pilots;

[4] This statistic does not include occurrences where investigation was suspended. Excluding the occurrences where investigation was suspended, the TTSB investigated 151 major marine occurrences involving fishing boats; and 46 occurrences involving non-fishing boats; 197 in total.

- Pilot shifts and fatigue management;
- On-the-job training for pilots;
- Specifications and safety equipment of piloting vessels;
- Use of pilot safety equipment and emergency response and rescue in case of falling overboard;
- Piloting communication and coordination as well as resource utilization.

Vessel traffic service system operation and management

The vessel traffic service (VTS) is designed to assist in navigation and guidance of vessels entering and leaving ports, control port traffic flow, assist in maritime search and emergency rescue, and provide environmental protection and other operational services. Since Taiwan's implementation of the "separation of government and business" policy in 2012, the VTS has been operated and managed by the TIPC. As one of the important functions of the VTS is to ensure the safe navigation of vessels entering and leaving ports, the operating organization shall comply with relevant safety management regulations, employ qualified control officers, and possess various hardware and software equipment and facilities required for the VTS, so as to ensure that vessels enter and leave ports in accordance with relevant laws and international standards.

According to statistics, as of the end of 2023, a total of 10 investigation reports on major marine occurrences have issued safety recommendations related to VTS operation and management, accounting for 21.74% of non-fishing boat occurrences. After review, there were 15 related safety recommendations that had not yet been concluded, with the main recipients being the TIPC at 11, the Maritime and Port Bureau of the MOTC at two, and the MOTC at two. Related topics included:

- VTS supervision and management mechanisms: VTS legal system, personnel certification, employment, and division of labor;
- VTS control officer training and competence: Strengthening of vessel dynamic monitoring, use of radar equipment and vessel automatic identification system, emergency response, language skills, as well as communication and coordination skills.

Fishing boat operation safety

According to statistics, by the end of 2023, the TTSB has filed a total of 151 major marine occurrences involving fishing boats, accounting for 76.65% of all 197 major marine occurrences[5]. This indicates that the safe operation of Taiwan-registered fishing boats is also a safety issue that demands attention. In addition, this study found that

[5] This statistic does not include occurrences where investigation was suspended.

among the 89 unclosed marine safety recommendations, 24 were related to fishing boat operation safety, with the main recipients being the Fisheries Agency[6] of the MOA at 12, the Maritime and Port Bureau of the MOTC at seven, and the Occupational Safety and Health Administration of the Ministry of Labor (MOL) at four. Related topics included:

- Strengthening safety measures to prevent falls into the sea from fishing boats;
- Emergency position indicator radio beacon (EPIRB[7]) installation, use, and inspection;
- Correct lookout, position monitoring, and weather data acquisition during maritime navigation.

[6] The agency was restructured into the MOA on August 1, 2023.

[7] An EPIRB is a radio transmitter designed to be manually activated or automatically triggered upon contact with water in case of emergencies during a vessel's voyage, such as crew abandonment, distress incidents, or ship foundering. It transmits distress signals via search-and-rescue satellites to facilitate signal transmission and location tracking, with the primary purpose of aiding search and rescue operations.

Appendix 1 Glossary

The terms used for marine occurrences in the international conventions, resolutions of Committee meetings, regulations, and guidelines of the International Maritime Organization (IMO) consist mainly of words such as "marine casualty," "marine incident," or "maritime casualty." For example, in the Code of International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (CI Code) (MSC.255[84]) passed in 2008, Item 2.9 of Chapter 2 defines a maritime casualty as an event leading to any of the following situations (IMO, 2008):

1. Death or serious injury of personnel caused by or related to the operation of a vessel;
2. Missing personnel on board caused by or related to the operation of a vessel;
3. Total loss, constructive total loss, or abandonment of the vessel;
4. Substantial damage to the vessel;
5. Grounding of the vessel, loss of navigational capability, or involvement in a collision occurrence;
6. Substantial damage to the vessel caused by or related to the operation of a vessel;
7. Substantial damage to the environment caused by or related to the operation of a vessel.

According to Appendix 5 of MSC-MEPC.3/Circ.4/Rev.1 of the IMO released in 2014, marine casualties are divided into collision, grounding, contact, fire/explosion, hull failure, equipment failure/loss of control, ship/equipment damage, capsize/listing, flooding/foundering, ship missing, and occupational accident based on the principle of initial event, as detailed below (IMO, 2014):

1. Collision: The vessel collides with another vessel or vessels during navigation, or the vessel collides with another vessel or vessels other than during navigation;
2. Grounding: The vessel is grounded, whether powered by a motor or not;
3. Contact: Collision with fixed objects, floating objects, and flying objects;

4. Fire/explosion: The initial event is caused by a fire or explosion on board the vessel;
5. Hull failure: Hull damage of the vessel not caused by any of the reasons listed in 1 to 4;
6. Equipment failure/loss of control of seaworthiness equipment: Loss of control of the vessel due to failure of important machines and equipment not caused by any of the reasons listed in 1 to 5;
7. Ship/equipment damage: Damage to the vessel or equipment not caused by any of the reasons listed in 1 to 6;
8. Capsize/listing: Capsizing or listing of the vessel not caused by any of the reasons listed in 1 to 7;
9. Flooding/foundering: Flooding or foundering of the vessel not caused by any of the reasons listed in 1 to 7;
10. Vessel missing: The vessel loses contact and its position cannot be confirmed;
11. Occupational accident: Objects on board moving, bursting, being damaged, cracking, falling, or collapsing; the spillage, overturning, leakage, flow, evaporation, or dispersion of materials on board; power-related issues on board; loss of control of machines, transport/loading equipment, manual machines, and animals on board; or injury or death of any person on board due to shock, fright, slip, trip, or fall.
12. Other: Such as crew suicide or unexplained failure of a crew member to return to the vessel.
13. Unknown: Unknown cause of marine casualty.

Chapter 2 of the CI Code and the IMO's 2014 MSC-MEPC.3/Circ.4/Rev.1 also classify marine casualties into very serious marine casualty, marine casualty, and marine incident according to their severity. The detailed descriptions are as follows:

1. Very serious marine casualty: Refers to an occurrence involving a vessel that results in loss of life, total loss of the vessel, or severe environmental damage.
2. Marine casualty: An event directly related to the operation of a vessel that results in any of the following consequences:
    (1) Serious injury;

(2) Missing personnel on board;

(3) Substantial damage to the vessel;

(4) Grounding of the vessel, loss of operational capability, or involvement in a collision;

(5) Damage to maritime infrastructure that causes substantial structural damage to the vessel, endangering the vessel itself, other vessels, or individuals; Potential severe environmental damage.

