

REPUBLIC OF THE MARSHALL ISLANDS

Maritime Administrator

ANNUAL REPORT ON MARINE SAFETY INVESTIGATIONS 2024

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Please submit questions to: 11495 Commerce Park Drive, Reston, Virginia 20191-1506 USA | tel: +1 703 620 4880 | fax: +1 703 476 8522 | investigations@register-iri.com

TABLE OF CONTENTS

List of Abbreviations and Acronyms	4
Message from the Administrator	6
Principles of Marine Safety Investigations	7
Section 1: 2024 Year in Review	8
Section 2: Reports by Incident Classification – 2024.	11
Very Serious Marine Casualties	11
Marine Casualties	12
Marine Incidents	13
Occurrences	14
Section 3: Summary of Select Reports of Very Serious Marine Casualties	15
Section 4: Marine Safety Advisories Issued by the Administrator.	22
Section 5: Looking Forward	22
Appendix 1: Very Serious Marine Casualties	24
Appendix 2: Marine Casualties	26
Serious Injuries	26
Collisions / Allisions	32
Loss of Propulsion	34
Groundings	37
Fires / Explosions	39
Appendix 3: Most Common Marine Casualties by Ship Type	41

LIST OF ABBREVIATIONS AND ACRONYMS

2/E	Second Engineer
3/O	Third Officer
Administrator	Republic of the Marshall Islands Maritime Administrator
AIS	Automatic Identification System
ARPA	Automatic Radar Plotting Aid
ASD	Able Seafarer Deck
IMO Casualty Investigation Code	International Maritime Organization Code of the International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea
C/E	Chief Engineer
C/O	Chief Officer
CEO	Chief Executive Officer
COT	Cargo Only Tank
CPR	Cardiopulmonary Resuscitation
ETO	Electro Technical Officer
IMO	International Maritime Organization
kg	Kilograms
kn	Knots
LSA	Life Saving Appliance
Maritime Act	Republic of the Marshall Islands Maritime Act 1990
Maritime Regulations	Republic of the Marshall Islands Maritime Regulations
m	Meters
MOU	Mobile Offshore Unit
MSA	Marine Safety Advisory
N ₂	Nitrogen Gas
NM	Nautical Mile
No.	Number
O ₂	Oxygen
OOW	Officer of the Watch

LIST OF ABBREVIATIONS AND ACRONYMS (continued)

OSV.....	Offshore Support Vessel
P	Port
PPE	Personal Protective Equipment
RMI.....	Republic of the Marshall Islands
Rules for Marine Investigations	RMI Rules for Marine Investigations and Administrative Proceedings
S	Starboard
SAR.....	Search and Rescue
SCBA	Self-contained Breathing Apparatus
SMS.....	Safety Management System
TSS	Traffic Separation Scheme

Message from the Administrator

Tom Jenkins

Deputy Commissioner of Maritime Affairs



Welcome to the Administrator's Annual Report on Marine Safety Investigations. Upon reflecting on the year 2024, the Administrator reaffirms its unwavering commitment to safeguarding lives at sea, protecting the marine environment, and promoting a culture of continuous improvement in maritime safety. This year's Annual Report on Marine Safety Investigations highlights the safety insights derived from data-driven analysis and lessons learned from marine safety investigations conducted across RMI-registered vessels.

The Administrator recognizes that effective investigation of marine incidents is essential not only to determine causal factors but, more importantly, to identify actionable lessons learned that can prevent recurrence. Throughout 2024, the Administrator's investigative process continued to align with international best practices as set forth by the Casualty Investigation Code. Each investigation has been approached not as a means of attributing blame, but as a tool to enhance collective learning and improve systematic safety outcomes.

The Administrator's investigations have revealed key safety trends, including recurring issues related to working at height, enclosed space entry, collision, grounding, fire / explosion, and loss of propulsion. By examining the root cause of these incidents, the Administrator has incorporated the identified lessons learned into actionable and targeted safety recommendations, reviewed existing regulatory requirements for gaps, and engaged with stakeholders to implement corrective actions.

During 2024, the Administrator investigated 954 total reports comprised of very serious marine casualties, marine casualties, marine incidents, and occurrences. Since 2022, on average, the number of reports has increased by 15% per annum; a trend that reflects both a growing fleet and heightened awareness of transparent reporting. This increase also reflects the need for continuous improvement and focus in pursuit of solutions to mitigate the risks inherent within a dynamic and ever-changing maritime environment.

The Administrator takes this opportunity to thank owners, managers, and crewmembers of RMI-registered vessels for maintaining the highest standards and working diligently to ensure crew welfare, marine safety, security, and the protection of the marine environment.

Principles of Marine Safety Investigations

Marine safety investigations are conducted in accordance with the Maritime Act, Maritime Regulations (Chapter 6), Rules for Marine Investigations, and the Casualty Investigation Code.

Under the Casualty Investigation Code, marine safety investigations are conducted to determine the causal factors of the casualty, with the objective of preventing similar casualties or incidents in the future, and to make safety recommendations, as necessary. Marine safety investigations do not seek to apportion blame or determine liability.

All reports to the Administrator are classified in accordance with the following:¹

1. **Very serious marine casualties** are those involving loss of life, total loss of the ship, or significant environmental damage.
2. **Marine casualties** are events, or a sequence of events, directly in connection with the operation of the vessel, that have resulted in serious injury, loss or material damage to the vessel, grounding or disabling of the vessel, collision or allision, and severe damage to marine infrastructure or to the environment.
3. **Marine incidents** are events, or a sequence of events, other than a marine casualty, which have occurred directly in connection with the operation of the vessel, that endangered, or if not corrected, would endanger the safety of the vessel, its occupants, or the environment.
4. **Occurrences** are other conditions and events which are not marine casualties or marine incidents but require investigation by the Administrator.

Additionally, all reports are assigned a primary incident type based on information obtained during the marine safety investigation. The primary incident type details the nature of the incident which resulted in the very serious marine casualty, marine casualty, marine incident, or occurrence.

Accurate and timely reporting by Masters, owners, and operators, in accordance with the Administrator's reporting requirements, is vital to ensure an appropriate response and necessary support can be provided in order to identify safety critical factors and lessons learned. Further, the analysis conducted by the Administrator is used to identify trends which can then be shared with Masters, owners, and operators to improve safety.

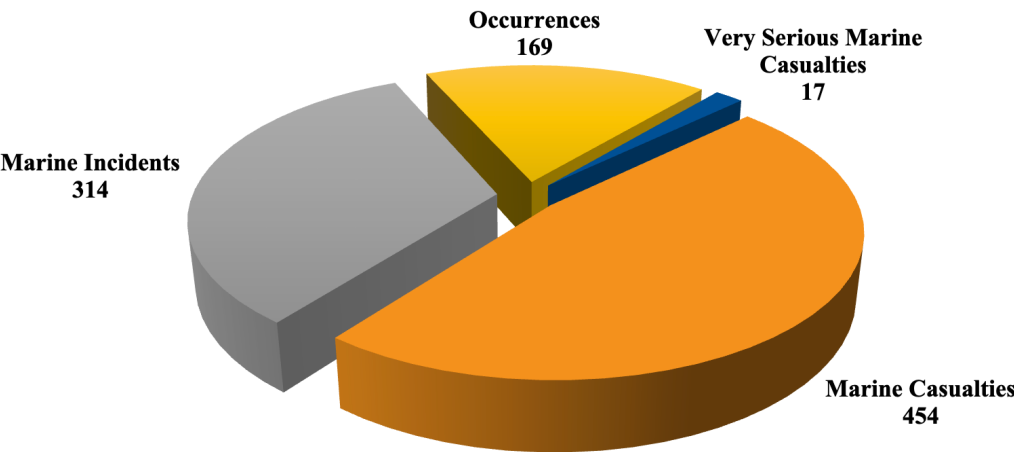
This report excludes data pertaining to the investigation of reports of misconduct and other intentional acts by RMI-documented seafarers.

¹ For complete definitions and additional information, refer to Rules for Marine Investigations.

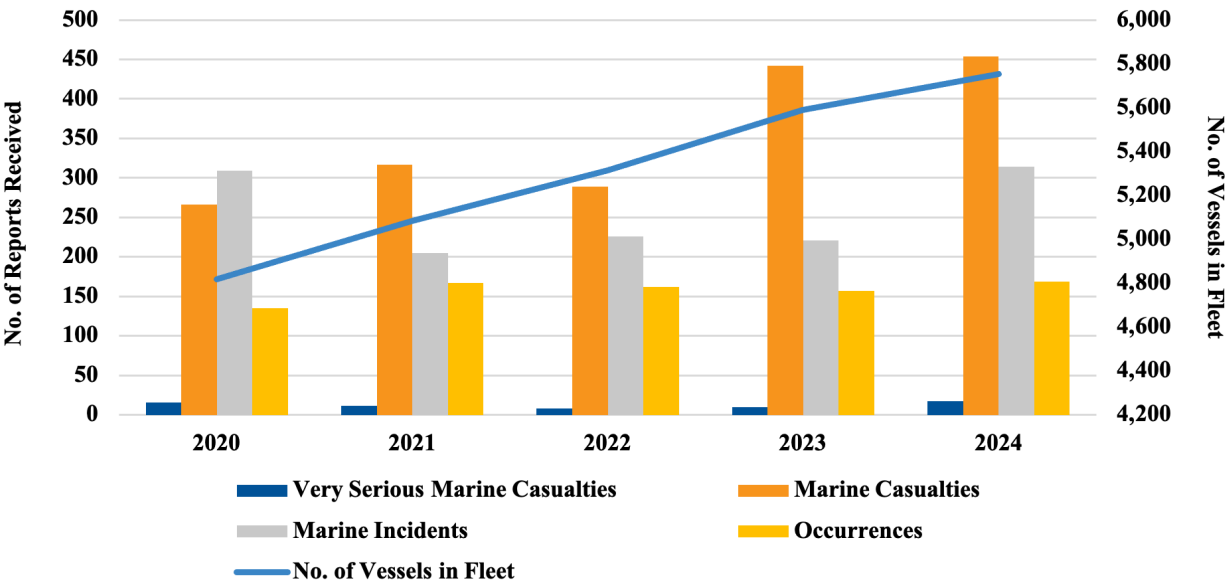
Section 1: 2024 Year in Review

During 2024, the Administrator received 954 total reports comprised of very serious marine casualties, marine casualties, marine incidents, and occurrences, a 13% increase compared to 2023.

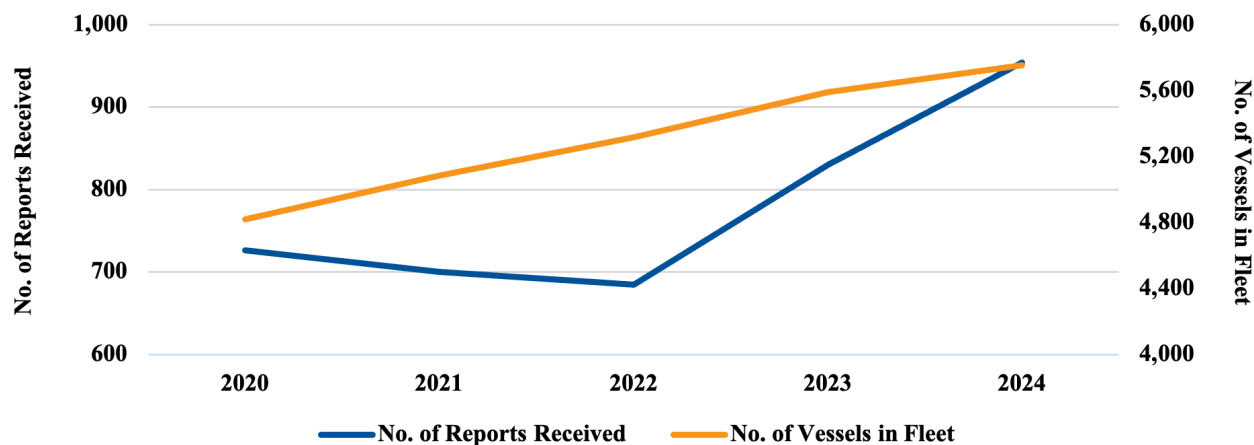
Reports to the Administrator – 2024



Reports to the Administrator – 2020 to 2024

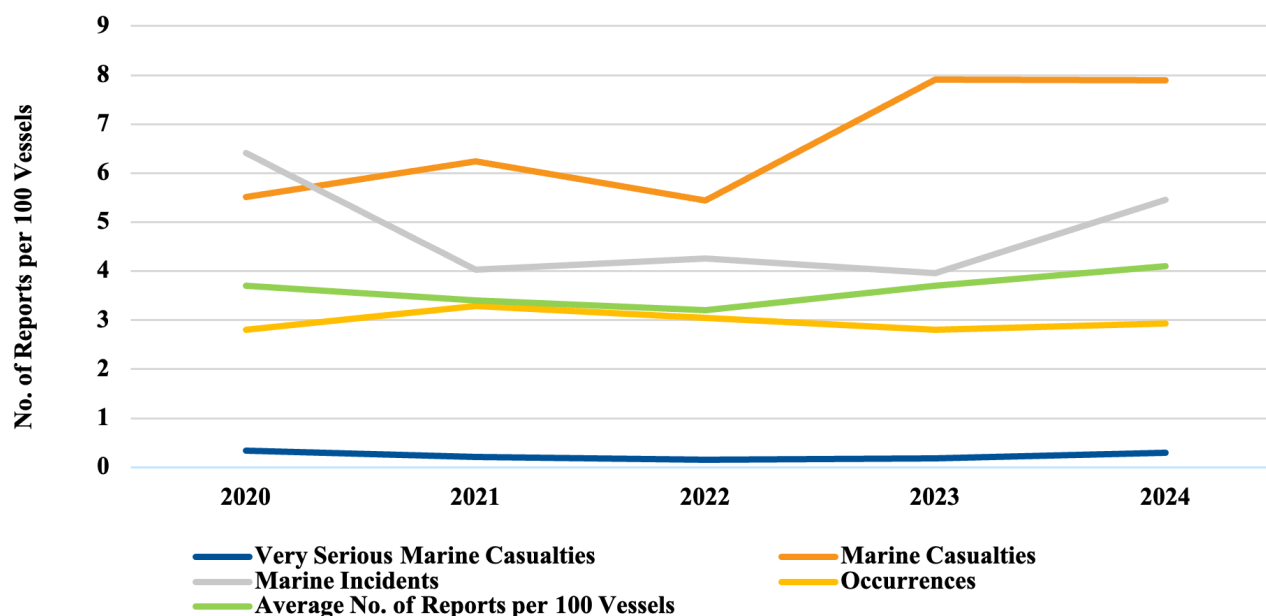


Reports Received – 2020 to 2024



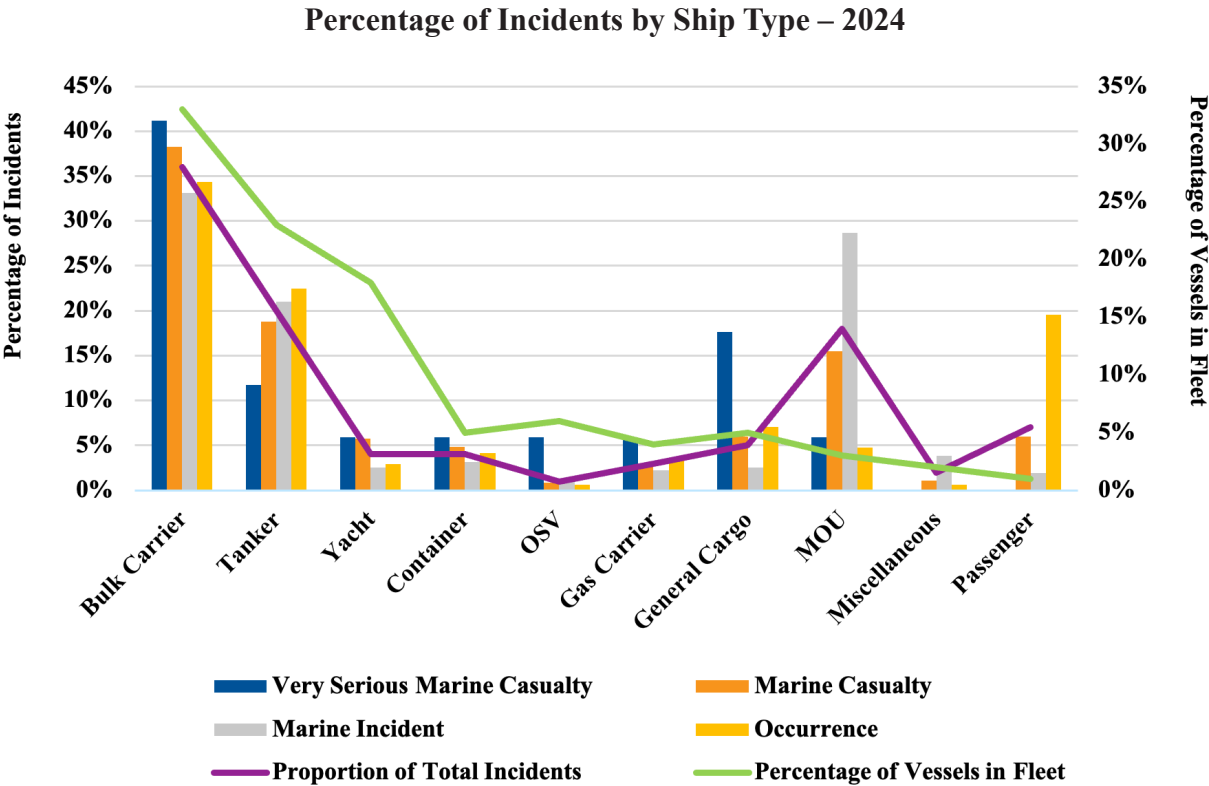
Since 2022, analysis of the data shows a steady increase in the number of reports received. The mean number of total reports received compared to the size of the fleet was 4.1%² in 2024. This is an increase of 0.4% compared to 2023 and 0.9% compared to 2022. Despite this steady increase over the preceding years, it has been recognized by the Administrator that owners and operators remain committed to safety of life and property at sea and the marine environment. This has been evidenced by an improvement in the quality of Company derived investigations and willingness to implement recommendations, observations, and lessons learned quickly across their respective vessels.

