



SAFETY INVESTIGATION REPORT

202207/008

REPORT NO.: 11/2023

July 2023

The Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011 prescribe that the sole objective of marine safety investigations carried out in accordance with the regulations, including analysis, conclusions, and recommendations, which either result from them or are part of the process thereof, shall be the prevention of future marine accidents and incidents through the ascertainment of causes, contributing factors and circumstances.

Moreover, it is not the purpose of marine safety investigations carried out in accordance with these regulations to apportion blame or determine civil and criminal liabilities.

NOTE

This report is not written with litigation in mind and pursuant to Regulation 13(7) of the Merchant Shipping (Accident and Incident Safety Investigation) Regulations, 2011, shall be inadmissible in any judicial proceedings whose purpose or one of whose purposes is to attribute or apportion liability or blame, unless, under prescribed conditions, a Court determines otherwise.

The report may therefore be misleading if used for purposes other than the promulgation of safety lessons.

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This safety investigation has been conducted with the assistance and cooperation of the Directorate General for Railway and Maritime Investigations (DiGiFeMa), Italy.

MV EUROCATANIA

Serious injury to a crew member, during cargo operations in the port of Salerno, Italy

09 July 2022

SUMMARY

On the evening of 09 July 2022, *Eurocargo Catania* berthed at Salerno, Italy, for cargo operations.

The vessel was loading the first semi-trailer on deck no. 3. One crew member was acting as a signal person, standing near the back of the semi-trailer. Another crew member was stationed on the side of the semi-trailer, ready to start securing, once in place. At one point, the signal person gave

the signal to the driver to stop, but the semi-trailer kept reversing.

Consequently, the signal person was caught between the semi-trailer's side and one of the vessel's transverse frames. He suffered crushing injuries and had to be transferred to a local hospital by ambulance.

Taking into consideration the actions taken by the Company, no safety recommendations have been issued by the MSIU.



MV Eurocargo Catania

FACTUAL INFORMATION

Vessel

Eurocargo Catania (**Figure 1**) was a 19,429 gt roll-on / roll-off (ro-ro) cargo vessel, owned by Malta Motorways of the Sea Limited, and managed by Valiant Shipping S.A., Greece (the Company). The vessel was built by Odense Staalskibsvaerft A/S, Denmark, in 2011. Registro Italiano Navale (RINA) acted as the classification society as well as the recognised organization, in terms of the International Safety Management Code for the vessel.

Eurocargo Catania was fitted with four decks, had a length overall of 193.3 m, a moulded breadth of 26.0 m, and a moulded depth of 8.6 m. It had a summer draught of 7.0 m, corresponding to a summer deadweight of 11,248 metric tonnes. The vessel was fitted with 3,663 m of lanes, which included a trailer capacity of 249.

Propulsive power was provided by two, 9-cylinder, four-stroke, medium speed MAK9M43 marine diesel engines, each producing 8,100 kW at 500 rpm. The engines drove two controllable pitch propellers, enabling *Eurocargo Catania* to reach a service speed of 21.5 knots.

The vessel was engaged in trade between three ports in the Mediterranean, namely Salerno in Italy, Catania in Sicily and Valletta, Malta. Consequently, the vessel was in port on each successive day.

Crew

Eurocargo Catania's Minimum Safe Manning Certificate stipulated a crew of 15. At the time of the accident, the vessel was manned by 25 Bulgarian crew members.