3. Marine incident: An event, other than a marine casualty, caused by or related to the operation of a vessel, where the event has endangered the vessel or any personnel, or could result in substantial structural damage to the vessel or environmental damage.

Appendix 2 Major marine occurrences filed for investigation by the TTSB in 2023

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
1	1.08	Cargo ship / Ocean Star No. 8 /964986	The vessel foundered after taking on water at about 16.65 nautical miles (NM) northwest of Mudou Island, Penghu County. Four people fell into the sea and were subsequently rescued by the Coast Guard Administration.	None	3
2	1.1	Fishing boat / Shuenn Man No. 23 /CT8-0161	An Indonesian crew member fell into the sea 139 NM southeast of the Port of Penang, Malaysia. The vessel searched the waters near the site of the fall for 72 hours but still found nothing.	1 missing	3
3	1.21	Fishing raft / Shu Yan No. 1 /CTR-PT3900	A captain of Taiwanese nationality fell into the sea after the raft capsized in Shanban Bay, Liuqiu Township, Pingtung County. He was rescued by a friendly ship and sent to the hospital but died afterwards.	1 dead	3

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
4	1.29	Fishing boat / Jin Sheng Fa No. 13 /CT3-4991	The boat foundered after catching fire 21 NM southeast of the Port of Su'ao, Yilan County. The captain and four crew members on board were rescued by a friendly ship and all remained safe.	None	3
5	2.18	Fishing boat / Jin Shun Li 168 /CT4-3175	The boat lost power due to a mechanical failure in the waters of Fuzhou, mainland China (25°18'N,119°45'E) and ran aground the next day, causing the vessel to take on water and founder. The three crew members on board were rescued by residents of Dongjia Island, mainland China. All three remained safe and returned to Taiwan on the 22nd.	None	3
6	2.18	Fishing boat / Sheng Feng No. 128 /CT3-5369	The vessel went missing about 414 NM northwest of Malakal Harbor, Palau. None of the six	6 people missing	3

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
			crew members on board (one Taiwanese captain and five Indonesian crew members) were found after 72 hours of searching.		
7	2.19	Fishing boat / Lian Sheng Fa /CT4-2896	The vessel lost contact while operating in the Indian Ocean after noon on February 19, 2023. On February 26, the National Coast Guard of Mauritius confirmed that the capsized fishing boat was the missing Lian Sheng Fa. No life raft or crew members were found in the area of the occurrence. To date, none of the 16 crew members on board have been found.	16 people missing	2
8	3.05	Fishing boat / Shin Charng Fa 88 /CT4-2677	The Taiwan-registered fishing boat Shin Charng Fa 88 was found capsized in the sea about 41 NM southeast of the Tiaoyutai Islands. On the morning of March	1 dead, 6 missing	3

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
			6, Japan sent divers to check inside the cabin of Shin Charng Fa 88 and found a body, which was later confirmed to be the captain of the ship. However, the other six Indonesian crew members have not yet been found.		
9	3.2	Container ship /HYUNDAI TOKYO/9305673	When berthing at the Port of Kaohsiung, the bow of the vessel hit Pier 77, causing damage to the Hyundai Tokyo's bulbous bow and the pier.	None	2
10	3.24	Fishing boat / Sheng Feng 266 /CT5-1881	An Indonesian crew member died of unknown causes while handling fish in a freezer 540 NM northwest of the Port of Rabaul, Papua New Guinea.	1 dead	2
11	4.02	Fishing boat / Hai Jin /CT2-4308	The vessel capsized 5 NM west of Kezailiao, Ziguan District, Kaohsiung City. Two Taiwanese crew members on board were rescued	None	3

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
			by a friendly ship and returned to the harbor safely. There were no casualties. The vessel foundered later without causing any environmental pollution.		
12	4.24	Fishing boat / Fu Liang No. 888 /CT2-5996	After entering Shen'ao Fishing Port, it was discovered that a Taiwanese crew member had gone missing and was not found after 72 hours of searching.	1 missing	3
13	4.27	Fishing boat / Shun Ying /CT4-1263	The boat foundered after catching fire 15.7 NM west of Yuanli Township, Miaoli County. The captain and two crew members on board were rescued by a nearby fishing boat and all remained safe.	None	3
14	5.11	Fishing boat / Shun Fu Yu No. 83 /CT4-3224	The vessel foundered after catching fire about 89 NM northeast of Bitou Cape. The captain and five crew members on board were rescued by a helicopter	None	3

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
			dispatched by the Taipei Rescue Coordination Center. All on board remained safe.		
15	6.03	Passenger and cargo ship / Taima Star /9684938	About 24 NM south of Dongyin Island, Matsu Township, Lienchiang County, the vessel lost power and could not start on its own. A tugboat then arrived at the occurrence site and towed the Taima Star to berth at Fu'ao Port in Matsu Township, Lienchiang County. There were no casualties or oil pollution in this occurrence.	None	2
16	7.03	Passenger and cargo ship / Shuang Ji Fu Shing /016429	When sailing from Dongji Island, Wang-an Township, Penghu County to Jiangjun Fishing Port in Jiangjun District, Tainan City, the vessel ran aground on the inner side of the outer dike. The vessel was towed away by a friendly ship and	None	2

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
			managed to escape the situation using its own power. There were no casualties or oil pollution in this occurrence.		
17	7.1	Container ship /WAN HAI312/9248693	When turning right to leave the port, the hull hit the revetment at the turning basin of the Port of Kaohsiung's 2nd harbor. There were no casualties and no oil pollution in this occurrence.	None	2
18	7.15	Fishing boat / Chun I No. 6 /CT8-0150	A crew member fell into the sea and went missing approximately 720 NM northeast of Kushiro Port, Japan and was not found after 72 hours of searching.	1 missing	3
19	7.2	Container ship /ANGEL/9256406	At 2.8 NM off the coast of the Port of Kaohsiung's 1st harbor, the vessel lost power for unknown reasons and the hull began to take on water and tilt. The captain announced	None	1