Incident Rate – 2020 to 2024 per 100 Vessels



² Average number of incidents per 100 vessels.

The incident rate per 100 vessels is a useful metric to determine how many incidents occur as a proportion of RMI-registered vessels by incident categorization. The incident rate average per 100 vessels has steadily increased since 2022. The continued increase was primarily due to more very serious marine casualties, marine incidents, and occurrences being reported in 2024 than in 2023.



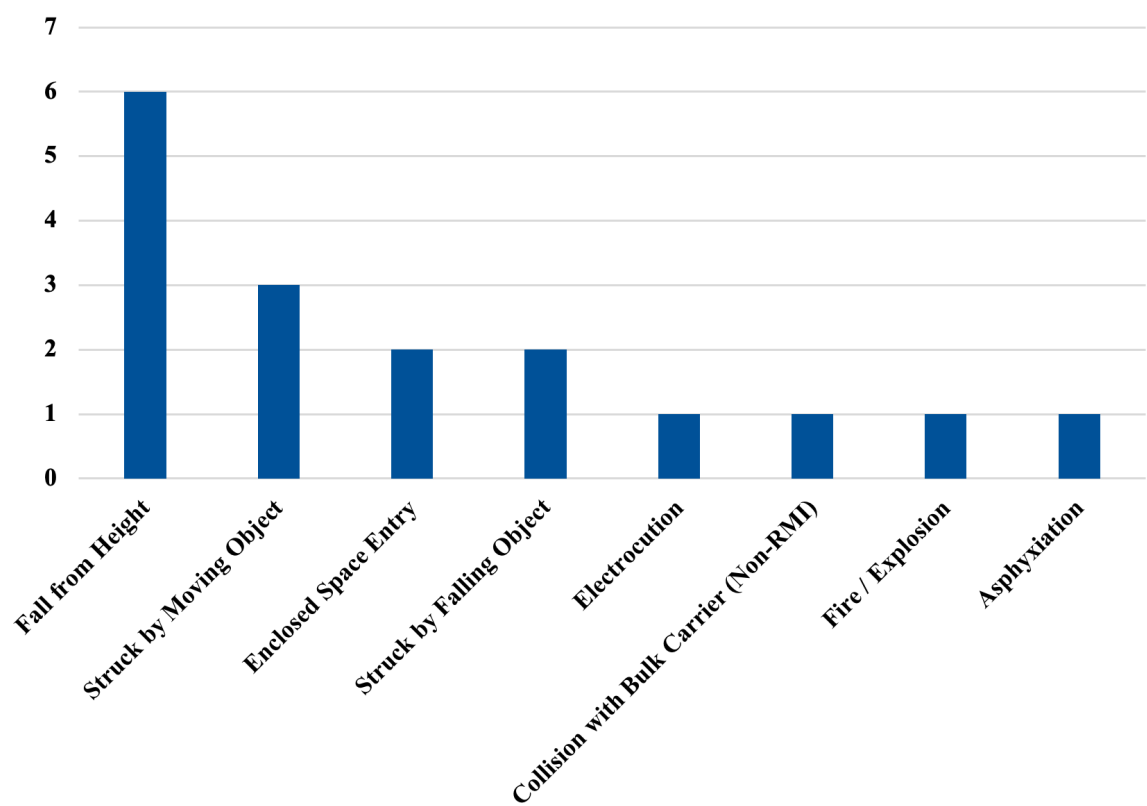
Bulk carriers and tankers make up 56% of RMI-registered vessels. Combined, bulk carriers and tankers account for 55% of all reported incidents. The average incident rate across all ship types is 16%. Although bulk carriers (36%) and tankers (20%) exceed the average incident rate of the RMI-registered fleet, the incident rate is proportionate to the size of each of these vessel types within the RMI-registered fleet. MOUs make up 3% of the RMI-registered fleet, however MOUs account for 18% of all reports. As a proportion of the number of reports, MOUs have a higher-than-average incident rate compared to all other vessel types.

Section 2: Reports by Incident Classification – 2024

Very Serious Marine Casualties

During 2024, 17 very serious marine casualties were reported to the Administrator, compared to 10 in 2023, an increase of 41%. Six of these incidents were related to working at height and resulted in six fatalities,³ the leading cause of death during 2024. Three separate incidents involving seafarers being struck by a moving object resulted in three fatalities. Two separate enclosed space entry incidents resulted in the loss of two lives.⁴ Two RMI-documented seafarers were fatally injured after being struck by falling objects in two separate incidents. Two fatalities occurred in two separate incidents by electrocution and asphyxiation.⁵ Two further very serious marine casualties occurred, one as a result of a collision involving a non-RMI-registered bulk carrier, and the second involving a fire on board an OSV, neither of which resulted in loss of life.

Very Serious Marine Casualties – 2024



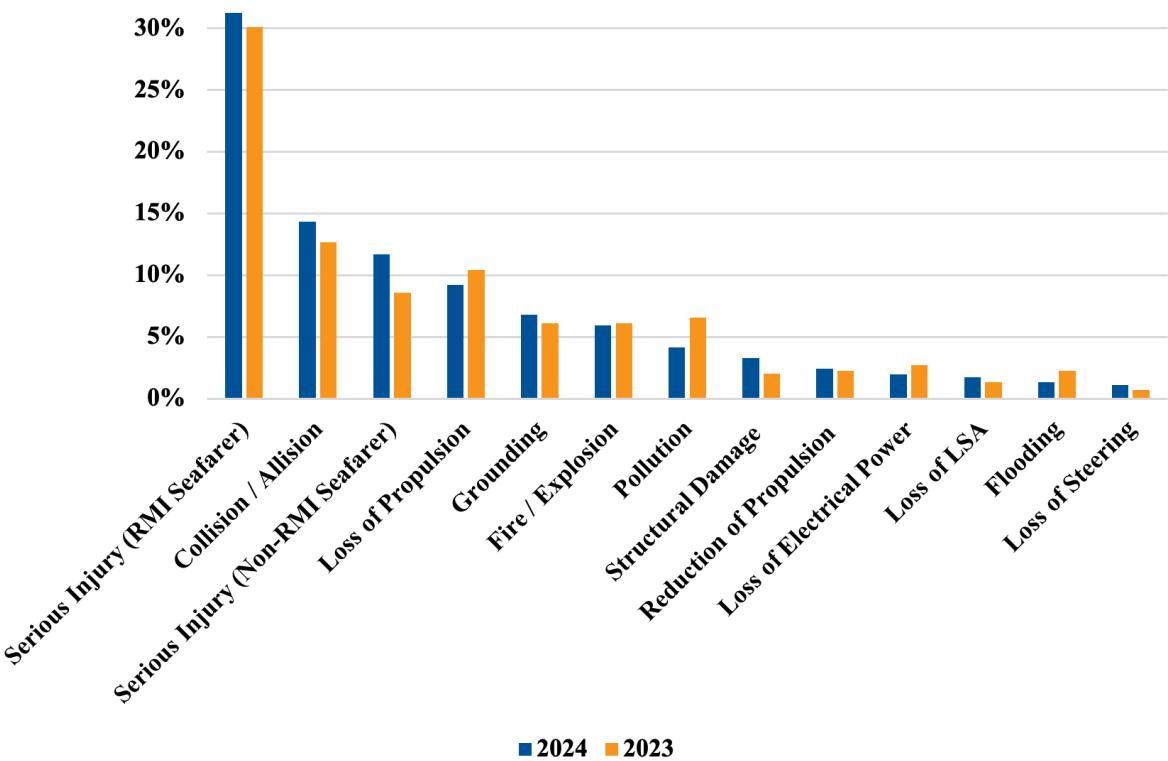
3 Five RMI-documented seafarers and one non-RMI seafarer.
4 One RMI-documented seafarer within a COT, and one non-RMI seafarer within a Cargo Hold.
5 One non-RMI seafarer (Stevedore) was asphyxiated having sunk within an open cargo hold carrying wheat. The atmosphere had previously been declared safe for entry.

Marine Casualties

There were 454 marine casualties reported to the Administrator during 2024. These have been classified by the primary incident type and are shown on the chart below as a percentage of the total marine casualties reported during 2024. Additional details pertaining to marine casualties, marine incidents, and occurrences reported during the previous years can be found in Appendix 2.

There was a reduction in the total number of loss of propulsion, pollution, loss of electrical power, and flooding incidents in 2024 compared to 2023. However, incidents related to serious injury, collision / allision, grounding, structural damage, reduction of propulsion, and loss of LSAs were greater than those reported in 2023.

Marine Casualties by Primary Incident Type – 2024

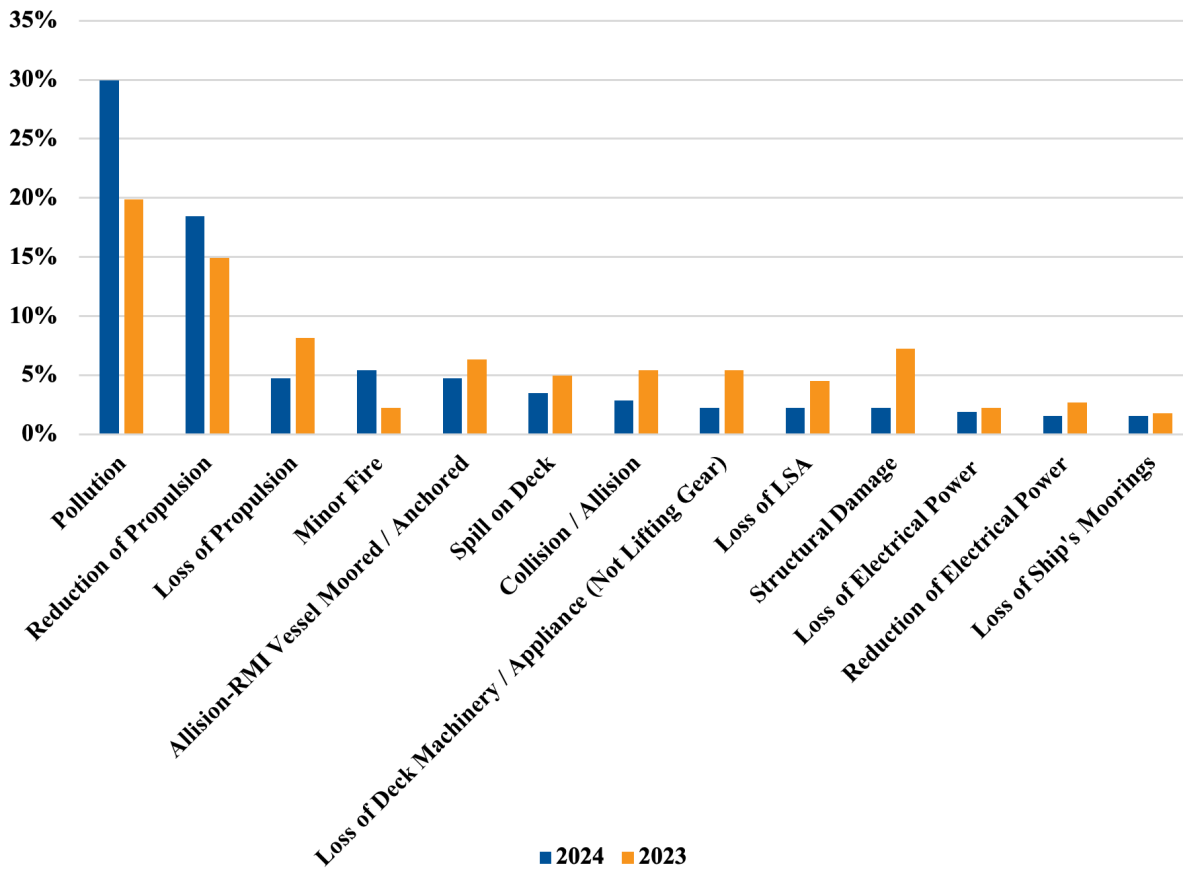


Marine Incidents

There were a total of 314 marine incidents reported to the Administrator during 2024. These have been classified by the primary incident type and are shown on the below chart as a percentage of the total marine incidents reported during 2024.⁶

13

Marine Incidents by Primary Incident Type – 2024

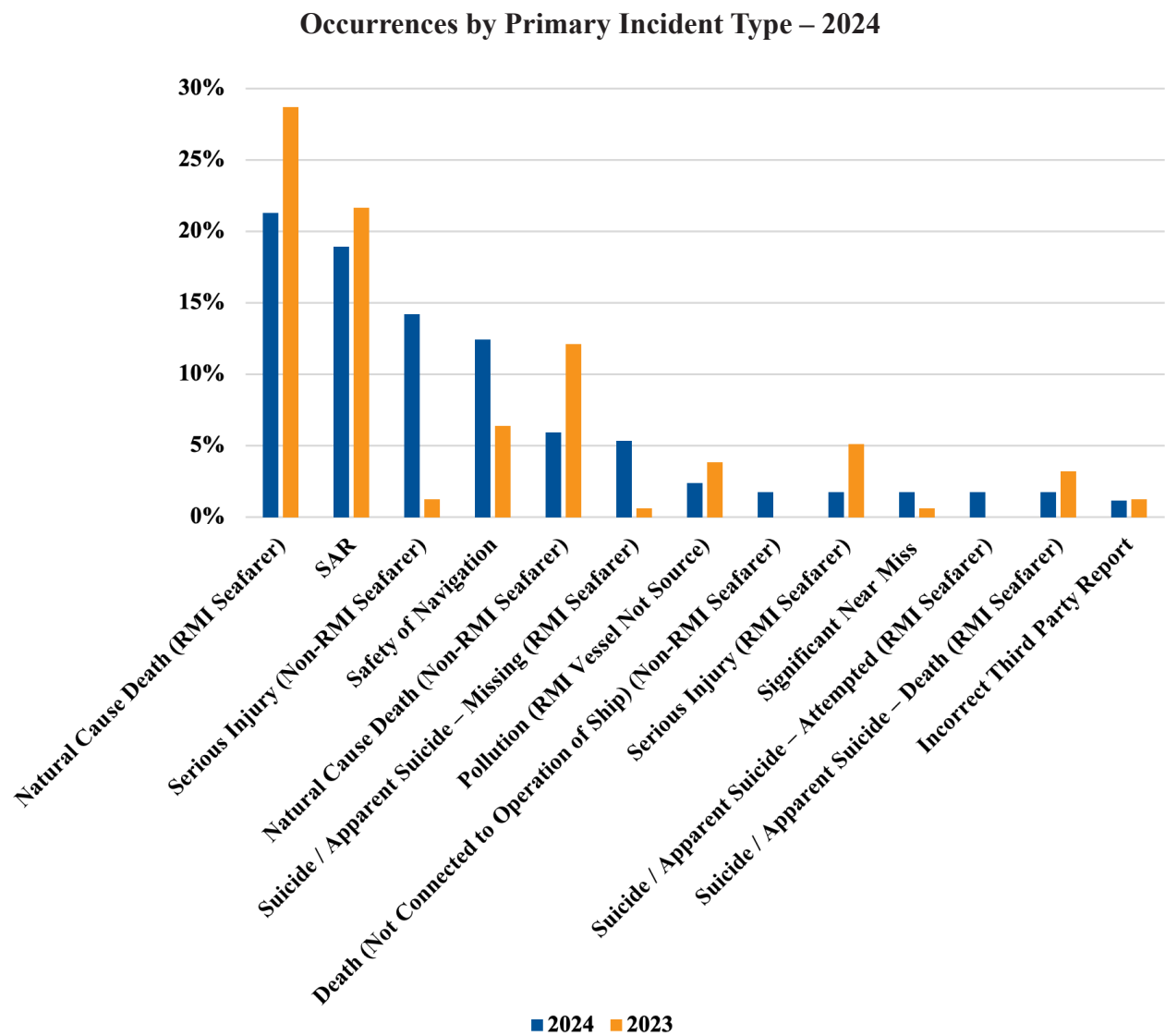


Marine incidents increased by 28% in 2024 compared to 2023. A significant proportion of these marine incidents were attributed to an increase in pollution cases, the majority of which were reported to have occurred within the RMI-registered MOU fleet. A reduction of propulsion incidents also contributed to this 28% increase in 2024 across varying vessel types.