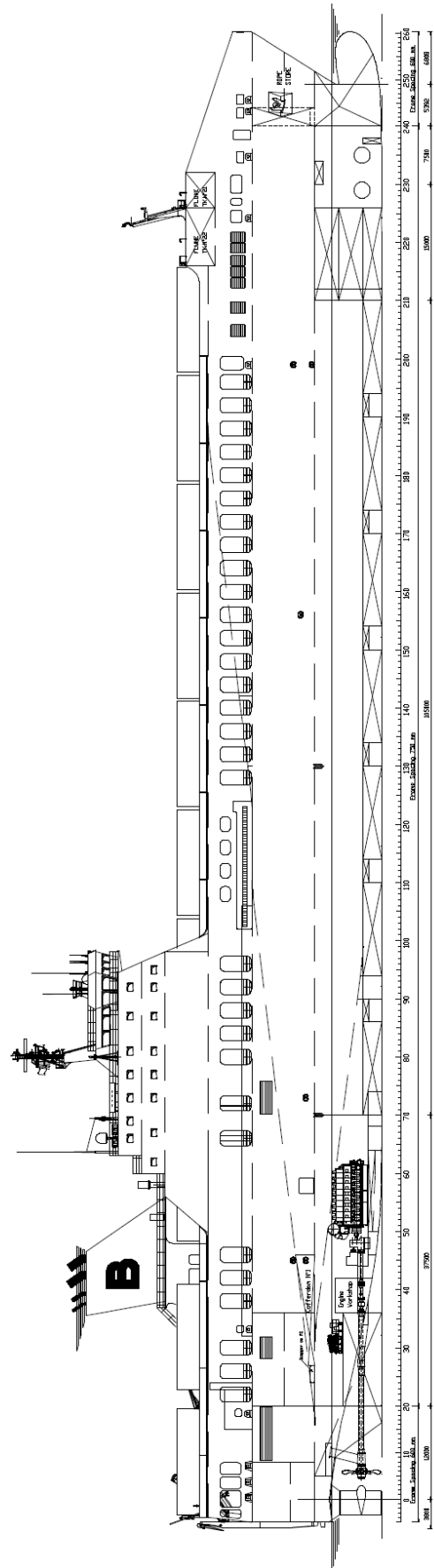


Figure 1: Extract from the vessel's General Arrangement Plan

The injured able-bodied seafarer deck (AB) was 25 years old and had been at sea since 2015. He had obtained his STCW¹ II/4 certificate of proficiency in 2018, which was issued by the Bulgarian Maritime Administration. He had worked on small bulk carriers for three years, prior to joining *Eurocargo Catania* on 02 March 2022. This was his first employment term on ro-ro vessels and with the Company. In port, he kept the 08:00 – 12:00 and 20:00 – 24:00 watches.

The bosun was 24 years old. He had been with the Company for three years and had started working as a bosun when he embarked on board *Eurocargo Catania* along with the AB. He held an STCW II/4 certificate of proficiency, which was issued by the Bulgarian Maritime Administration. The bosun's designated working hours in port and at sea were 0800 – 1200 and 1300 – 1800.

Familiarisation

Upon joining, the AB was familiarised with the vessel, in accordance with the vessel's SMM procedures. This familiarisation also included a section on the cargo securing equipment available on board and the relevant securing procedures to be followed by the crew members.

Environment

The vessel's records indicated that at the time of the accident, the weather was clear, with a moderate sea and a Northeasterly fresh breeze. A swell of 0.5 m from the Northeast was also reaching the vessel. The visibility was recorded as 12 nautical miles, and the air and sea temperatures were recorded as 26 °C and 22 °C, respectively.

¹ IMO. (2010). *The Manila Amendments to the Annex to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW), 1978*. London: Author.

Loading and securing semi-trailers procedure

To secure the semi-trailers after loading, the crew members first guided the semi-trailer into position within the lane. A trestle² would then be inserted under the front end of the semi-trailer, while rubber chocks are wedged at the rear wheels. The tug master would then be signalled to move away, following which, chain lashings are applied and tightened by a lashing gun. **Figure 2** shows a typical, complete securing arrangement of a semi-trailer on board.

Narrative³

The vessel had berthed at the port of Salerno, Italy, at around 1136 on 09 July 2022. At 1415, cargo operations were commenced.

One of the ABs was stationed on Deck 3 for the cargo operation. His personal protective equipment (PPE) consisted of safety shoes, overalls, a safety helmet, safety gloves, and a reflective safety vest. He was also equipped with a whistle and a portable two-way radio. A total of 160 cars had been loaded in the forward area of the same deck that afternoon. The plan was to load semi-trailers bound for Catania, once the loading of cars was completed, with the bosun assisting the AB.

The first semi-trailer to be loaded came up the ramp from Deck 2, made a 180° turn on Deck 3, and lined up into the first lane to starboard, in reverse (**Figures 3 and 4**).

² The trestle is also known as trailer horse.

³ Unless otherwise specified, all times refer to the vessel's time (UTC+2).