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
			evacuation and all 19 people on board were rescued. The ship later foundered and hundreds of containers on board fell into the sea and drifted. Oil pollution prevention and control work for this occurrence is underway.		
20	8.25	Workboat / TIPM No. 13302 / Passenger and cargo ship 012336 / Taima Star /9939709	A collision occurred at Fu'ao Wharf, Lienchiang County while assisting the passenger and cargo ship New Taima (IMO No. 9939709) to leave the port, causing the port side of the TIPM No.13302 to be damaged and flooded. The vessel then foundered.	None	1
21	10.03	Fishing boat / Guo Tong No. 3 /CT7-0642	About 630 NM from the Kushiro Port, Japan, a Filipino crew member on board was injured by a roller while working, causing severe laceration of his left	1 dead	3

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
			shoulder. He unfortunately died after receiving first aid on the spot.		
22	11.25	Fishing boat / Jin An Hai Bao /CT2-7157 Workboat / TIPM No. 514001 /416006589	The Vietnamese tugboat Bihn An was towing the platform barge TIPM No. 514001 and collided with the Taiwan-registered recreational fishing boat Jin An Hai Bao, causing substantial damage to the bow of said boat. One Taiwanese passenger on the vessel fell into the sea and went missing, the captain and two crew members were seriously injured, and four Taiwanese passengers were injured.	1 missing, 6 injured	2
23	12.13	Other / Hsun Hu No. 9 015113 Other / Da Yang /015346	About 4.3 NM south of Qimei Island, Penghu County, the Taiwan-registered fishery patrol vessel Hsun Hu No. 9 collided with the Taiwan-registered semi-container ship	None	2

No.	Date	Vessel type/name/registration number or serial number	Occurrence description	Casualties	Occurrence category
			Da Yang, causing damage to the left bow of Hsun Hu No. 9 and the starboard hull of Da Yang. No casualties were reported in the occurrence.		

Appendix 3 Safety recommendations from the 2023 Marine Occurrence Survey

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
1	1100805 Shan Bao No. 2 general cargo ship ran aground at Budai Commercial Port	Far Ocean Marine Transport Corp.	Improve the berthing plan of the fleet, avoid arriving at the port before low tide, and pay special attention to the seaworthiness regarding under-keel clearance during strong southwesterly air flow and poor sea conditions in summer.
2			The fleet should be notified to comply with the provisions of the company's safety management documents and to log in equipment tests before entering and leaving the port to ensure the vessel's actual safe operation.
3		Taiwan International Ports Corporation, Ltd.	In the event that the water depth of the channel cannot be effectively maintained, implement and effectively enforce Article 33 of the Commercial Port Law, and control port entry and exit during the lowest tide period for vessels with limited draught or grounding risk.
4			Develop a method to provide the water depth data measured monthly for actual positioning of vessels, thereby improving the safety of domestic commercial ships sailing through the Budai Commercial Port.
5			When the water depth of the channel cannot be effectively maintained, and taking into account factors such as weather, swells, and under-keel clearance for control of port entry

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			and exit, port entry and exit control should be implemented for vessels with limited draught or grounding risk.
6			Increase the utilization of radars and use radar observation as the main method, assisted with vessel automatic identification system (AIS) data and simultaneous electronic nautical chart display, so that the on-duty control officer can immediately identify risks and respond accordingly.
7	1090130 Hoping Port pilot casualties	Hoping Port Pilot Office	In accordance with Article 8 of the Regulations for Administrating Pilots, a risk assessment management mechanism shall be established for substitute vessels/piloting vessels.
8			Consult with the Hoping Industrial Port Administration of MOEA's Industrial Development Bureau to establish regulations that prevent pilots from boarding ships in the main channel when using tugboats as dedicated piloting vessels to ensure their personal safety.
9	1090130 Hoping Port pilot casualties		Strengthen employed pilots' risk awareness, establish good communication with the signal station, abide by regulations when ships enter the main channel, and comply with international pilot boarding and disembarking procedures.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
10		Hoping Industrial Port Corporation	Confirm that the pilot station in the nautical chart legend is the starting point for main channel navigation. The signal station navigation area should lie after entering the channel. Vessels entering the port should follow the direction of the channel and accept navigation guidance from the signal station.
11		Hoping Industrial Port Administration, Industrial Development Bureau, MOEA	Supervise Hoping Industrial Port Corporation to establish a mechanism whereby, in case of adverse sea conditions, pilots should board the ship in the open sea area outside the pilot station's boarding point. Vessels should only approach the starting point of the main channel only after the pilots have safely boarded.
12		Maritime and Port Bureau, MOTC	Formulate standards and guidelines for dedicated piloting boats in accordance with Article 8 of the Regulations for Administrating Pilots, supervise that the pilot office establishes a risk assessment management mechanism for piloting boats, and improve the allocation of life-saving equipment for people falling into the water to ensure the safety of piloting boats and pilots when boarding and disembarking.
13	1091110 Splendor Taipei general cargo ship collision	Hinase Ship Management Co., Ltd.	Strengthen the professional competence of captains, improve the management ability regarding pilothouse resources, and effectively

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
	occurrence at Port of Taichung		deploy pilothouse personnel when ships enter and leave the port and sail.
14			Strengthen captain awareness that the voyage data recorder (VDR) records of the involved ship should be immediately preserved after a marine occurrence occurs.
15	1101230 collision occurrence of Ta Ho cement carrier at Port of Anping	Ta-Ho Maritime Corporation	The company should strengthen its fleet's awareness of berthing risks. In ports where pilotage is mandatory, vessels that do not leave the berthing area on their own should employ professional pilots to navigate and berth in accordance with regulations, in addition to achieving the purpose of applying for a tugboat within the port.
16		Port of Anping Pilot Office	Ensure compliance with port's responsibility of mandatory pilotage prescribed by the Pilotage Act, see to the professional competence of pilots, meet the standards of the Bridge Resource Management and Pilot (BRM-P) training course, and fulfill the purpose of using tugboats.
17		Maritime and Port Bureau, MOTC	Strictly supervise the execution effectiveness of pilotage operations, ensure the quality of pilotage services, require pilots in mandatory pilotage ports to fulfill their responsibilities in pilotage operations, prevent similar occurrences from happening again, and maintain the safety of port