⁶ Incident types which accounted for less than 1% of the reported marine incidents are excluded. Values are rounded to the nearest whole percent.

Occurrences

There were 169 occurrences reported to the Administrator during 2024. These have been classified by the primary incident types and are shown on the chart below as a percentage of the total occurrences reported during 2024. These include primary incident type which would normally be classified as marine casualties or marine incidents but have been classified as occurrences due to their specific nature and circumstances.



As can be seen in the chart above, there was a significant increase in 2024 in the number of serious injuries and safety of navigation related incidents. The former can be attributed to the number of passenger vessels within the RMI-registered fleet and includes serious injuries, which were not connected to the operation of the vessel, and did not involve an RMI-documented seafarer. The increase in the number of safety of navigation related cases can be attributed to instances whereby RMI-registered vessels failed to abide, or conform, to internationally recognized recommended routing measures.

Section 3: Summary of Select Reports of Very Serious Marine Casualties⁷

Enclosed Space Entry on a Bulk Carrier



Figure 1: Cargo Hold No.1 aft access ladder. The red circle indicates where the C/E, ETO, and Fitter were located at the bottom of the inclined ladder on the intermediate platform. The cargo of scrap metal is visible in the hold.

An RMI-registered bulk carrier was in laden condition carrying a cargo of scrap metal. The C/E, ETO, and Fitter were conducting maintenance on an electrical junction box on the port side of the cross deck between Cargo Holds Nos. 1 and 2. Prior to the afternoon coffee break, the C/E told the Bosun that he was going to enter Cargo Hold No. 1 to get a welding cable and other tools that had previously been left inside the cargo hold. The Bosun told the C/E that it was dangerous and that he should get permission from the Master before entering. At the end of the working day, the Bosun went on deck with a flashlight to find the C/E, ETO, and Fitter as they had not been seen since the coffee break. The Bosun entered Cargo Hold No.1 without telling the OOW or wearing an SCBA.

While on the vertical ladder leading from the main deck to the upper platform inside Cargo Hold No.1, the Bosun saw the light reflect from the reflective patches on the missing crewmembers' coveralls. The Bosun went back on deck, raised the alarm, and then started removing the cleats from the cargo hold hatch cover. A rescue was conducted per the ship's enclosed space entry rescue plan and the C/E, ETO, and Fitter were removed from Cargo Hold No. 1 without further incident. All three were unresponsive when removed from the cargo hold and did not respond to CPR. The C/E, ETO, and Fitter were subsequently determined to be deceased.

The Administrator's marine safety investigation determined that the C/E, ETO, and Fitter had entered Cargo Hold No. 1 to recover the welding cable and other tools without complying with the Company's enclosed space entry procedures despite the Bosun's prior warning to the C/E that it was dangerous and required permission from the Master. The following lessons learned were identified:

- Entering a loaded cargo hold without authorization and without following established shipboard enclosed space entry and rescue procedures is extremely hazardous and should not be attempted.
- Physical boundaries are critical for preventing unauthorized access into an enclosed space.
- Enclosed space rescue procedures must be properly practiced and drills conducted as if they were a real emergency.
- Stop-work authority can prevent marine casualties. For stop-work authority to be effective, crewmembers must not only be aware that they have this authority, but they must also have confidence that the authority is non-negotiable and can be exercised without fear of repercussion. They must also be as familiar with how to issue and respond to a stop-work action or instruction as they are with their other shipboard duties.

⁷ The selection of marine safety investigation reports summarized within this section were released in 2024. They can be read and downloaded from the following link: <https://www.register-iri.com/maritime/investigations/investigation-reports>.

Enclosed Space Entry on an Oil / Chemical Tanker

An RMI-registered oil / chemical tanker was in ballast condition awaiting voyage and cargo orders when the deck crew were conducting routine maintenance on various Butterworth hatches on selected cargo tanks which were inerted with N_2 . The deck crew were instructed to remove rust from the surface of the Butterworth hatch covers. To prevent rust and debris from entering the tank, a plastic bucket was positioned inside the opening of the Butterworth hatch. During the morning maintenance, the plastic bucket fell inside the COT No. 5S, and the Bosun entered COT No. 5S to retrieve it. A short time later, the ASD3 sighted the Bosun inside COT No. 5S and noted that he was unresponsive. The ASD3 raised the alarm before entering COT No. 5S to render assistance to the Bosun. The onboard rescue team found the Bosun and ASD3 unconscious on Platform 2 inside COT No. 5S and commenced to retrieve first the Bosun and then the ASD3. The Bosun responded to medical O_2 and was later discharged from the hospital. The ASD3 received medical O_2 and first aid, however, a short time after being rescued, he was declared deceased.



Figure 2: COT No. 5S tank access hatch cover warning signage.

The Administrator's marine safety investigation determined that unauthorized entry into an enclosed space was an unsafe act which could have been influenced by a state of hypoxia. The following lessons learned were identified:

- The Company documented control measures existed but were not followed on board. This resulted in inadequate hazard identification of the risk of exposure to N_2 and the danger of an O_2 deficient environment. The stop-work authority procedure was not robustly implemented and therefore did not prevent unauthorized access to an enclosed space.
- Necessary implementation and adherence to procedures combined with adequate oversight of maintenance and working routines should be sufficient in ensuring the safety of crewmembers undertaking the task required of them.
- The stop-work authority, if exercised by crewmembers, is designed to identify and stop an unsafe act or unsafe condition. Enclosed Space Rescue procedures must be properly practiced and drilled as if it were a real emergency. If crewmembers are not familiar with Enclosed Space Rescue procedures, they stand to put themselves and their fellow crewmembers in danger.



Figure 3: COT No. 5S Butterworth hatch with plastic bucket located inside.

Enclosed Space Entry on an Oil / Chemical Tanker

An RMI-registered oil / chemical tanker was underway on a ballast voyage. The deck crew had been assigned the task of preparing the COTs ahead of loading at the next port. While tank cleaning was ongoing, the C/O entered COT No. 1P to check the cleanliness of the tank. COT No. 1P had last contained a cargo which was required by the Charterer to be loaded, transported, and discharged under nitrogen padding (less than 0.1% O₂). COT No. 1P had not been ventilated or gas freed prior to the C/O's entry. While entering the tank, the C/O called over the Deck Cadet and asked him to hold his portable radio. The Deck Cadet, recognizing that the COT No. 1P was an enclosed space, asked the C/O to wait so that he could retrieve a portable gas detector. The C/O refused and continued to climb down into the tank, where he was quickly rendered unconscious on the upper platform of the COT No. 1P.

The Deck Cadet witnessed the incident and immediately notified other crewmembers. An enclosed space rescue was carried out to remove the C/O from COT No. 1P without further incident. Despite the efforts of the crewmembers, the C/O was determined to be deceased.

The Administrator's marine safety investigation determined that the C/O entered a COT despite his knowledge that it had been inerted with nitrogen and had not been ventilated. The C/O entered the COT without complying with the enclosed space entry procedures that were contained in the Company's SMS. The C/O disregarded the Deck Cadet when he intervened and asked him to check the atmosphere inside the COT with a portable gas detector. The intervention of the Deck Cadet may have been more effective if he had expressly exercised his stop-work authority. The stop-work policy in the Company's SMS was not followed. The crewmembers stated that despite being aware of their stop-work authority, they were not confident in exercising this authority. The following lessons learned were identified:

- Any entry into an enclosed space without taking proper precautions and without complying with the enclosed space entry procedures contained within the Company's SMS is hazardous and can be fatal.
- Risk assessments and Toolbox Talks must identify and include all associated hazards related to the conduct of work in and around an inerted COT.
- For stop-work authority to be effective, seafarers must not only be aware that they have the authority to intervene to stop an unsafe act or condition, but they must also be confident that they can exercise this authority.



Figure 4: COT No. 1P access hatch showing warning label "Enclosed Space Do Not Enter Without Permit."

Collisions with Fishing Vessels

In the early morning hours, an RMI-registered bulk carrier collided while in a crossing situation with a fishing vessel. The bulk carrier was the give-way vessel and the fishing vessel, which was not engaged in fishing, was the stand-on vessel. The OOW on the bulk carrier was alone on watch. A designated Lookout had not been posted so that the deck ratings would be fully rested before undertaking deck duty later that morning. The fishing vessel's Master was on watch assisted by a Mate in maintaining a proper lookout.

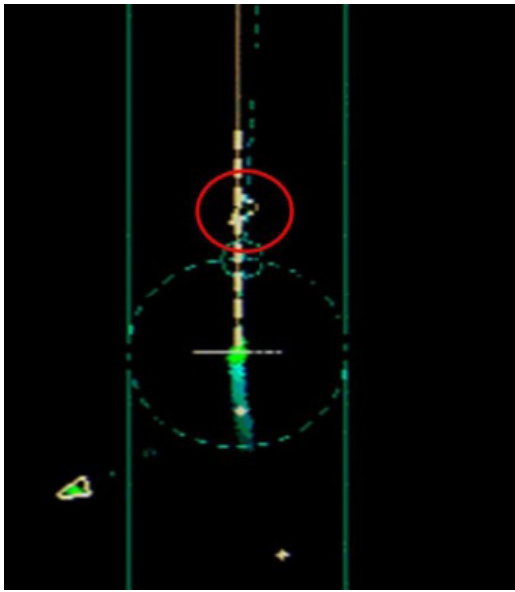


Figure 5: Fishing vessel AIS contact circled in red acquired on ARPA three minutes before the collision.

The collision occurred soon after the fishing vessel turned toward the bulk carrier when the fishing vessel was less than 0.7 NM off the bulk carrier's starboard bow. At the time, the bulk carrier's OOW was using the autopilot to turn the ship to starboard. Approximately three hours after the collision, the fishing vessel sank. All six of the crewmembers who had been on board were rescued by another fishing vessel in the vicinity. The bulk carrier's OOW did not inform the ship's Master of the collision or assist in the recovery and rescue of the crewmembers from the fishing vessel and continued on the ship's planned voyage.

The Administrator's marine safety investigation determined that neither vessel made effective use of all available means to assess the risk of the collision as the two vessels approached each other. It was also determined that the bulk carrier, which was the give-way vessel, did not take early and substantial action to keep clear of the fishing vessel. Similarly, the fishing vessel, which was the stand-

on vessel, did not take any action to avoid collision until the vessels were in a close quarters situation and then turned toward the bulk carrier contrary to COLREGs. Other factors that contributed to the collision included the fact that the bulk carriers' OOW was alone on the Bridge and that he used the autopilot to maneuver the ship while in a close quarters situation. The following lessons learned were identified:

- The risk of collision is significantly increased when COLREGs is not adequately applied as two vessels are approaching each other.
- Maintaining a proper lookout must be prioritized over shipboard maintenance tasks.
- Navigation watchstanders need to make effective use of all available means to assess the risk of collision and to take early and substantial action when it is determined that there is a risk of collision.
- Autopilot should not be used when large alterations of course are required to resolve a developing situation with another vessel. An additional watchstander should be called to the Bridge in ample time so that the changeover from autopilot to manual steering can be made before a close quarters situation exists and so that the continuity of the lookout is not broken.
- Navigational watchstanders need to use extra caution when navigating in the vicinity of fishing vessels.

Occupational Fatality on Board a Bulk Carrier

A C/E on board an RMI-registered bulk carrier found the Fitter pinned under steel plates that were stored vertically on a rack in the Oxygen Bottle Room. The steel plates, which each weighed approximately 294 kg, had fallen and were lying on top of the Fitter's legs and chest so that his body was wedged in a semi-reclined position with his lower body and back on the deck. Only the Fitter's head, which was pressed against two of the O₂ bottles, was visible. The retaining bar used to secure the steel plates was pressed against the Fitter's neck. Crewmembers responded immediately to the C/E's call for assistance and lifted the steel plates off the Fitter, who was not breathing. The crewmembers transported him by stretcher to the Ship's Office where they started to administer CPR. The crewmembers administered CPR

for approximately an hour, but the Fitter remained unresponsive and was determined to be deceased. The Administrator's marine safety investigation was not able to determine with certainty what caused the steel plates to fall and likely knock the Fitter down, who had been alone in the Oxygen Bottle Room. It was determined that the retaining bar used to secure the steel plates had possibly been removed by the Fitter sometime before they fell and pinned him against the O₂ bottles.

Additionally, the investigation determined that although the location and design of the storage rack was effective for storing steel plates securely when the retaining bar was in place, a potential hazard exists whereby the steel plates may fall whenever the retaining bar is removed or fails for any reason. The following lessons learned were identified:

- The Company's safe work procedures and the C/E's and 2/E's instructions were not followed. This created a situation where whatever work the Fitter may have intended to do in the Oxygen Bottle Room was not subject to being reviewed with either the C/E or 2/E. Such review is an opportunity to ensure the task is planned, the associated risks identified, and appropriate control measures put in place so that it can be completed safely. It also created a situation where no one on board knew where the Fitter was.
- Handling unsecured steel plates, even when they are on a storage rack, is a potentially dangerous activity and should not be attempted without assistance.
- The location and design of storage racks should eliminate or reduce the potential for steel plates to fall while being handled.
- The importance of maintaining positive control of keys for spaces with restricted access.

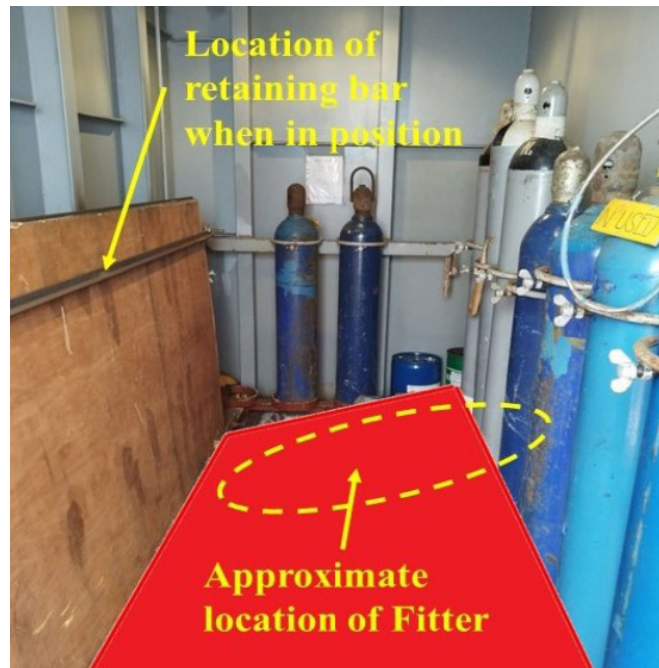


Figure 6: The approximate position of the steel plates and location of the Fitter when he was found by the C/E.



Figure 7: Starboard side pilot boarding area.

Occupational Fatality on Board a Gas Carrier

An RMI-registered gas carrier was underway at a speed of 8 kn in squally weather. The 3/O and ASD welcomed the Pilot on board at the pilot boarding area and, after completing the boarding procedures, the 3/O began to escort the Pilot to the Bridge. When leaving the boarding area, the 3/O and the Pilot heard a scream and shouting for help. They then realized that the ASD had fallen overboard. The 3/O ran aft to throw a lifebuoy to the ASD and meanwhile alerted the Master on the Bridge by means of his hand-held radio. The ASD, who was not wearing a life jacket, was not able to reach the lifebuoy. The pilot boat became aware of the situation and approached the ASD in the water. A crewmember on board the pilot boat grabbed a lifebuoy with light

and jumped into the water to rescue the ASD. Without having succeeded in aiding the ASD, the crewmember was recovered by the pilot boat. After the pilot boat recovered their crewmember, sight of the ASD was lost. The following day, during a SAR operation, the ASD was recovered deceased.