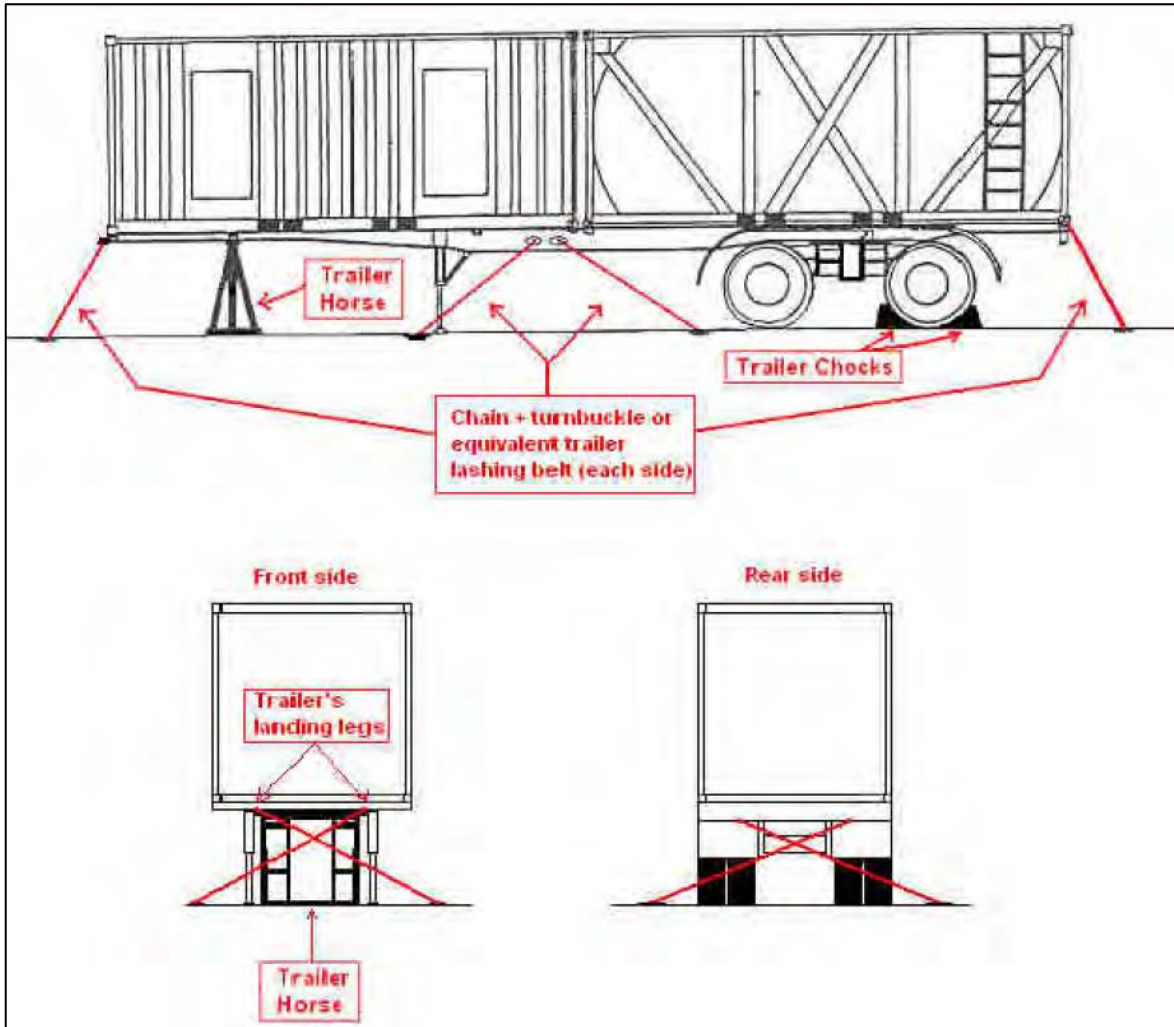


Figure 2: Extract from the vessel's approved cargo securing manual, showing the securing of semi-trailers

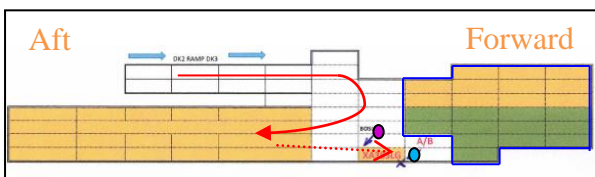


Figure 3: Top view of the approximate path of the first semi-trailer. The location of the bosun is indicated with a pink dot, while the location of the AB is indicated with a blue dot. The area marked in a blue perimeter had just been loaded with 160 cars.



Figure 4: The tug master in line with the first lane on the starboard side (photograph taken after the accident)

To reverse and manoeuvre the semi-trailer in position, the tug master driver's seat had been rotated by 180° to face the semi-trailer. During this time, the bosun was positioned to the port side of the semi-trailer, ready to push one of the trestles beneath the semi-trailer. The AB positioned himself towards the backend of the semi-trailer, close to the vessel's frames, to signal to the driver when to stop reversing (**Figure 5**).