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			waterways and navigation.
18	1091230 Yong Yu Sing No. 18 fishing boat disappearance off the coast of Midway Island, Hawaii	Fisheries Agency, MOA	Strengthen the proficiency training of distant-water fishing boat crews with regards to various life-saving and distress equipment, so as to reduce the risk of distant-water fishing boats sailing under severe weather.
19			Coordinate and cooperate with domestic and foreign government-affiliated agencies/institutions to evaluate and provide weather observation and forecast data required for the operation of Taiwanese individual distant-water fisheries, so as to improve the operational safety of distant-water fishing boats.
20		Maritime and Port Bureau, MOTC	Strictly follow the ship equipment rules and carry out inspection of various life-saving and distress equipment on distant-water fishing boats, so as to reduce the risk of distant-water fishing boats sailing under severe weather.
21	1101028 Lucky general cargo ship took on water and foundered off Changhua coast	LW Maritime Service Co., Ltd.	Implement and strengthen the vessel safety management system to ensure safe vessel navigation.
22		Maritime and Port Bureau, MOTC	Implement the Aids to Navigation Act and Sailing Direction for the Changhua Wind Farm Channel, and take appropriate actions against vessels that do not navigate in accordance with the Changhua Wind Farm Channel to enhance navigation

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			safety in said route.
23			Strengthen safety information collection and response mechanisms on the Changhua Wind Farm Channel to effectively grasp dynamic risk information of said route and inform relevant responsible authorities/institutions.
24			The performance of flag states on the black list in the Annual Report of the Tokyo MOU should be included among the evaluation factors of Taiwan's new port state control and vessel risk inspection system, so as to ensure that it is in line with international standards and truly presents actual vessel risks.
25	1100309 Crew members of the fish carrier vessel Fong Kuo No. 819 fell into the sea and went missing at Port of Kaohsiung	F.K. Overseas Co., Ltd.	Strengthen crew safety education and training, focus on crew safety and protection, identify risks in shipboard operations, and draw preventive measures to prevent crew members from falling into the water.
26			Implement a safety management system and conduct special internal safety audits, especially with regards to Fong Kuo No. 819, to ensure that the crew correctly implements vessel safety management regulations and operating procedures.
27	1100731 Ta Shan general cargo ship ran aground at Wuqiu Port	Navy Command Headquarters, MND	Re-examine the berthing and operating regulations related to vessels entering and leaving Wuqiu Port, and confirm the main safety standards based on the current

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			berthing operations of civilian ships and military assistance operations at Wuqiu Port, as to ensure the safety of vessels entering and leaving Wuqiu Beifeng Wharf. The safety standard factors to be considered should include at least: (1) Low-tide stern draught restrictions; (2) Minimum under-keel clearance restrictions; (3) Wharf mooring line wave height (overtopping) restrictions; (4) Typhoon period and southwest swell wave height and period restrictions; (5) Respecting the captain's berthing expertise for determining berthing methods at Wuqiu Beifeng Wharf;
28			The distribution of various berthing piles at Beifeng Wharf and wharf transportation and replenishment facilities, such as the extension of the wharf unloading pipeline, should be reviewed based on the demand for vessel supply items, such as fresh water and mooring lines.
29			Negotiate with relevant agencies and evaluate the feasibility of deploying tugboats. Vessels can apply for tugboat assistance under severe sea weather to improve safety when they berth and unberth.
30		Ta Shan Shipping Co., Ltd.	The company should implement safety management of its fleet and promote a conservative attitude and actions that prioritize safety when

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			berthing at Wuqiu Beifeng Wharf in bad weather, so as to maintain safety during berthing and unberthing.
31	1110807 Los Angeles No. 1 private yacht capsized off the coast of Toucheng Township, Yilan	Maritime and Port Bureau, MOTC	Ensure that when a private yacht encounters a disaster, it can send out a distress signal immediately and receive rescue in time, thereby reducing the risk of failing to obtain help after a marine casualty. Review the Small Vessel Management Regulations, the Regulations for the Inspection and Measurement of Small Boats, and the Regulations for the Management of Yachts, and assess the necessity of installing EPIRBs or other automatic rescue devices on passenger boats and private yachts.
32	1111013 Crew member of a well-boat fell into the sea and went missing off the coast of Eluanbi	Fisheries Agency, MOA	Together with the Occupational Safety and Health Administration of the MOL and the Maritime and Port Bureau of the MOTC, develop reference guidelines for Article 21 of the Regulations on Occupational Safety and Health Facilities for fishing boats, and step up awareness raising efforts to help fishing boat owners take necessary measures to prevent crew members from falling overboard.
33	1111013 Crew member of a well-boat fell into the sea and went missing	Maritime and Port Bureau, MOTC	Together with the Fisheries Agency of the Council of Agriculture, Executive Yuan and the Occupational Safety and Health Administration of the MOL, develop

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
	off the coast of Eluanbi		reference guidelines for Article 21 of the Regulations on Occupational Safety and Health Facilities for fishing boats to help fishing boat owners take necessary measures to prevent crew members from falling overboard.
34		Occupational Safety and Health Administration, MOL	Together with the Fisheries Agency of the Council of Agriculture, Executive Yuan and the Maritime and Port Bureau of the MOTC, develop reference guidelines for Article 21 of the Regulations on Occupational Safety and Health Facilities for fishing boats to help fishing boat owners take necessary measures to prevent crew members from falling overboard.
35	1111123 Casualty occurrence on Tai Jie Cheng No. 1 fishing boat off Pengjia Islet	Fisheries Agency, MOA	Cooperate with the Occupational Safety and Health Administration of the MOL to raise awareness of the need for people entering the water to tie safety ropes when fishing boats recover nets. Those who have not received professional diving training should not be allowed to go into the water to handle the situation alone. The vessel should be towed into the port by a friendly ship, then professional divers should be entrusted to recover nets to avoid similar occurrences.
36		Occupational Safety and Health Administration,	Cooperate with the Fisheries Agency of the Council of Agriculture, Executive Yuan to raise awareness