The Administrator's marine safety investigation determined that the ASD most probably fell overboard while securing the rail chains of the pilot access point. The investigation was not able to determine the cause of the ASD's death. The following lessons learned identified that:

- The decision to enact a rescue attempt without proper equipment or training carries a high degree of risk and using rescue cradles or similar equipment can help to successfully recover persons from the water.
- The importance of proper oversight of crewmembers while working on deck and during seamanship evolutions.
- Suitable PPE should be worn when the risk of falling overboard exists.

Occupational Fatality on Board a Bulk Carrier

While at anchor, an RMI-registered bulk carrier was undergoing a change of management and crew following a change of ownership. The weather was good with calm seas. The ship's freeboard amidships was approximately 11-12 m.

Mid-morning a launch with the on-signing Master and eight on-signing crewmembers arrived alongside in way of the starboard side pilot station, where a combination pilot ladder had been rigged. Seven of the on-signing crewmembers embarked the ship without incident. The on-signing Master, who was not wearing a lifejacket, transferred from the launch and started climbing up the pilot ladder. He stopped climbing when he was one or two steps below the accommodation ladder platform. A crewmember on board the ship lowered the accommodation ladder so that the platform was level with the on-signing Master's feet. The on-signing C/O and an on-signing ASD had both climbed down the accommodation as the on-signing Master was climbing up the pilot ladder and tried to help him step onto the platform. The on-signing Master was reported to say he could not climb any further. He then appeared to lose his grip on the pilot ladder and fell, hitting the launch before falling into the sea. A crewmember on the ship immediately threw a lifebuoy to the on-signing Master. This was then followed by the on-signing C/O and a Superintendent who jumped into the sea and helped the on-signing Master swim to the stern of the launch.

The launch was not equipped with a rescue cradle. Between the on-signing C/O, Superintendent, and launch crewmembers, the on-signing Master was able to get halfway up the ladder before stopping and falling back into the sea. Repeated attempts to help the on-signing Master climb the ladder that had been rigged at the stern of the launch were not successful. The on-signing Master lost consciousness in the water and was determined to not have a pulse approximately 30 minutes after he fell from the pilot ladder while embarking the ship. The on-signing C/O and Superintendent, both of whom were still in the water assisting the on-signing Master, were not able to revive him.

The on-signing Master was not recovered until after a local authority rescue boat with a diver on board arrived on scene. Crewmembers on the rescue boat were able to get the on-signing Master on board their vessel and immediately proceed to shore. The on-signing Master was determined to be deceased sometime after being recovered from the water.

The Administrator's marine safety investigation was not able to determine why the on-signing Master fell from the pilot ladder as he was embarking the ship. A possible contributing factor was that the on-signing Master, who had

passed a pre-employment medical exam less than a month earlier, may not have been physically capable of climbing the ladder. The Administrator's marine safety investigation also determined that there was a delay recovering the on-signing Master from the water. Factors that contributed to the delay included that the on-signing Master was, even with assistance, not able to climb the ladder that had been rigged on the launch, and that the launch was not equipped with a rescue cradle.

Fatal Engine Room Casing Fire on Board a General Cargo Ship

An RMI-registered general cargo ship was underway on a ballast voyage. In the early evening, a thermal oil low pressure alarm, located in the Engine Control Room, initiated a chain of events resulting in the C/E jumping overboard from the Aft Mooring Deck. Following a thermal oil leak on the blind flange connected to the thermal oil system, which triggered the alarm identified by the C/E, the C/E proceeded to the compartment to investigate the thermal oil leak and in doing so, manually adjusted the blind flange threaded bolts to secure the leaking thermal oil.

Moments later, pressurized thermal oil ignited in vicinity of the thermal oil blind flange, engulfing the C/E. The C/E took evasive action resulting in him jumping over the guardrails and into the sea below.

The thermal oil heating system connected to the main engine remained operational while the C/E attempted to rectify the leaking blind flange. This deviation from PMS procedures resulted in the eventual fire. The firefighting effort conducted by the attending crewmembers was unplanned. The immediate actions of the crewmembers fighting the fire with portable fire extinguishers was effective and the fire was extinguished. However, shipboard firefighting procedures were not followed, resulting in increased risk in the event the fire could not be contained and extinguished.



Figure 8: Starboard Engine Room Casing and Economizer post fire.

The SAR operation was initiated utilizing the ship's rescue boat and shoreside SAR assets. The search for the C/E, led by the local authorities, continued for eight hours however the C/E could not be located.

The Administrator's marine safety investigation determined that the cause of the fire, which originated within the starboard Engine Room Casing on the upper deck, was determined to have been started by leaking thermal oil from the blind flange which ignited on an adjacent hot surface. The Administrator's marine safety investigation also determined that procedures for rectifying the thermal oil leak on the blind flange were not followed as they require the main engine to be shut down in order for the thermal oil system to be secured and cooled down. The following lessons learned identified:

- The importance of adhering to documented maintenance procedures and avoid deviating from those procedures especially when conducting unplanned defect rectification.
- The importance of ensuring that adequate thermal insulation is maintained especially in vicinity of flammable fluids and gases. Regular testing and assessment must be conducted to verify adequacy of thermal insulation within machinery spaces and adjacent compartments.
- The importance of regular firefighting drills to ensure crewmembers are familiar with firefighting techniques and practices and the use of firefighting protective equipment.

Section 4: MSAs Issued by the Administrator

During 2024, the following MSAs were issued in response to incidents reported to the Administrator:

MSA No.	SUBJECT
01-24	Anchor Windlass Motor Protection
02-24	Counterfeit Pilot and Embarkation Ladders
03-24	Enclosed Space Entry Incidents
06-24	Incidents Involving the Storage and Handling of Steel Plates
10-24	Fatalities Due to Falls from Height

Section 5: Looking Forward

Both the number and rate per 100 vessels of reported incidents has increased since 2022. Specifically, the number of very serious marine casualties has increased significantly both across RMI-registered vessels and throughout industry. As a result, and in order to address and stem this increase, which often results in the loss of life, the Administrator has continued to develop and publish detailed marine safety investigation reports and advisories, incorporating guidance, lessons learned, and recommendations designed to raise awareness and improve safety. Through the analysis of marine incidents and extensive investigations, a number of recurring trends continue to appear. Based on these trends, the Administrator has identified three key areas in which owners, operators, and seafarers must improve. Namely:

- training;
- supervision; and
- the application of robust stop-work authority.

In the year ahead, the Administrator will endeavor to provide more evidence-based guidance and tailored engagement to ensure owners, operators, and seafarers have the tools necessary to learn from and improve safety.

Further, the Administrator has recognized that more can be done to improve safety through focused engagement with key industry stakeholders. In 2025, the Administrator had the opportunity to join a unique non-regulatory industry consortium focused on improving the safety performance in shipping. The consortium, Together in Safety, is comprised of CEOs and senior executives, representing global shipping industry bodies, shipping companies, insurers, and Classification Societies. The Together in Safety industry consortium has identified the three strategic drivers of Leadership, Incident Prevention, and Wellbeing & Care in order to develop and improve safety performance. In line with each strategic driver, the consortium developed readily accessible resources developed by industry, for the industry.

The Together in Safety industry consortium has further developed Golden Safety Rules. These rules have been selected following a detailed review by the consortium on fatal incident reports across all sectors of the shipping industry.

The rules are comprised of activities that are most likely to lead to fatalities and serious injury and focus on the areas that an individual has control over in their everyday work. The ongoing work by the Administrator in addressing and improving safety in collaboration with the Together in Safety consortium, if adhered to, could significantly reduce the loss of life on board.

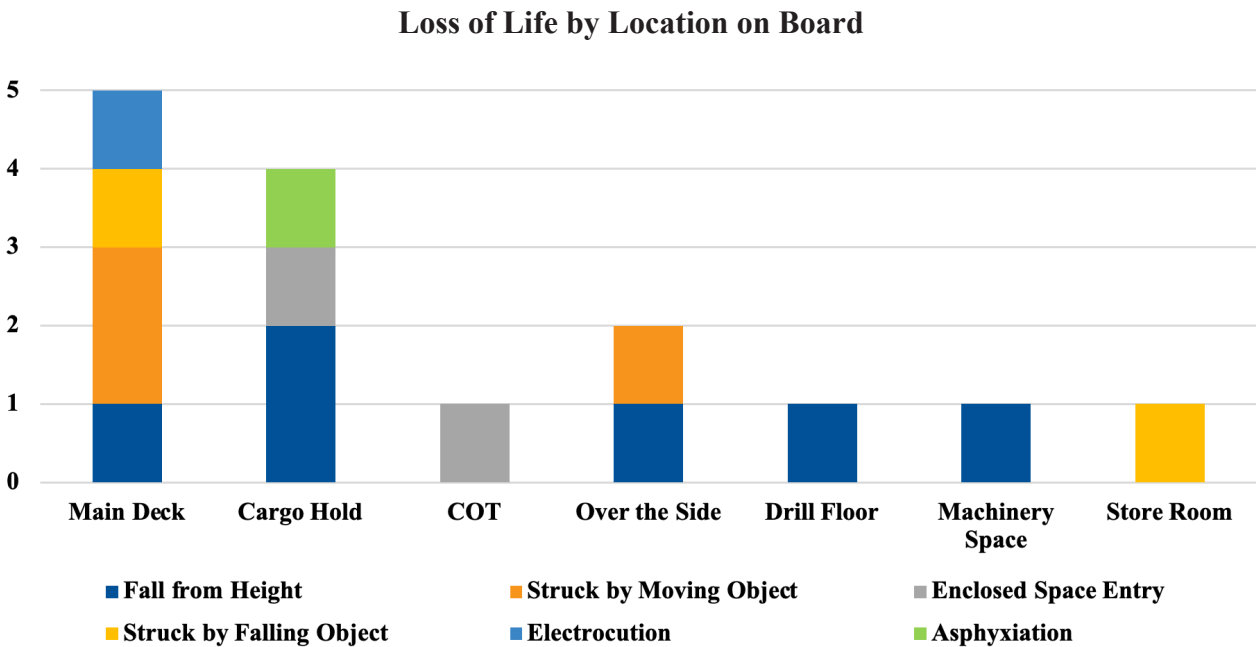
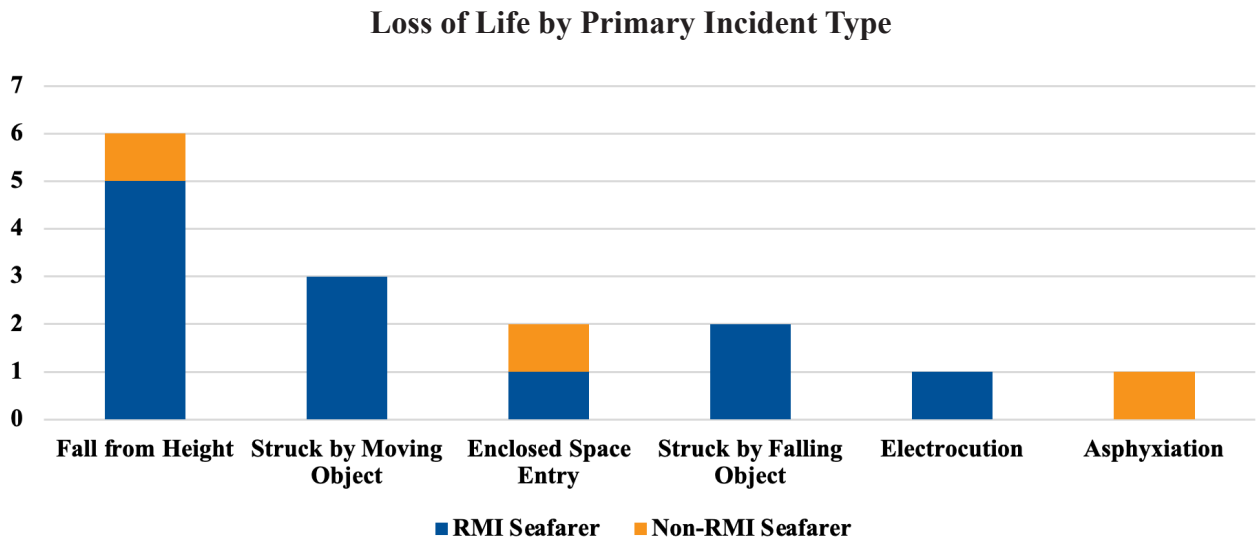
 Leadership Leadership is a key driver that contributes to safety onboard. It needs to apply to each and every individual, regardless of their rank, across the ship. Choose and modify the resources below that work for your company. Find out more >	 Incident Prevention We have learned that a lot of preventable incidents happen across specific areas. Pick an area and use the materials to educate your teams, both onboard ship and ashore. Find out more >	 Wellbeing & Care Crew being supported and happy onboard is key to safer operations. Browse the resources below to choose practices that work for you. Find out more >
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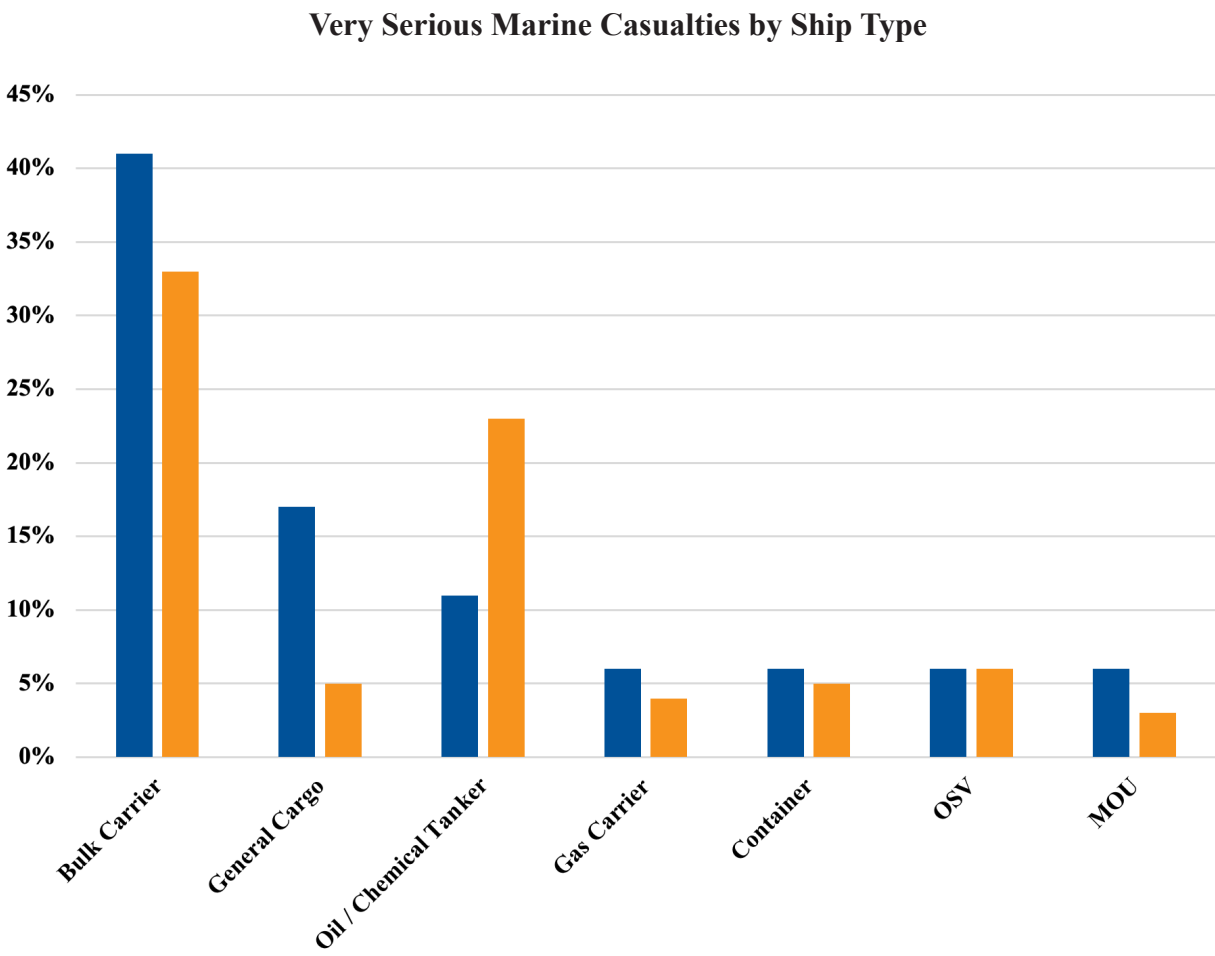
Source: <https://togetherinsafety.info/resource-library/>.