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
		MOL	of the need for people entering the water to tie safety ropes when fishing boats recover nets. Those who have not received professional diving training should not be allowed to go into the water to handle the situation alone. The vessel should be towed into the port by a friendly ship, then professional divers should be entrusted to recover nets to avoid similar occurrences.
37	1100801 Collision between the Uni-Premier container ship and the tugboat TIPC No. 14402 at the Port of Kaohsiung	Port of Kaohsiung Pilot Office	The formulation of guidelines should comply with international standards and urge employed pilots to abide by the principle of mutual cooperation with resource management by the pilothouse during pilotage. In the case of poor visibility, they should leverage the vessel's radars and related navigation equipment to ensure the vessel's safe navigation.
38		TIPC Marine Corporation, Ltd.	Strengthen fleet education and training. When on duty to assist in berthing missions under bad weather, radars and electronic nautical charts should be used to assist in lookout, so as to fully understand the situation and maintain navigation safety when performing missions in the port.
39		Taiwan International Ports Corporation, Ltd.	The practice of VTS control officers that "once the pilot of an incoming vessel comes on board, the monitoring target can be shifted as

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			long as safety matters have been confirmed" should be changed, and the previous mindset of dynamic vessel monitoring in the port should be re-imparted, as to meet safety and professional expectations.
40	1100801 Collision between the Uni-Premier container ship and the tugboat TIPC No. 14402 at the Port of Kaohsiung	Taiwan International Ports Corporation, Ltd.	Evaluate and strengthen education and training of VTS control officers at various ports regarding their ability to dynamically monitor vessels in the port, provide dynamic safety information services for vessels 24/7, and accurately collect, analyze, interpret and respond to emergencies, so as to ensure port safety.
41			Review the regulations on vessel entry and exit control, formulate necessary measures to take port low visibility into consideration, and formulate relevant training manuals and implement training matters with reference to IMO Resolution A.857(20).
42		Maritime and Port Bureau, MOTC	Pilots should be urged to abide by the principle of mutual cooperation with the resource management by the pilothouse during pilotage. In the case of poor visibility, they should leverage the vessel's radars and related navigation equipment to ensure the vessel's safe navigation.
43			International pilot on-the-job training and Annex 1 of the relevant IMO Resolution A.960(23)

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			regarding the necessary knowledge and technical training content for pilots are included in the scope of amendment to Taiwan's pilotage legislation, so as to ensure that pilots continue to be proficient in their tasks and update their knowledge.
44			The planning and implementation of regular refresher training (not exceeding five years) and on-the-job training courses for pilots should guarantee their professional capabilities, continuous proficiency, updated knowledge, and alignment with the times, so that their skills remain at the highest professional level in accordance with international standards, enhancing the safety of Taiwan's international commercial port waterways and navigation.
45			The competent authority should implement its supervisory responsibilities, monitor and evaluate pilots' piloting quality, continuously supervise the effectiveness of pilotage task execution, revise the pilot supervision and assessment system, incorporate a pilot exit mechanism, and clearly define the procedures and standards for revoking the practicing certificate or closing practice, so as to improve the safety of navigation and berthing in

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			Taiwan's ports.
46	1090724 Oriental Chilan reefer ship collision occurrence at the Port of Kaohsiung	Go Rising Trading Limited	Continue to strengthen vessel safety management mechanisms, including pilothouse operations, vessel equipment maintenance, and emergency drill procedures.
47		Port of Kaohsiung Pilot Office	Referring to the recommendations of IMO Resolution A.960(23), implement the information exchange mechanism between captains and pilots, and strengthen pilots' regular refresher training (not exceeding five years) and on-the-job training courses, so as to ensure their professional competence and safe navigation responsibility.
48		Maritime and Port Bureau, MOTC	Referring to the recommendations of IMO Resolution A.960(23), it should be supervised that the pilot offices in each region strengthen regular refresher training (not exceeding five years) and on-the-job training courses for pilots, so as to ensure their professional competence and safe navigation responsibility.
49			Review the scoring criteria of the New Inspection Regime (NIR) for vessel risks, and give priority to the black list, gray list, and performance of recognized organizations of flag states in the Annual Report the Tokyo MOU for priority inclusion in the selection mechanism for Taiwan's port state control, so as to facilitate the adoption of appropriate

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			safety measures.
50			Take stock of port state control officers (PSCOs) at Taiwan's international commercial ports with a view to strengthening the inspection mechanisms and continuously training dedicated and qualified PSCOs.
51	1110710 Collision occurrence of Federal SW bulk carrier at Hoping Port	Hoping Port Pilot Office	Before pilotage, the pilot should analyze tides and currents data, confirm the safe port berthing plan, and understand berthing risks and emergency preparedness measures. Before the end of the cross-port support plan, each pilot must fulfill their respective duties after boarding the ship to ensure safety precautions for navigation within the waterway.
52			Create a proposal to increase the minimum number of pilots at Hoping Port and restore the importance of dedicated pilots in the port to maintain safe navigation in the port waterways.
53			Negotiate with Hoping Industrial Port Corporation (Hoping Industrial Port Administration) to establish a mechanism to regularly implement vessel-shore combined training for pilots, tugboats, and Hoping Port VTS control officers in the main channel to strengthen mutual coordination, communication, and emergency response, so as to maintain safe navigation in the

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			waterways.
54	1110710 Collision occurrence of Federal SW bulk carrier at Hoping Port	Hoping Industrial Port Corporation	Implement and strengthen the port operation management mechanism, including: Strengthen control officer's emergency control measures for waterway crises, upgrade the horsepower of tugboats, incorporate tide calculations into coal ship berthing plans, solve the problem of waterway water flow that affects vessel maneuvering, and improve the port berthing environment to avoid occurrences from happening again.
55			Create a proposal to revise the emergency control measures of the VTS control officers entering Hoping Port, including measures such as requiring vessel to turn around and re-enter the port or canceling entry. Hoping Industrial Port Corporation must include such emergency measures in "3. Key Points for Controlling the Entry and Exit of Vessels at Hoping Port" of the Hoping Port Signal Station Operation Manual for both vessels and ports to follow, in order to maintain the safety of navigation in the port waterways.
56			Negotiate with Hoping Port Pilot Office to establish a mechanism to regularly conduct vessel-shore combined training for pilots, tugboats, and Hoping Port VTS