The Administrator strongly encourages engagement with the coalition, Together in Safety, and the utilization of readily accessible material designed to improve the safety performance of vessels.

Appendix 1: Very Serious Marine Casualties

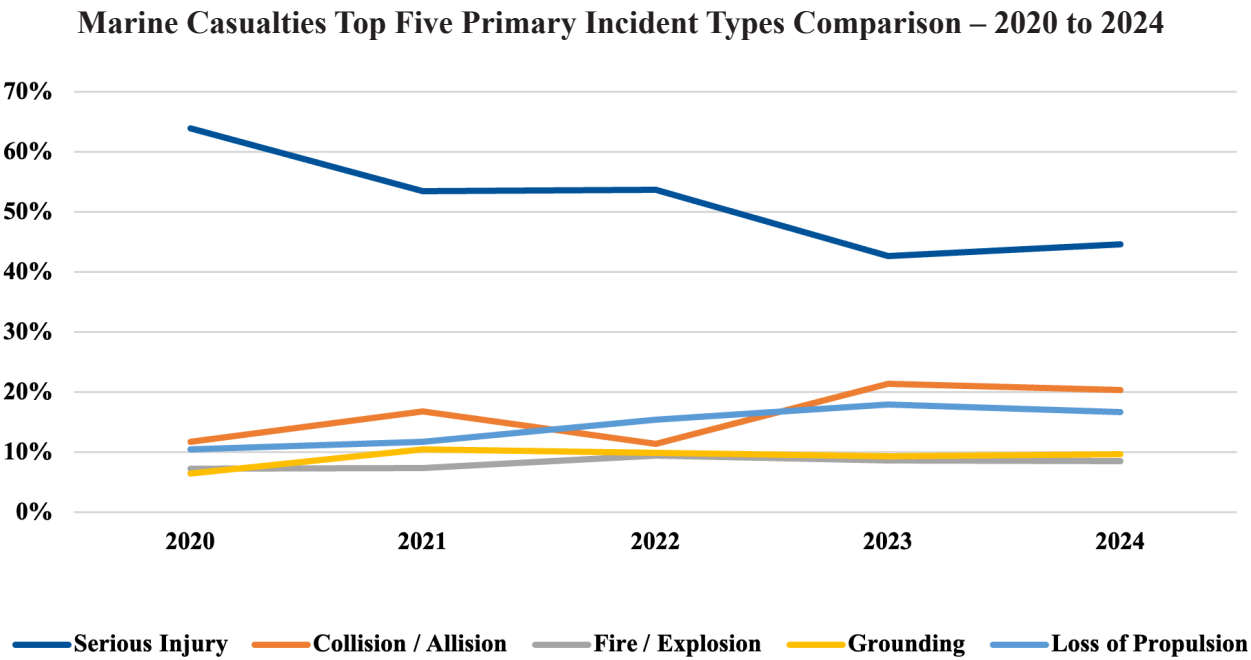
During 2024, very serious marine casualties involving RMI-registered vessels resulted in 15 fatalities.





Appendix 2: Marine Casualties

The following information includes data obtained during 2024 for marine casualties. The detailed analysis includes data obtained from marine casualties investigated by the Administrator into the five most common incidents by type over a five-year period.

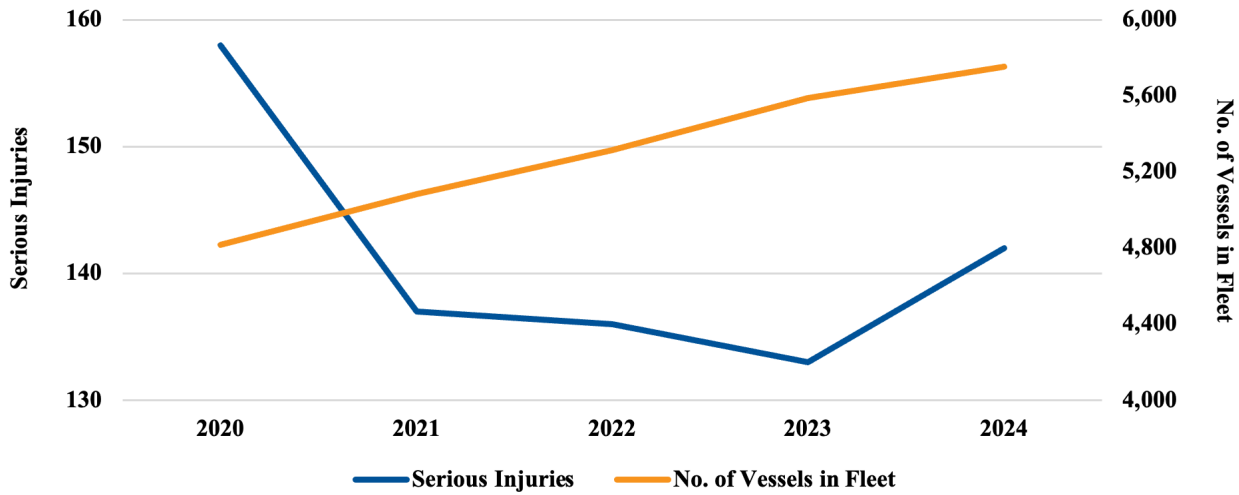


Serious injuries (those resulting in incapacitation for 72 hours or more) continue to be the leading primary incident type reported to the Administrator. However, as a proportion of the top five incident types, serious injuries are generally declining over the five-year period. Collision / allision cases are increasing over a five-year period. Loss of propulsion increased significantly between 2020 and 2023, before steadying in 2024. Grounding and fire / explosion cases have remained steady over the previous five-year period, increasing proportionally with the growth of the fleet.

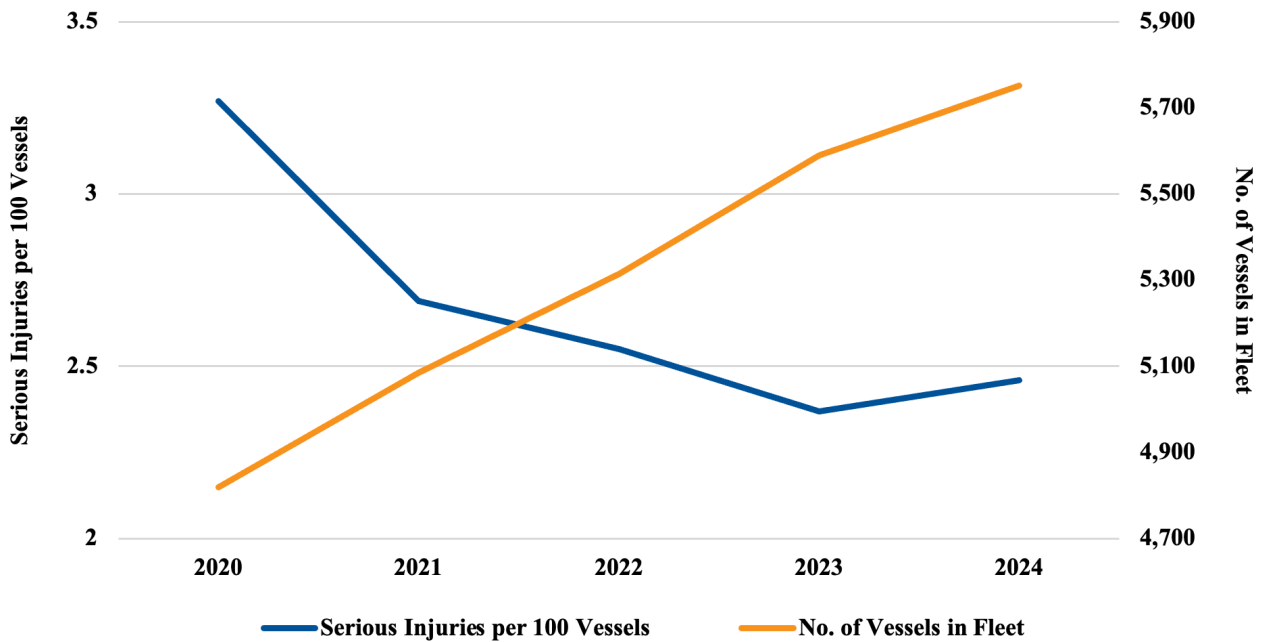
Serious Injuries

Serious injuries continue to be the leading marine casualty primary incident type. However, it is noted that the total number of serious injuries reported continued to decline while the fleet size has continued to grow. On average, 2.5 serious injuries occurred for every 100 vessels in 2024. Although this is an increase of 0.1 compared to 2023, the general average across the five-year period is 2.7, and therefore, the number of serious injuries is reducing as a proportion of the RMI-registered fleet.

Serious Injuries – 2020 to 2024



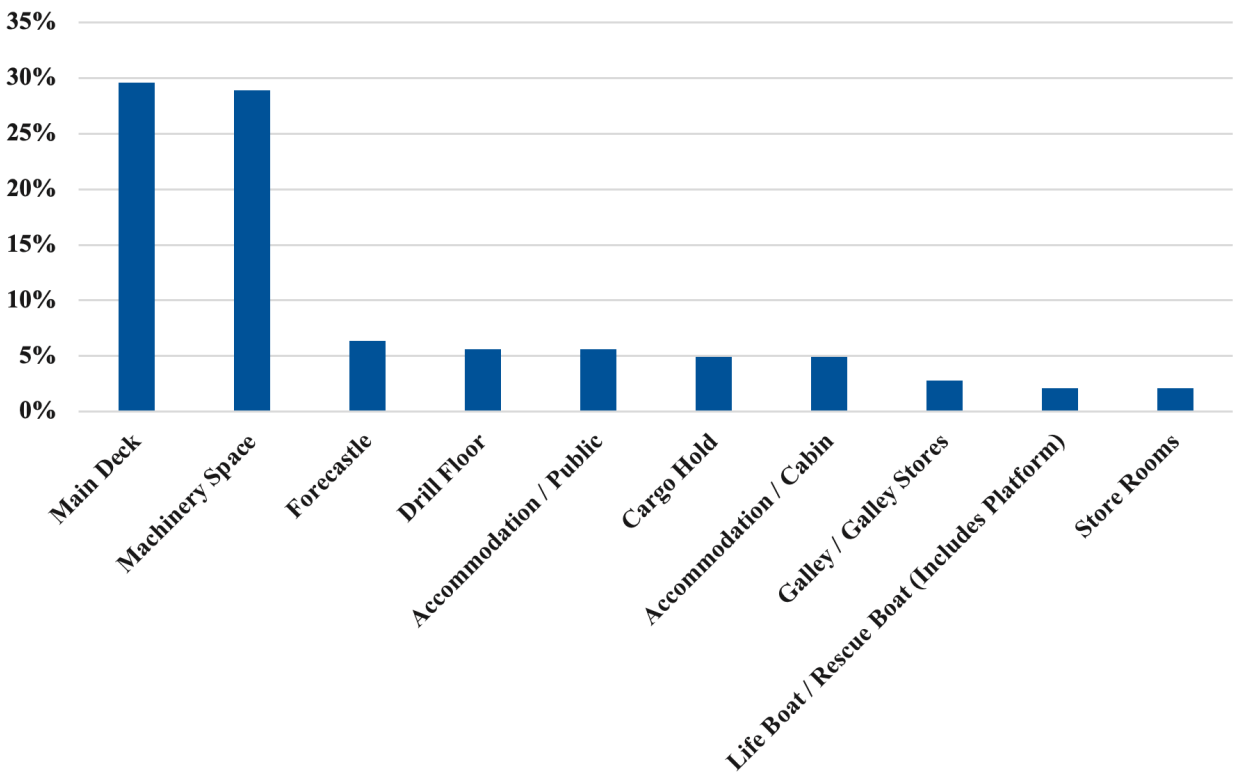
Number of Serious Injuries per 100 Vessels – 2020 to 2024



Top 10 Causal Factors of Serious Injuries – 2024

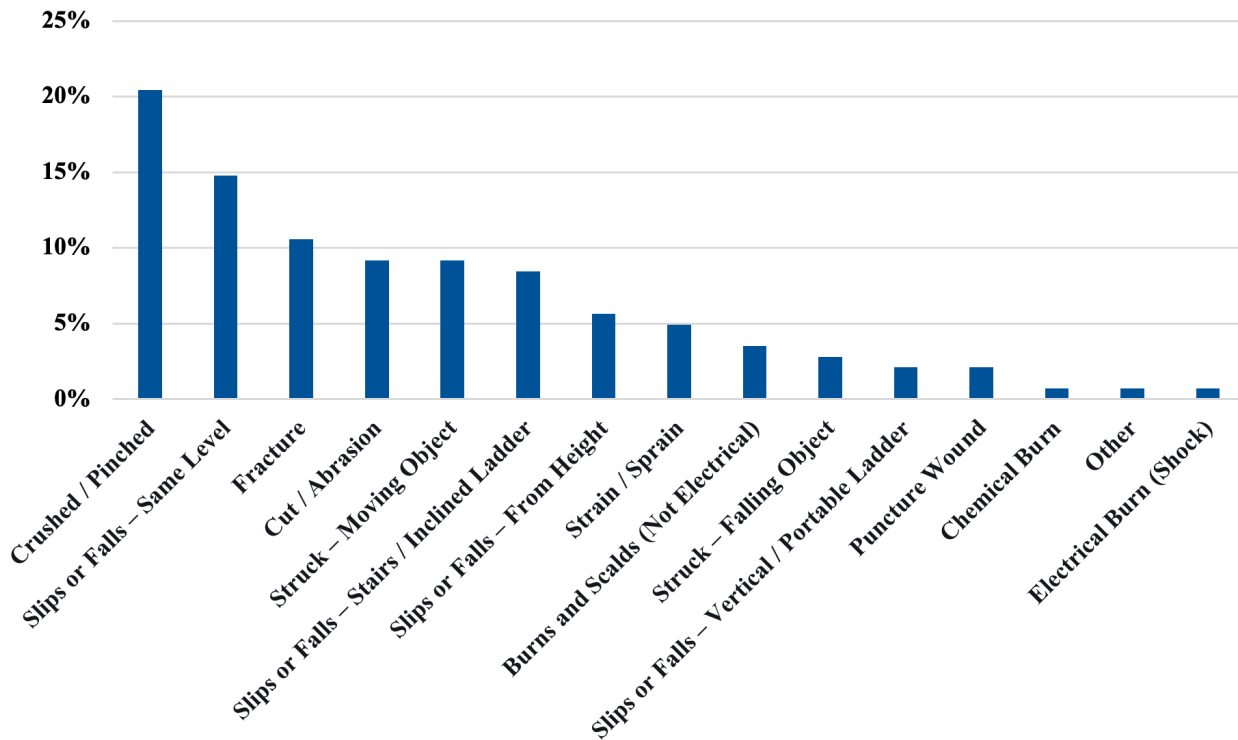
CAUSAL FACTOR	PERCENTAGE OF INCIDENTS ⁸
Improper position for task	10%
Improper lifting, handling, or storage	6%
Inadequate work planning or programming	6%
Routine, monotony, demand for uneventful vigilance	6%
Inadequate identification and evaluation of hazards	6%
Failure to follow rules and regulations	6%
Failure to use PPE properly	5%
Failure to secure	5%
Poor judgement	5%
Incorrect use of equipment or machinery	4%