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			control officers in the main channel to strengthen mutual coordination, communication, and emergency response, so as to maintain safe navigation in the waterways.
57		Hoping Industrial Port Administration, Industrial Development Bureau, Ministry of Economic Affairs	Supervise that Hoping Industrial Port Corporation and the Hoping Port Pilot Office negotiate to establish a mechanism to regularly implement vessel-shore combined training for pilots, tugboats, and Hoping Port VTS control officers in the main channel to strengthen mutual coordination, communication, and emergency response, so as to maintain safe navigation in the waterways.
58			Strengthen the implementation of the supervision and management mechanism of Hoping Commercial Port Corporation, effectively improve the water flow in waterways that affects the safety of large coal ships entering the port, and prevent repeated grounding occurrences at the port mouth from happening again.
59	1110710 Collision occurrence of Federal SW bulk carrier at Hoping Port	Maritime and Port Bureau, MOTC	Supervise the personnel promotion plan of the Hoping Port Pilot Office, review the relevant regulations and actual outcomes of additional pilot support in other ports, and supervise that supporting pilots are familiar with the environment of each port and play their supporting role.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
60			A comprehensive review and study should be conducted to increase the minimum number of pilots in all pilotage areas across Taiwan, so as to keep up with the changing times and shifts in the port operating environment. Based on the national labor and health system, in order to avoid work fatigue among pilots, there should also be enough personnel to take shifts to prevent maritime occurrences in the port due to suspected overwork of pilots.
61			When a major marine occurrence happens or is suspected to have happened, the responsible institution shall notify the TTSB in accordance with Article 9 of the Transportation Occurrences Investigation Act and the Standard Operating Procedures for Marine Casualty Disaster Prevention and Emergency Response of the Maritime and Port Bureau, MOTC.
62	1120110 Casualties in the waters off the coast of the Port of Penang, Malaysia on the Shuenn Man No. 23 fishing boat	Fisheries Agency, MOA	Raise awareness that crew members of Taiwan-registered fishing boats and fishing rafts should take appropriate precautions or wear life jackets when working on the deck at sea to avoid falling into the sea and dying or going missing.
63		Occupational Safety and Health Administration, MOL	Cooperate with the Fisheries Agency of the Council of Agriculture to raise awareness that crew members of Taiwan-registered fishing boats

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			should take appropriate precautions or wear life jackets when working on the deck at sea to avoid people falling into the sea and dying or going missing.
64	1120121 The captain of Shu Yan No. 1 fishing raft fell into the sea and died in Shanban Bay	Fisheries Agency, MOA	Raise awareness that crew members of Taiwan-registered fishing boats and fishing rafts should take appropriate precautions or wear life jackets when working on the deck at sea to avoid falling into the sea and dying or going missing.
65		Occupational Safety and Health Administration, MOL	Cooperate with the Fisheries Agency of the Council of Agriculture to raise awareness that crew members of Taiwan-registered fishing boats should take appropriate precautions or wear life jackets when working on the deck at sea to avoid people falling into the sea and dying or going missing.
66	1110929 Crew members of An Wen Fa fishing boat fell into the sea and went missing off the coast of Kushiro Port, Japan	Fisheries Agency, MOA	Raise awareness that crew members of Taiwan-registered fishing boats and fishing rafts should take appropriate precautions or wear life jackets when working on the deck at sea to avoid falling into the sea and dying or going missing.
67		Occupational Safety and Health Administration, MOL	Cooperate with the Fisheries Agency of the Council of Agriculture to raise awareness that crew members of Taiwan-registered fishing boats should take appropriate precautions or wear life jackets when working on the deck at sea to avoid people

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			falling into the sea and dying or going missing.
68	1111230 Casualty occurrence on Jin Li Sheng No. 1 fishing boat off the coast of Eluanbi	Fisheries Agency, MOA	Raise awareness that crew members of Taiwan-registered fishing boats and fishing rafts should take appropriate precautions or wear life jackets when working on the deck at sea to avoid falling into the sea and dying or going missing.
69		Occupational Safety and Health Administration, MOL	Cooperate with the Fisheries Agency of the Council of Agriculture to raise awareness that crew members of Taiwan-registered fishing boats should take appropriate precautions or wear life jackets when working on the deck at sea to avoid people falling into the sea and dying or going missing.
70	1111110 Crew members of Jin Yi No. 1 fishing raft fell into the sea and went missing off Nan'ao Beach	Fisheries Agency, MOA	Raise awareness that crew members of Taiwan-registered fishing boats and fishing rafts should take appropriate precautions or wear life jackets when working on the deck at sea to avoid falling into the sea and dying or going missing.
71		Occupational Safety and Health Administration, MOL	Cooperate with the Fisheries Agency of the Council of Agriculture to raise awareness that crew members of Taiwan-registered fishing boats should take appropriate precautions or wear life jackets when working on the deck at sea to avoid people falling into the sea and dying or going missing.
72	1110409 Dong	Maritime and Port	Review the existing inspection

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
	Yang No. 6 workboat foundered in waters off Keelung Islet	Bureau, MOTC	mechanism for old steel boats (e.g., those older than 12 years), add hull plate thickness testing items, and provide necessary training courses for inspection personnel.
73			Coordinate and cooperate with TIPC to register and manage small boats in the Port of Keelung area to prevent small boats from engaging in operations that are inconsistent with their licenses and sailing in unnavigable waters.
74			Assist TIPC to strengthen security inspections within the control boundaries of Keelung International Commercial Port and implement management of vessels entering and leaving the port area; and request assistance from Coast Guard Administration in reporting vessel violations.
75	1110409 Dong Yang No. 6 workboat foundered in waters off Keelung Islet	Coast Guard Administration, Ocean Affairs Council	Assist in reporting the violations of small boats according to the small boat registration information of the Port of Keelung provided by the Maritime and Port Bureau.
76		Taiwan International Ports Corporation, Ltd.	Prevent small boats from engaging in operations inconsistent with their licenses and sailing in unnavigable waters according to the small boat registration information of the Port of Keelung provided by the Maritime and Port Bureau.
77			To strengthen security checks at the boundaries of the Keelung

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			International Commercial Port control area, request the Coast Guard Administration to assist in reporting any violations.
78		Keelung City Government	Examine the review mechanism of the Application Form for Vessels Other Than Fishing Boats Entering and Leaving Fishing Ports to effectively require applicants to provide information on the vessel, captain, and crew, and strengthen the inspection of applicants' licenses, vessel certificates, and concrete work plans.
79			Strengthen the quality planning content of engineering contracts, especially those involving the marine transportation of construction materials and machinery to ensure safety and environmental protection supervision and implementation details, so as to avoid work safety incidents or vessel occurrences.
80		CSBC Corporation, Taiwan (Keelung Plant)	Review the personnel control and audit mechanism at the Keelung plant, especially those who board and disembark vessels at the plant's wharf.
81	1110608 Major marine occurrence of collision between the Viva Fafa No.	Fisheries Agency, MOA, Executive Yuan	Formulate relevant management measures and require relevant operators to implement Article 22 of the Regulations on the Management of Crew Members of Fishing Vessels, so that when Taiwan-