Serious Injuries by Location on Board – 2024

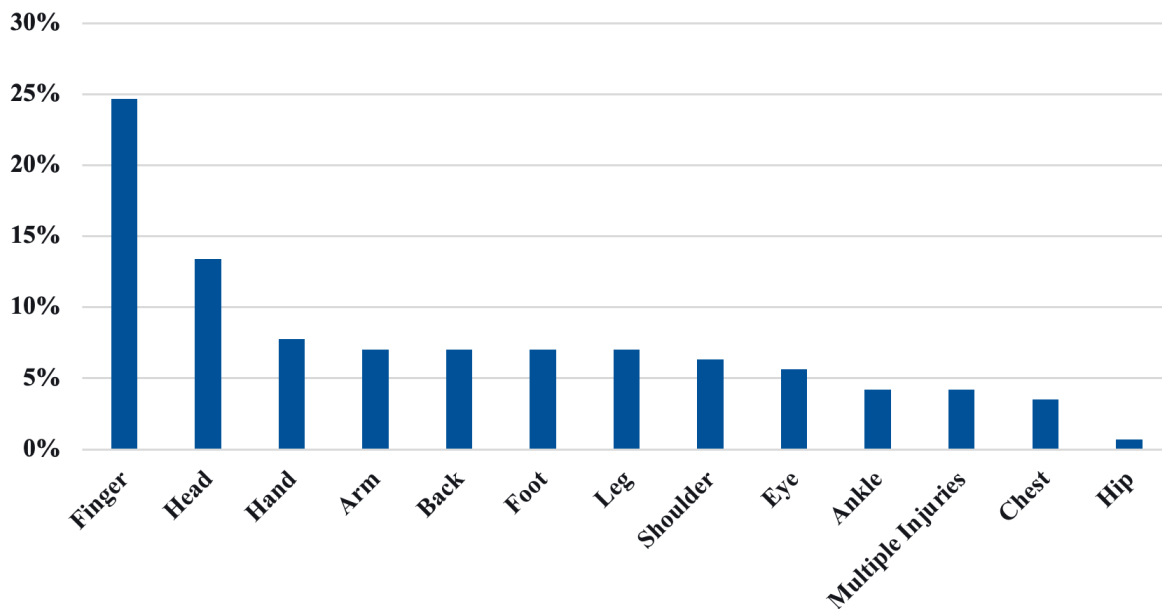


8 Multiple causal factors can be associated with the same incident.

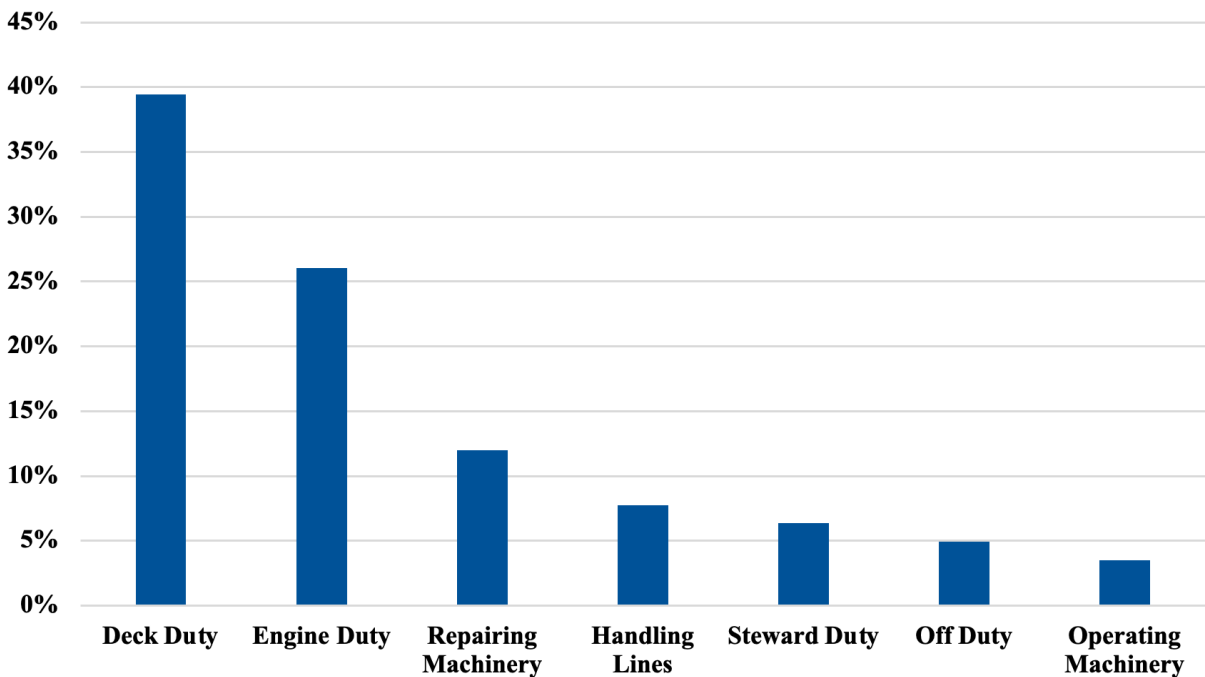
Serious Injuries by Injury Type – 2024



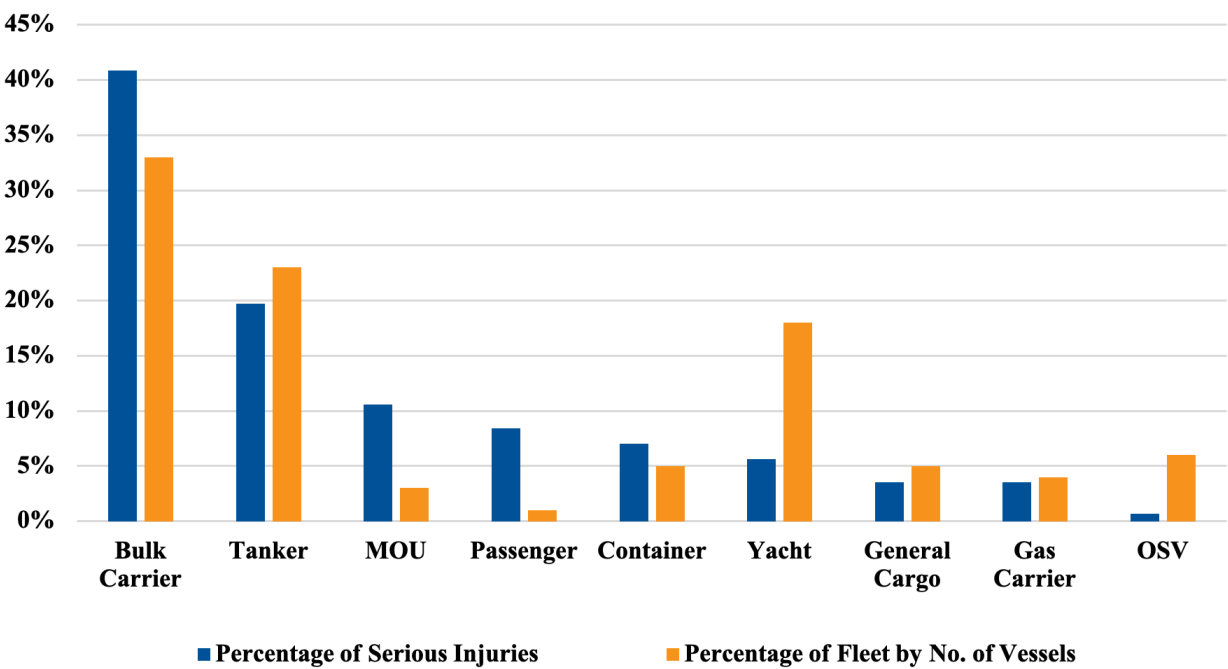
Serious Injuries by Body Part – 2024



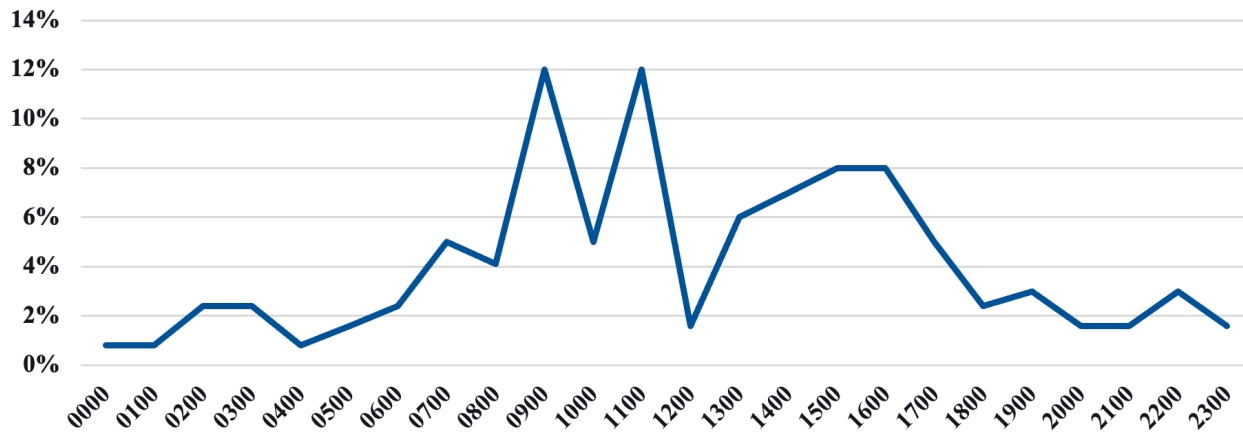
Serious Injuries by Activity – 2024



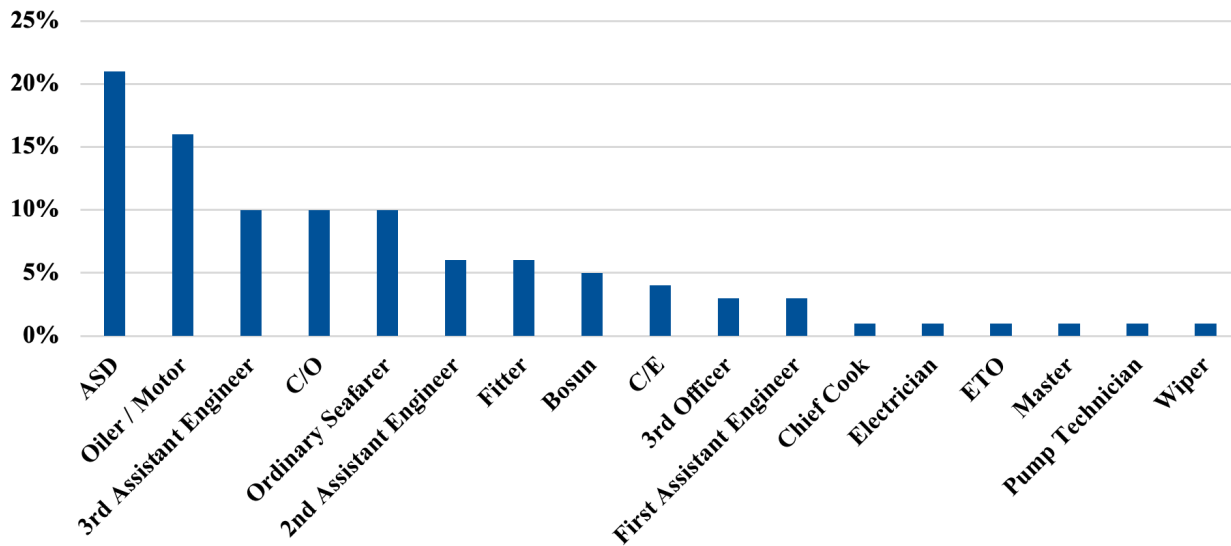
Serious Injuries by Ship Type – 2024



Serious Injuries by Time of Incident – 2024

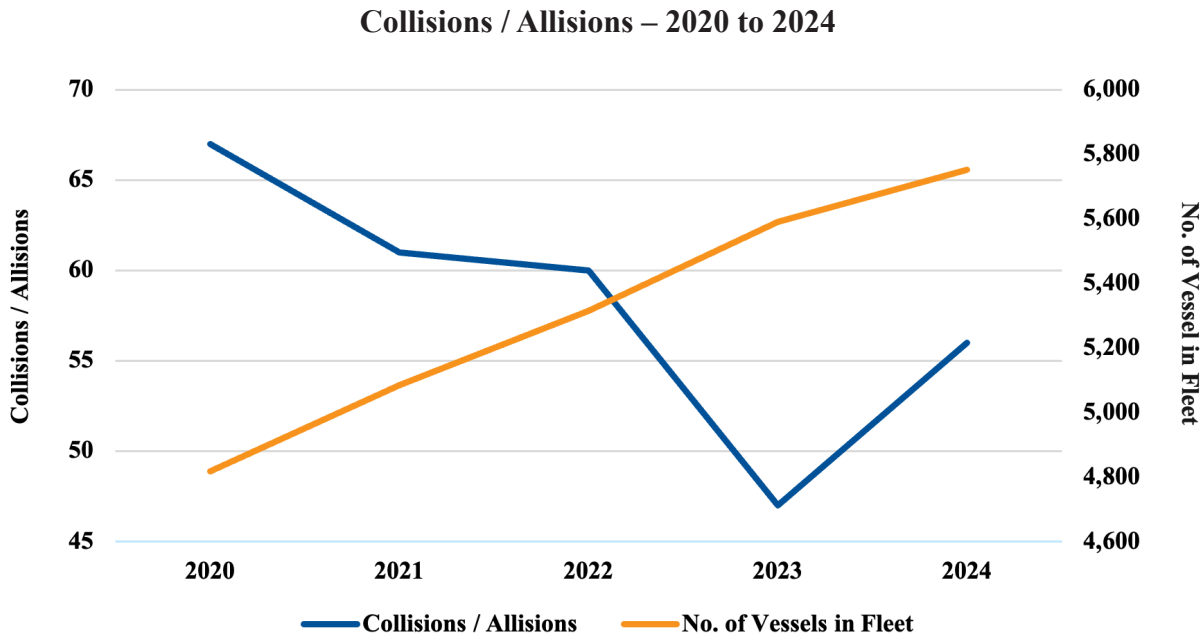


Serious Injuries by Position – 2024



Collisions / Allisions

During 2023, 65 collisions / allisions⁹ were reported, compared to 56 in 2022; 34% of these incidents occurred with a pilot on board. The percentage of collisions / allisions that have occurred with a pilot on board has remained consistent over the past five years.



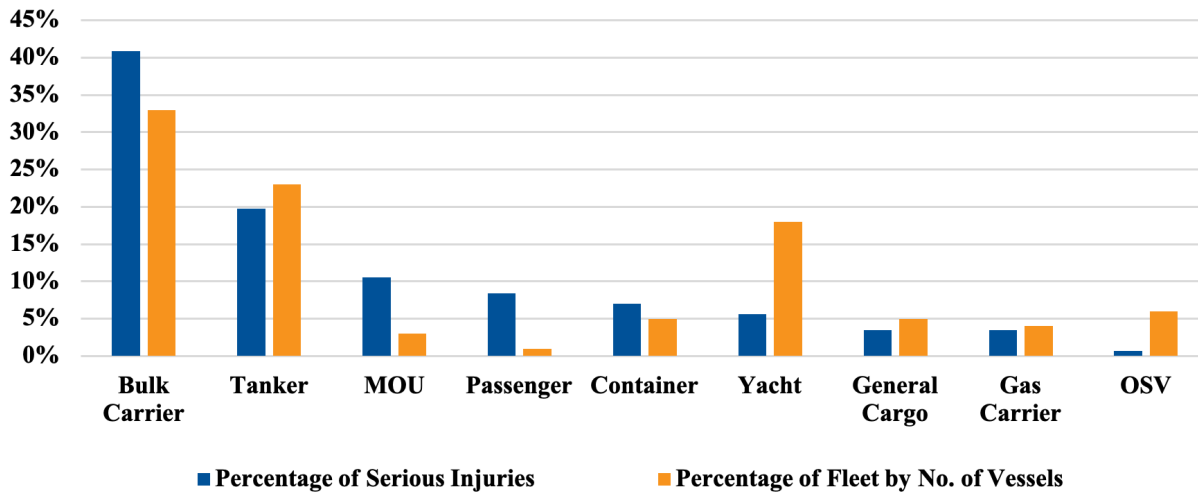
Top 10 Causal Factors of Collisions / Allisions – 2024

CAUSAL FACTOR	PERCENTAGE OF INCIDENTS ¹⁰
Incorrect navigation or ship handling	31%
Failure to warn	6%
Failure to follow rules and regulations	6%
Inadequate work planning or programming	6%
Inadequate or incorrect performance feedback	4%
Inadequate identification and evaluation of hazards	4%
Port and berthing facilities	3%
Lack of supervisory and/or management job knowledge	3%
Congestion or restricted action	3%
Poor judgement	3%

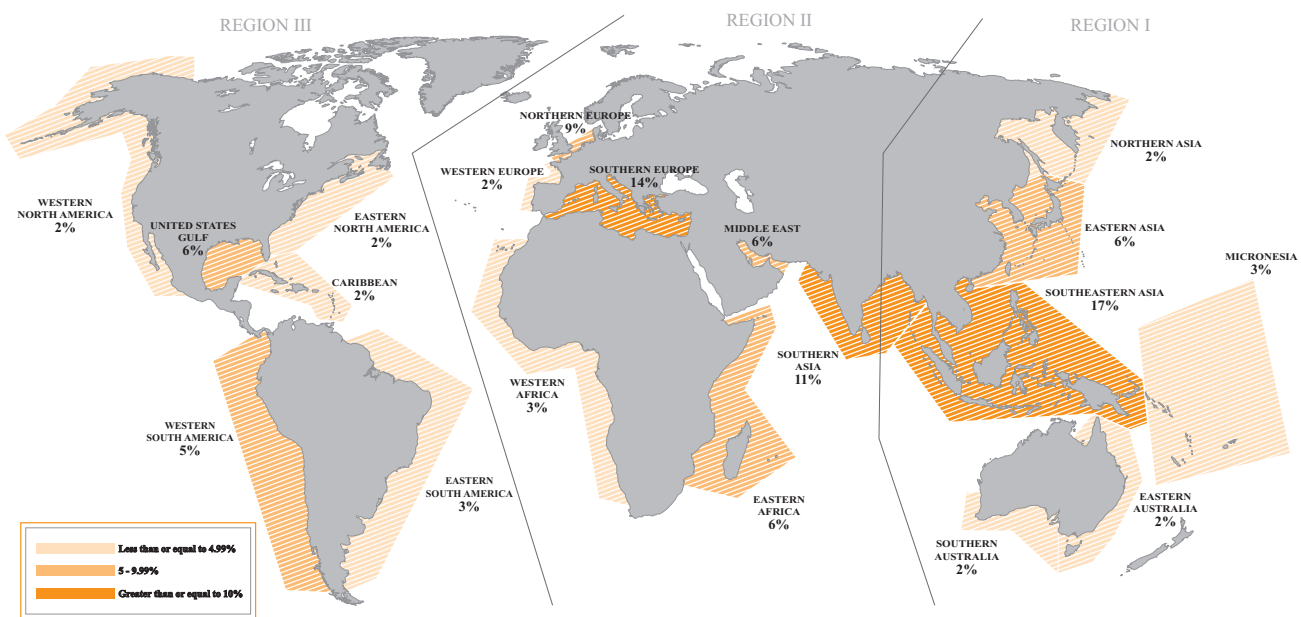
⁹ These do not include allisions where the RMI-registered vessel was anchored or moored.