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
	707 fishing boat and the Moamaeu fishing boat off the coast of Port of Rabaul, Papua New Guinea		registered fishing boats change crews abroad, the personnel quota must meet the minimum quota standards to ensure the vessel's safe navigation.
82		Viva Fafa Fishery Co., Ltd.	When replacing crew members of the fleet abroad, comply with Article 22 of the Regulations on the Management of Crew Members of Fishing Vessels and meet the minimum personnel quota to ensure the vessel's safe navigation.
83			When the company's fleet is sailing, qualified crew members must be assigned shifts at the pilothouse to ensure the safety of the vessel.
84		Kirikore Fisheries Co., Ltd.	Strengthen fleet education and training; on-duty helmsmen must fully understand the relevant provisions of the 1972 International Regulations for Preventing Collisions at Sea to avoid vessel collisions.
85			Raise awareness that when the fleet is sailing at sea, the crew members on duty at the pilothouse must maintain correct lookout and understand the potential risk factors of possible collision to avoid occurrences.
86			When a major marine occurrence occurs in Taiwan's waters and commercial ports, ensure that relevant units under jurisdiction comply with the Transportation

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			Occurrence Investigation Act, consider evidence preservation measures for safety investigations, and seek the approval of the TTSB before releasing a vessel.
87	1110426 Collision between the Da Fa No. 1 general cargo ship and the Lia oil tanker off the coast of Green Island	Maritime and Port Bureau, MOTC	When a major marine occurrence occurs in Taiwan's waters and commercial ports, ensure that relevant units under jurisdiction comply with the Transportation Occurrence Investigation Act, consider evidence preservation measures for safety investigations, and seek the approval of the TTSB before releasing a vessel.
88		Coast Guard Administration, Ocean Affairs Council	When a major marine occurrence occurs in Taiwan's waters or commercial ports, consider evidence preservation measures for safety investigations, and notify the TTSB before releasing a vessel.
89		Shin Fa Marine Co., Ltd.	Raise awareness that fleets should make good use of vision, hearing, various navigation instruments, and other methods suitable for the current environment when sailing, maintain correct lookout, and abide by the 1972 International Regulations for Preventing Collisions at Sea to avoid vessel collisions.
90			Raise awareness that fleets should make full assessments before taking corresponding measures when sailing at sea to maintain navigation

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			safety.
91	1110221 Occurrence where pilot of Blue Ocean container ship fell into the sea and died in Port of Taichung	Maritime and Port Bureau, MOTC	With reference to IMO Resolution A.960(23), the location of the pilot boarding area for cargo ships entering the Port of Taichung should be reviewed and improved in a timely manner based on the port facilities and hydrological conditions of said port.
92			Review the piloting boat equipment at international commercial ports and ensure it meets international standards. Consider the geographical relationship and weather conditions of each port and make available piloting boats suitable for each port to guarantee safety when pilots board and disembark from vessels, so as to achieve the purpose of compulsory pilotage, that is, to strengthen the safety of Taiwan's international commercial port waterways and navigation.
93	1110221 Occurrence where pilot of Blue Ocean container ship fell into the sea and died in Port of Taichung	Maritime and Port Bureau, MOTC	Using this case as an example, all pilots across Taiwan "must wear a life jacket as their outermost layer of clothing" to ensure its proper functioning in the event of an accidental fall into the sea.
94			Refer to the practices of pilot associations in other countries to formulate operational guidelines for pilots boarding and leaving vessels to protect the safety of pilots and crew members.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
95			Evaluate and improve the physical examination system and supporting measures for pilots in Taiwan, including at least: Enhance the relevant standards for physical examinations of pilots, offer guidance on the key points of each examination, and provide an evaluation process to be followed by examining physicians to ensure the consistency of physical examination results. Improve the thoroughness of pilots' physical examinations to ensure they are in good health and competent for their jobs, so as to maintain their personal safety and the safety of vessels entering and leaving ports.
96			Review the disaster prevention and relief plans of the port subsidiaries under jurisdiction to ensure that VTS control officers and monitoring center personnel on duty possess the necessary capabilities to deal with various disasters.
97		Taiwan International Ports Corporation, Ltd.	In accordance with the disaster emergency response procedures of the marine casualty disaster prevention and rescue plan, formulate standard communication terminology to enhance communication efficiency and rescue success during marine casualties and unexpected incidents.
98			Review once again the drill plan for

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			people falling into the sea in the port area to ensure that the drill content simulates a real-life crisis.
99	1111209 Koombana Bay bulk carrier collision occurrence at Port of Kaohsiung	Ministry of Transportation and Communications	To enhance navigation safety in port areas and to help captains unfamiliar with Taiwan's commercial ports easily obtain relevant port traffic information, the provisions of Articles 4 and 5 of the Pilotage Act should be enforced, determining and announcing the locations of Taiwan's pilotage districts and pilot boarding and disembarkation points, and the information should be provided to relevant units for revision and publication on nautical charts.
100	1111209 Koombana Bay bulk carrier collision occurrence at Port of Kaohsiung	Ministry of Transportation and Communications	To reduce risks and prevent occurrences during pilotage operations, the Maritime and Port Bureau should be urged to assist the pilot offices of each port to establish a safety management system and implement an independent safety management and supervision system.
101		Maritime and Port Bureau, MOTC	Revise the Regulations for Administrating Pilots to stipulate that pilots are not allowed to leave the ship midway in compulsory pilotage ports when performing pilotage duties, except due to weather factors.
102			To ensure safe traffic within Taiwan's international commercial ports, the pilot offices of each port