¹⁰ Multiple causal factors can be associated with the same incident. Improper or ineffective application of COLREGs is addressed by several of the identified causal factors.

Collisions / Allisions by Ship Type – 2024

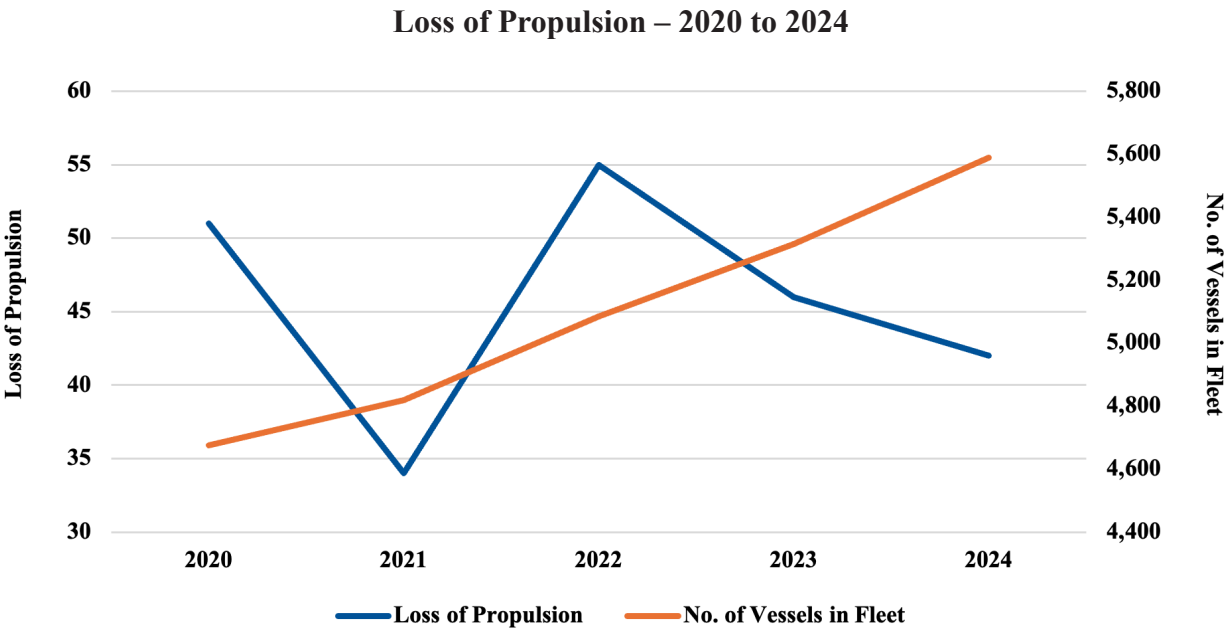


Collisions / Allisions by Geographic Regions – 2024



Loss of Propulsion

The Administrator received 42 reports of loss of propulsion during 2024, with 22 occurring in coastal seas, narrow and restricted waters, and port approaches with a pilot on board. The remaining 20 reports of the loss of propulsion occurred on the high seas, TSS, at anchor or alongside. Additionally, 9 of the 42 loss of propulsion incidents required towing of the vessel to a repair facility.

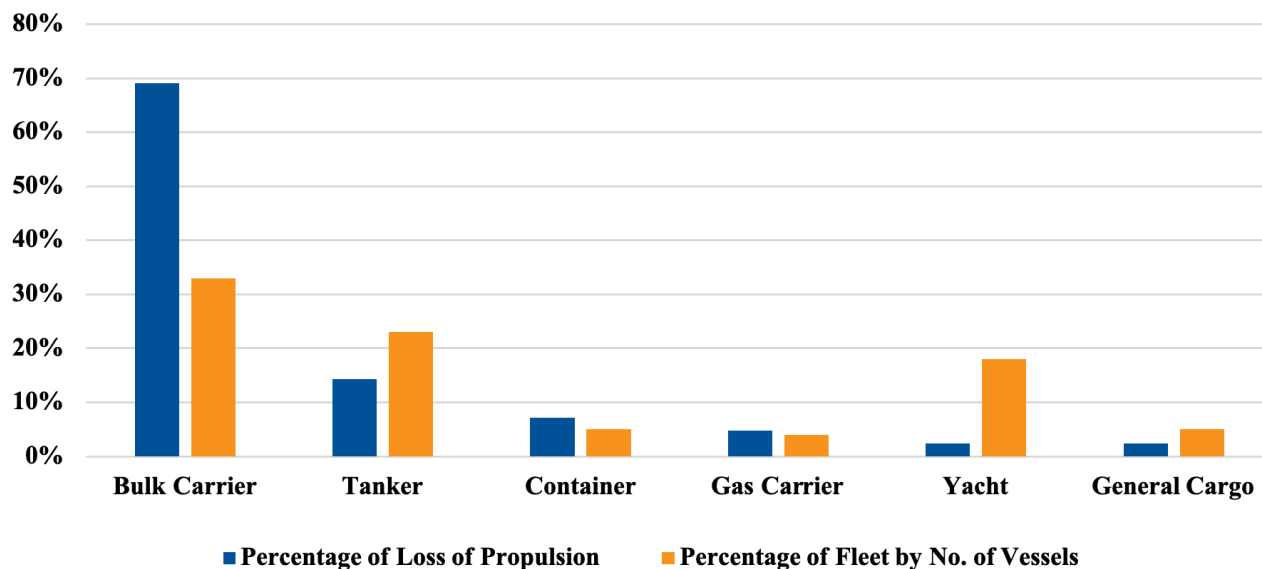


Top 10 Causal Factors of Loss of Propulsion – 2024

CAUSAL FACTOR	PERCENTAGE OF INCIDENTS ¹¹
Defective equipment, machinery, or tools	24%
Inadequate identification and evaluation of hazards	12%
Inadequate work planning or programming	12%
Bunkers and/or lube oils	8%
Inadequate inspection and monitoring	7%
Incorrect use of equipment or machinery	5%
Failure to follow repair and maintenance instructions	4%
Inadequate preventative maintenance	4%
Inadequate instructions, orientation, and/or training	3%
Improper extension of service life	3%

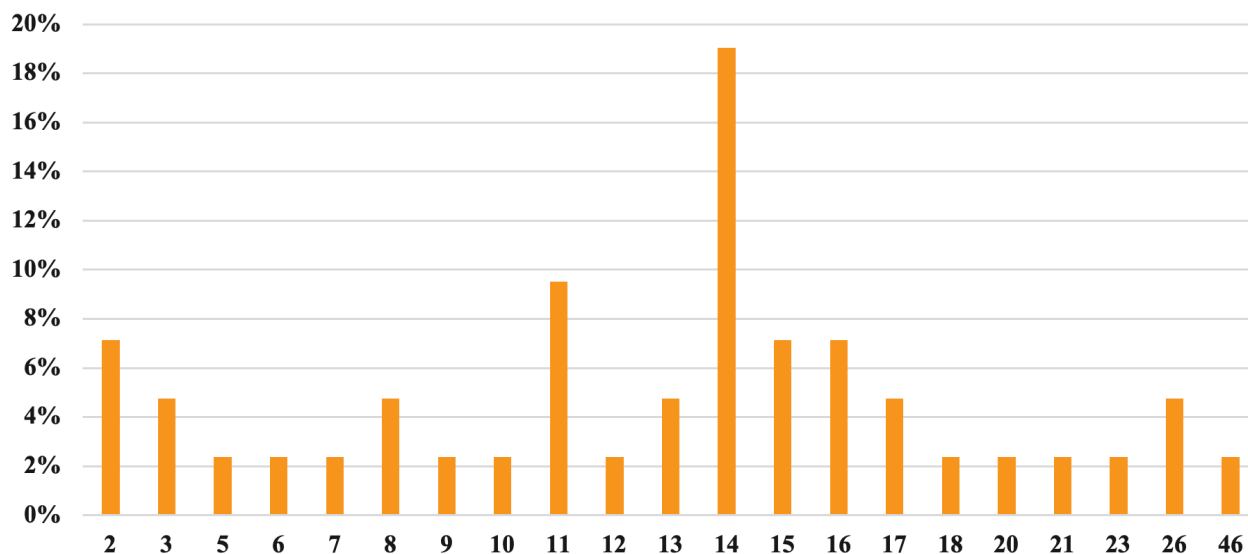
¹¹ Multiple causal factors can be associated with the same incident.

Loss of Propulsion by Ship Type – 2024



As of the end of December 2024, the average age of the fleet¹² was 10.56 years. Bulk carriers¹³ accounted for 69% of all loss of propulsion incidents. The majority of the fleet was between 0-14 years of age, accounting for 64% of RMI-registered vessels. While 12% of the fleet was aged between 0-4 years, 14% of vessels were between 5-9 years of age, 38% between the ages of 10-14 years, and 21% of vessels were between 15-19 years of age. The vast majority of loss of propulsion incidents occurred after a vessel's second renewal survey.

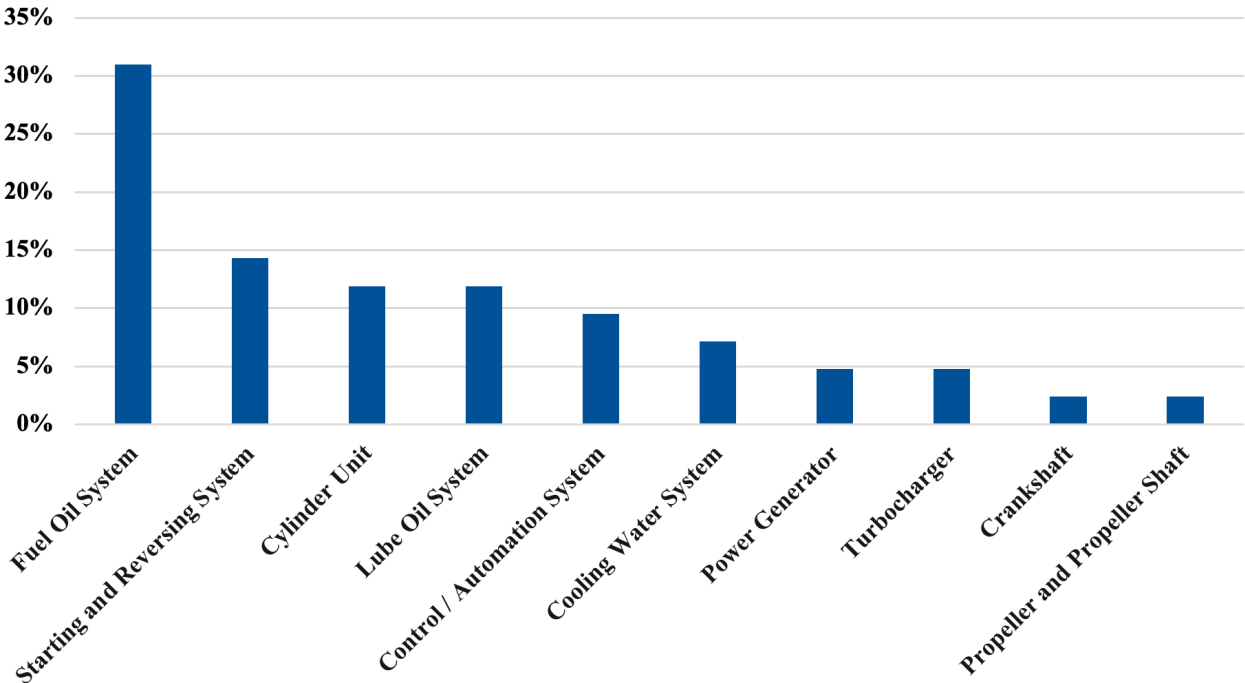
Loss of Propulsion by Ship Age – 2024



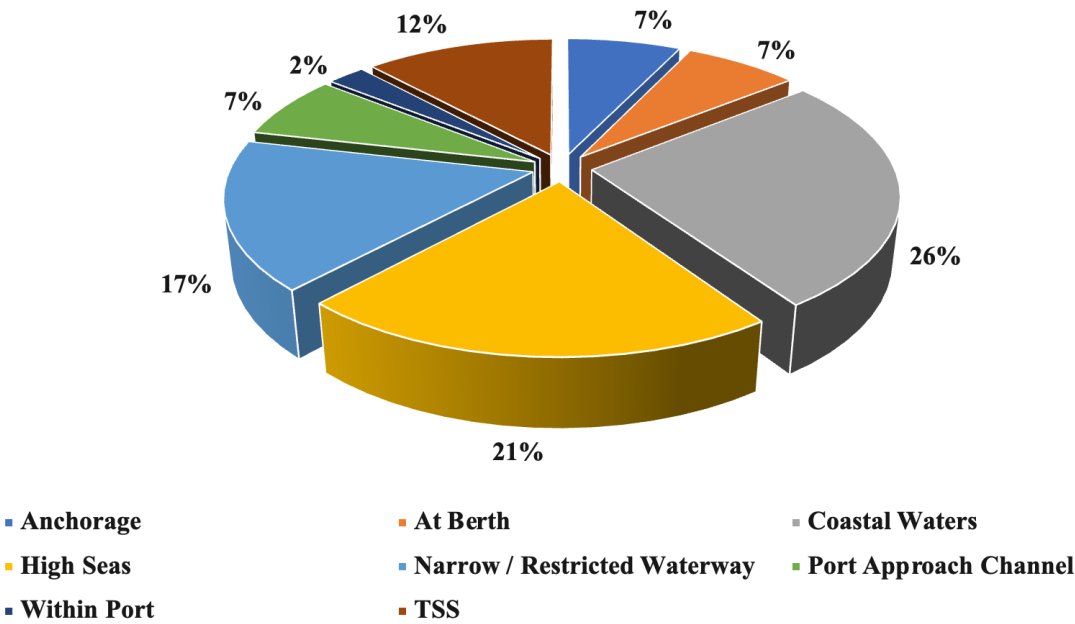
¹² MOUs have been excluded from this data.

¹³ The average age of RMI-registered bulk carriers was 10.23 years as of 31 December 2024.