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			should be supervised to ensure that pilots perform the task of piloting vessels in mandatory pilotage districts, so as to fulfill the goal of mandatory pilotage.
103			To reduce risks and prevent occurrences during pilotage operations, the pilot offices in various ports should receive assistance to establish a safety management system and implement an independent safety management and supervision system.
104		Taiwan International Ports Corporation, Ltd.	To maintain safe navigation in port areas, relevant regulations should be evaluated and formulated to clearly define the reporting mechanism for pilots before the completion of pilotage operations.
105		Port of Kaohsiung Pilot Office	Formulate operating guidelines to improve the operating environment and ensure that pilots perform the task of piloting vessels in mandatory pilotage districts, so as to fulfill the goal of mandatory pilotage and ensure traffic safety within Taiwan's international commercial ports.
106			When pilots are required to end the pilotage ahead of schedule in mandatory pilotage districts, they must actively report to the port VTS and the pilotage operation can only be ended after confirmation.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
107	1110201 Torm Emilie refined oil tanker collision occurrence in Port of Kaohsiung	Maritime and Port Bureau, MOTC	Supervise pilots and establish information management regulations and standard operating procedures for port duties to convey to pilots important port duty information and ensure safe navigation of their vessels.
108			Referring to the technical specifications or guidelines for waterway markings of the International Lighthouse Association (IALA) or other countries, revise Taiwan's Technical Specifications for the Installation of Aids to Navigation to establish reference standards for the dimensions and visibility ranges of facilities; and provide a clear basis for agencies/institutions to set up waterway markings, so as to effectively fulfill the warning function of navigation aids.
109	1110201 Torm Emilie refined oil tanker collision occurrence in Port of Kaohsiung	Taiwan International Ports Corporation, Ltd.	Before revising Taiwan's Technical Specifications for the Installation of Aids to Navigation, refer to the technical specifications or guidelines for waterway markings in other countries to re-inspect the various navigation aids in port areas and confirm that all facilities are operating normally. In addition, formulate necessary inspection plans.
110			With reference to IMO A.1158(32), revise the Port of Kaohsiung Vessel

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			Traffic Services System (VTS) Controller Operation Manual to enable VTS control officers to exert a proactive and professional attitude, provide the captain or pilot with appropriate navigation safety control measures in a timely manner, and use standard technical terms to provide information, advice, warnings, and instructions.
111		Port of Kaohsiung Pilot Office	Employed pilots should be required to comply with the Port of Kaohsiung Vessel Navigation Regulations and may not overtake or pass other vessels in two-way channels. They must wait for the outgoing vessel to leave the breakwater and approach the end line of the two-way channel in the open sea. They can only enter the port after confirmation from the VTS control officer and ensure that the vessel is located in the center line of the channel to ensure safe navigation of vessels entering and leaving the port.
112			Establish information management regulations and standard operating procedures for port duties to convey to pilots important port duty information and ensure safe navigation of their vessels.
113	1120305 Shin Charng Fa 88 fishing boat	Fisheries Agency, MOA	Review the promotional practices for the installation of EPIRBS on Taiwan-registered fishing boats to

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
	capsized in the waters off the Tiaoyutai Islands		prevent fishing boat crews from removing EPIRBs after annual inspections, thereby maintaining navigation safety.
114			Review and strengthen the monitoring mechanism for fishing boat positions, requiring all Taiwan-registered fishing boats to install and activate automatic identification systems (AIS) and vessel monitoring systems (VMS) in accordance with regulations. Ensure that fishing boat departure information can be transmitted to the Fisheries Monitoring Center in real time, and formulate effective supervision measures for AIS and VMS failures and violations.
115	1111113 Xinhaiyan 1 oceanographic research vessel lost power about 50 NM west of Luzon, Philippines	National Taiwan University	The highest management of the vessel's engine room department should conduct effective supervision. If the on-duty engineer fails to handle or is unable to handle any engine room alarm, they must be monitored in a timely manner and appropriate emergency measures must be taken to comply with the contents of the safety management system manual.
116			Revise the vessel maintenance system management mechanism to implement matters such as repair reporting, work assignment, completion, and problem improvement follow-up, and

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			enhance the vessel safety management system.
117	1111017 Crew members of VIMC Sunrise Vietnamese bulk carrier fell into the sea and went missing off the coast of Mailiao Township, Yunlin County	VIMC Shipping Company	Implement a vessel safety management system and conduct specific internal safety audits, especially with regards to the vessel itself, to ensure that the crew correctly implements vessel safety management regulations and operating procedures.
118			Strengthen crew safety education and training, focus on crew safety and protection, identify risks in shipboard operation, and draw preventive measure. In bad weather and when there are waves on the deck, avoid work on the main deck and bow to prevent crew members from suffering injuries or falling into the sea.
119	1111112 Collision between Yu Shan No. 168 fishing boat and Bungo Princess general cargo ship at the northern boundary of the Port of Keelung's outbound channel	Fisheries Agency, MOA	Raise awareness among fishermen that when fishing boats are sailing at sea, the crew on duty at the pilothouse must maintain correct lookout. When sailing in waters with poor visibility or heavy traffic, they should consider the current sea conditions and sail at a safe speed to avoid occurrences.
120		Dojima Marine Co., Ltd.	Strengthen fleet education and training. When sailing in waters with limited visibility or heavy traffic, vessels must proceed at a safe speed and on-duty drivers must comply with the relevant provisions of the

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
			International Regulations for Preventing Collisions at Sea to avoid vessel collisions.
121		Ministry of Transportation and Communications	Urge the Maritime and Port Bureau of the MOTC to refer to relevant contents of the IMO's Guidelines for Vessel Traffic Services to formulate relevant regulations on the legal system of VTS and relevant standards for the training, certification, and employment of VTS personnel.
122		Maritime and Port Bureau, MOTC	Refer to relevant contents of the IMO's Guidelines for Vessel Traffic Services to formulate relevant regulations on the legal system of VTS and relevant standards for the training, certification, and employment of VTS personnel.
123	1111112 Collision between Yu Shan No. 168 fishing boat and Bungo Princess general cargo ship at the northern boundary of the Port of Keelung's outbound channel	Taiwan International Ports Corporation, Ltd.	Refer to relevant contents of the Port of Keelung Control Officer Manual to implement the division of labor and responsibilities of each control officer during heavy fog and effectively monitor the movements of vessels in and outside the port, so as to maintain the safety of the port and vessel navigation.
124			Refer to relevant contents of the IMO's Guidelines for Vessel Traffic Services to strengthen the training of control officers in system operation, incident response, and language communication skills to ensure the effective functioning of VTS.

No.	Major marine occurrence	Recommendation recipient	Safety recommendation
125			Before Taiwan completes the relevant training, certification, and employment standards for VTS personnel, it is recommended to refer to relevant contents of the IMO's Guidelines for Vessel Traffic Services to improve the employment standards of control officers.