Loss of Propulsion by Ship System – 2024



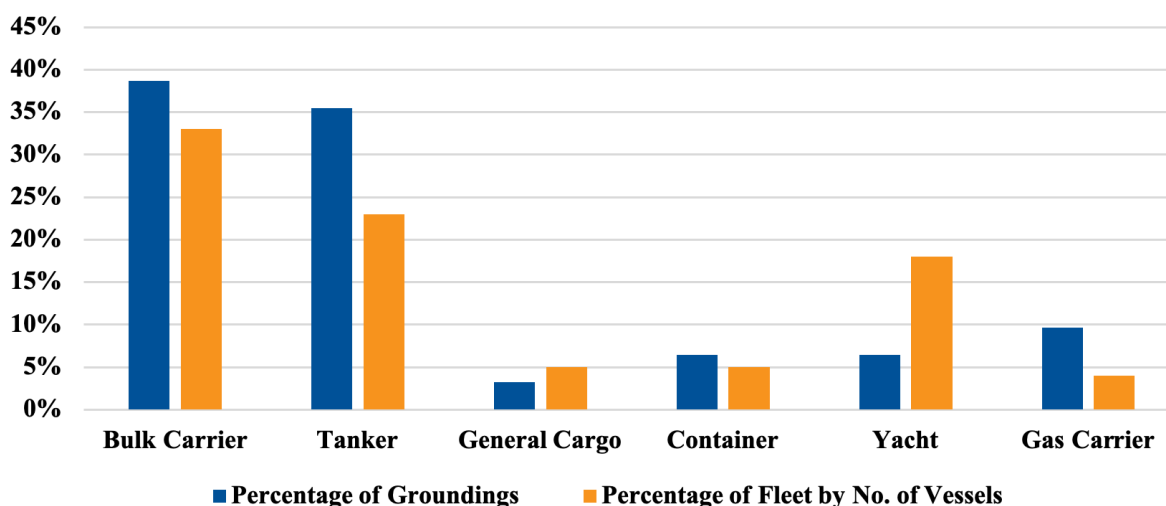
Loss of Propulsion by Ship Activity – 2024



Groundings

The Administrator received 31 reports of groundings during 2024, 67% of these occurred while a pilot was on board. The majority of groundings occurred in Asia (28%), South America (26%), and the United States of America Gulf Coast (16%). In total, eight causal factors were identified during the interrogation of grounding incidents in 2024. With the exception of inadequate port and berthing facilities, attributing 22% of all incidents, the remaining causal factors were shared equally at 11%. The causal factors provide strong evidence that inadequate passage planning was the main cause and that selection of the berth, timely weather observations, accounting for sufficient under keel clearance, monitoring a vessel's position relative to available depth and breadth or navigable water, and management of bridge resources such as the pilot, should be regularly discussed, reinforced, and exercised among bridge teams.

Groundings by Ship Type – 2024

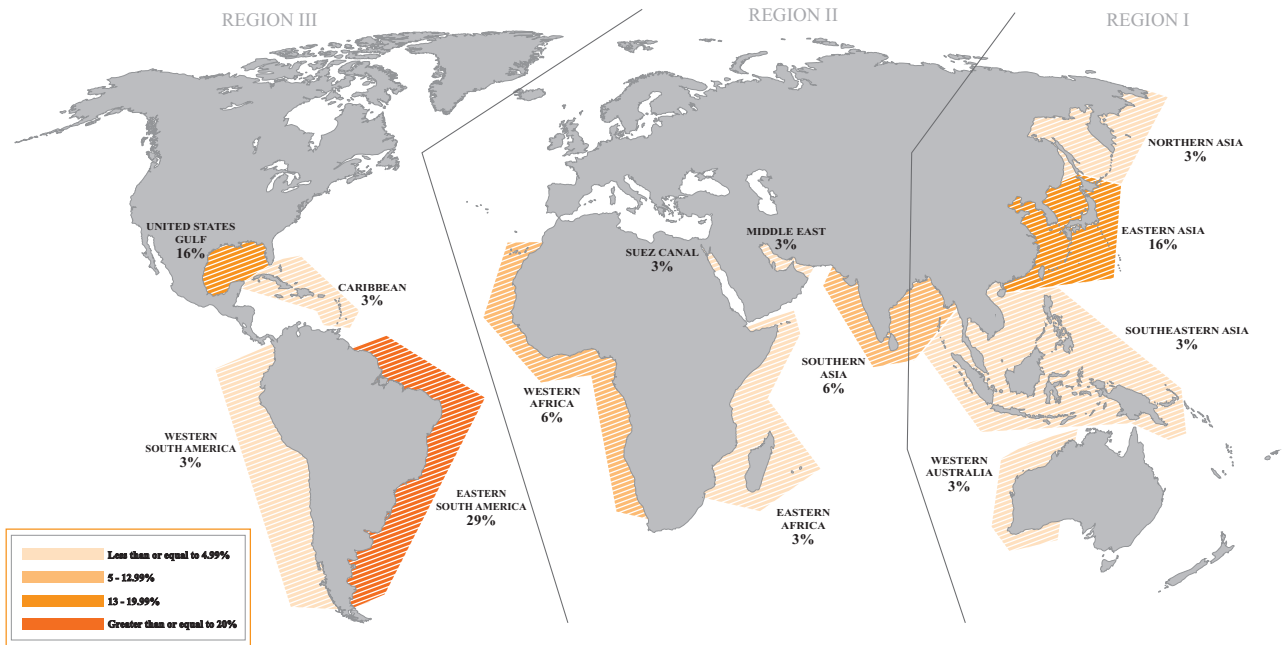


Top Eight Causal Factors of Groundings – 2024

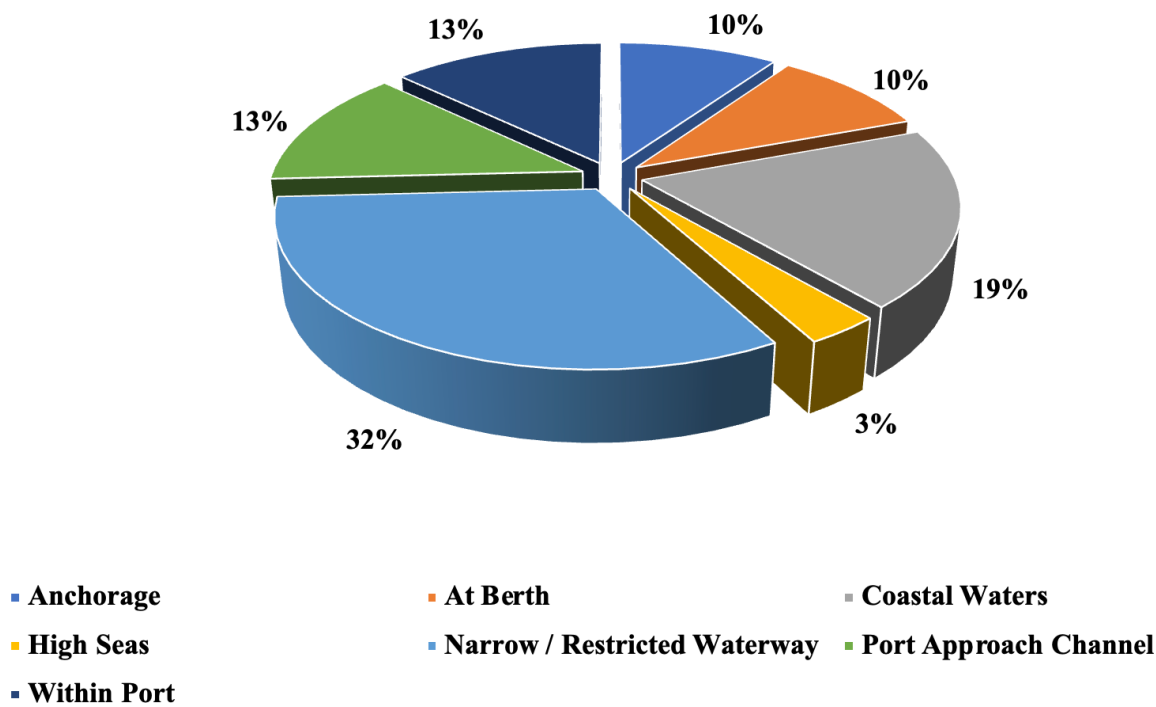
CAUSAL FACTOR	PERCENTAGE OF INCIDENTS ¹⁴
Inadequate port and berthing facilities	22%
Outdated charts, publications and other documentation	11%
Inadequate work planning or programming	11%
Adverse sea conditions	11%
Environmental conditions	11%
Unclear or conflicting reporting relationships	11%
Inadequate identification and evaluation of hazards	11%
Incorrect navigation or ship handling	11%

¹⁴ Multiple causal factors can be associated with the same incident.

Groundings by Geographic Region – 2024



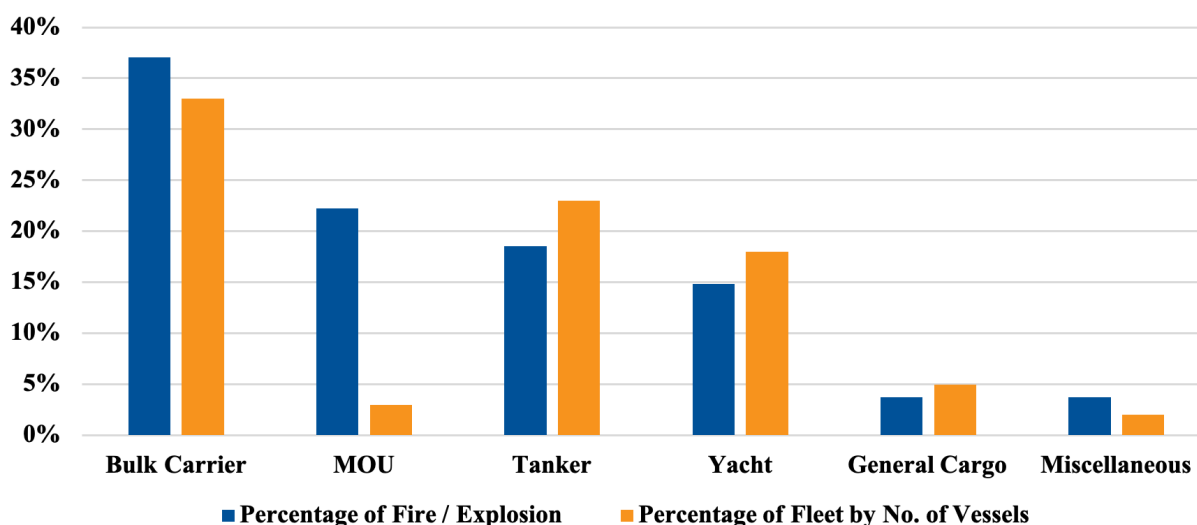
Percentage of Groundings by Ship Activity – 2024



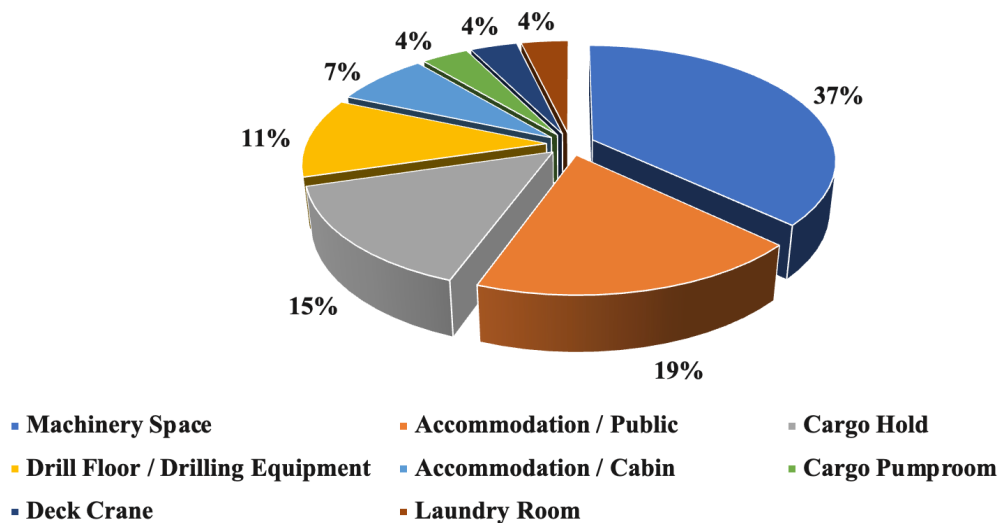
Fires / Explosions

In 2024, the Administrator received 27 reports of fires / explosions, the same number that was received in 2023. However, in 2024, an increase in the number of electrical fires within accommodation spaces has been observed. Machinery space fires continue to be the leading location at 37%. The most common extinguishing method used was a portable fire extinguisher (48%), with fixed gas and water-mist systems used to good effect on 19% and 11% of fires respectively. Further analysis indicated that fires / explosions generally occurred most frequently between 0001–0100 and 0730–0830. Within the accommodation spaces, fires most frequently occurred between 1100–1400. Within the machinery spaces, fires were reported to have occurred most frequently between 0730–0830, during the morning watch changeover and the commencement of the working day.

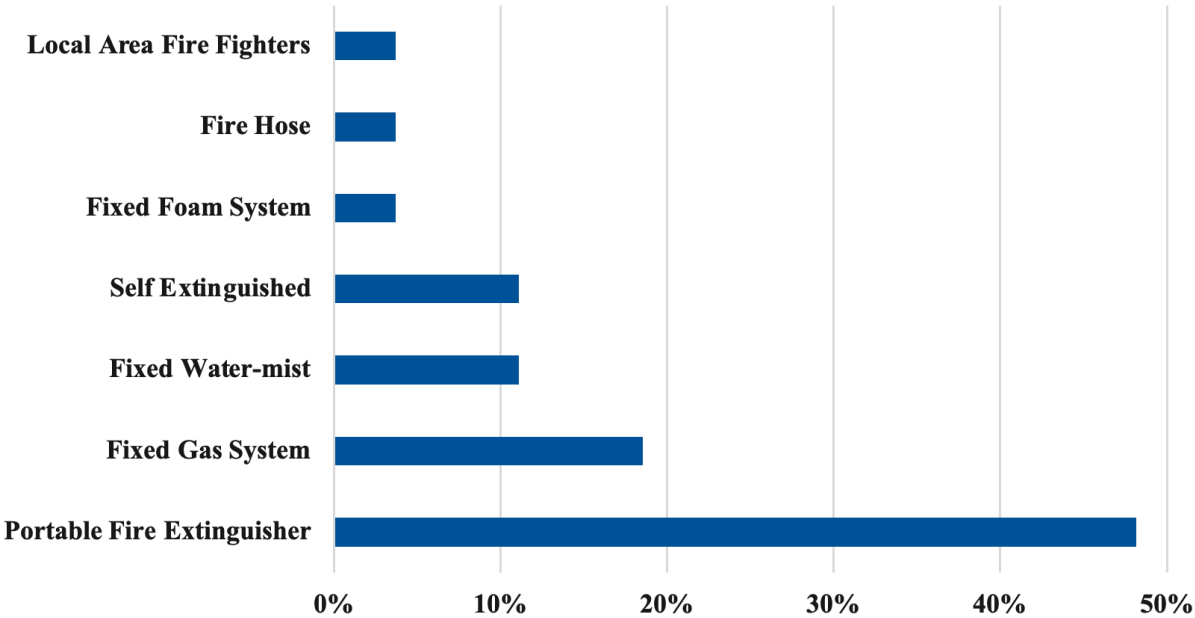
Fire / Explosion by Ship Type – 2024



Fire / Explosion by Location on Board – 2024



Fire / Explosion Extinguishing Methods – 2024



Top 11 Causal Factors of Fire / Explosion – 2024

CAUSAL FACTOR	PERCENTAGE OF INCIDENTS ¹⁵
Defective equipment, machinery, or tools	18%
Fire / explosion hazards	12%
Inadequate identification and evaluation of hazards	12%
Inadequate maintenance	6%
Inadequate work standards	6%
Inadequate review of instructions	6%
Improper lifting, handling, and/or storage	6%
Routine, monotony, demand for uneventful vigilance	6%
Inadequate removal and replacement of unsuitable items	6%
Inadequate instructions, orientation, and/or training	6%
Inadequate inspection and/or monitoring	6%

15 Multiple causal factors can be associated with the same incident.

Appendix 3: Most Common Marine Casualties by Ship Type

The below table lists, by ship type, the three most common incident types for all reports made to the Administrator in 2024.

SHIP TYPE	FIRST	SECOND	THIRD
Bulk Carrier	Serious Injury	Collision / Allision	Loss of Propulsion
Tanker	Serious Injury	Collision / Allision	Grounding
Container	Serious Injury	Loss of Propulsion	Collision / Allision
OSV	Collision / Allision	Fire / Explosion	Serious Injury
Gas Carrier	Serious Injury	Grounding	Collision / Allision
General Cargo	Collision / Allision	Serious Injury	Loss of Electrical Power
MOU	Serious Injury (Non-RMI Seafarer)	Serious Injury	Pollution
Miscellaneous	Collision / Allision	Pollution	Fire / Explosion
Passenger	Serious Injury (Non-RMI Seafarer)	Serious Injury	Reduction of Propulsion
Yacht	Serious Injury	Fire / Explosion	Reduction of Propulsion