Figure 5: Simulation showing the AB's position to direct the semi-trailer within the lanes

Arriving in position, the AB gave a long signal on his whistle to indicate to the driver to halt. However, the driver continued to reverse. Hearing the whistle, the bosun attempted to draw the attention of the driver but was unsuccessful. The driver continued reversing the semi-trailer for approximately another metre, before stopping. Upon stopping, the bosun walked towards the back of the semi-trailer to check for available lashing points and noticed the AB, caught in a standing position, between transverse frame no. 158 and the semi-trailer⁴. The bosun

⁴ The AB recalled that first he was hit by the semi-trailer, which pushed him backwards, after which

immediately ran towards the tug master to alert the driver, who then drove forward to release the AB. The chief officer was also called on the portable radio and notified of the matter by the bosun.

By the time the bosun had walked back towards the area, the AB was lying on deck, bleeding profusely. The vessel's medical officer was called, who attended to the AB until the ambulance arrived and the shore medical team took over.

Area of the accident

At the time of the accident, the AB was positioned near transverse frame 158. Two elephant foot lashing points were also in the area, to the starboard side of the lane (**Figure 6**). Elephant foot 'A' was about 2 m away from the face bar of transverse frame 158. A vent head was fitted close to the aft end of the frame.



Figure 6: Location of the accident

he was caught between the semi-trailer and the transverse frame in mere seconds.

After the accident, it was noticed that one turn buckle had already been inserted into elephant foot 'B' (**Figure 7**).



Figure 7: The scene at Deck 3, after the semi-trailer was moved forward to release the AB (one turn buckle seen in position)

At around the time of the accident, Deck 3 was illuminated by artificial lighting. The crew members stated that loud noises were generated by the vessel's garage ventilators and various vehicles being driven on board⁵.

Injuries suffered by the AB

At the local hospital, the AB was diagnosed with a crushing polytrauma. The AB had suffered several fractures to his face, spine and both sides of the rib cage⁶. The AB also required urgent surgical intervention shortly

⁵ Information reaching the safety investigation, but which could not be confirmed / verified by the MSIU, suggested that loud music was being played in the tug master's driver cabin.

⁶ A total of five ribs were injured.

after he was admitted to the local hospital, due to traumatic internal injuries.

He remained in the hospital at Salerno for two weeks. He was then transferred to a local hotel for one and a half months until he was deemed fit to fly home. He returned to his home country on 09 September 2022, where he continued his medical treatment and check-ups.

ANALYSIS

Aim

The purpose of a marine safety investigation is to determine the circumstances and safety factors of the accident as a basis for making recommendations, and to prevent further marine casualties or incidents from occurring in the future.

Cooperation

During the safety investigation, the MSIU received all the necessary assistance and cooperation from the Directorate General for Railway and Maritime Investigations (DiGIFeMa), Italy.

Immediate cause of the accident

The AB was standing between transverse frames 154 and 158 while a semi-trailer was reversing in his direction. When the AB blew the whistle to signal that the semi-trailer was in position, it was highly likely that the tug master driver did not hear the signal. Consequently, he continued with his reversing manoeuvre. The AB was caught between the semi-trailer's side and transverse frame no. 158.

Noise on deck

The MSIU's safety investigators boarded the vessel and visited the accident site, a few days after the occurrence. It was confirmed that the ventilation fans and movement of

vehicles on deck generated high levels of noise on Deck 3, necessitating persons to speak loudly to be understood and get their message across.

Based on the above, the safety investigation believed that the high noise levels at the time of the accident, were contributory to the driver not hearing the whistle signal to stop.

Tug master driver

The MSIU was unable to contact the tug master's driver involved in this occurrence and therefore, could not completely understand his perspective on the dynamics of the accident.

It is common practice for shore drivers to drive the wheeled cargo, both for loading and unloading, on / off board a ro-ro vessel. Terminals may also provide tug masters operated by shore drivers, to tow semi-trailers, after which, the tug master is uncoupled and driven off the vessel.

Since tug master drivers are not crew members and it is likely that several drivers may not understand the English language, means of communication are often restricted to the sound of a whistle.

At the time of the occurrence, the driver was reversing and facing the semi-trailer (with his back to the windshield). This meant that he did not have a visual of the left-hand side mirrors fitted on the tug master⁷ (Figure 8) and he would need to lean his head out of the side window. The mirror on the right-hand side had a different attachment arrangement / design and was positioned further towards the rear end of the tug master⁸ and in such a way that with the seat rotated by 180°, the

driver would still be able to see the reflection of the back end of the cargo unit in the side mirror (Figure 9).

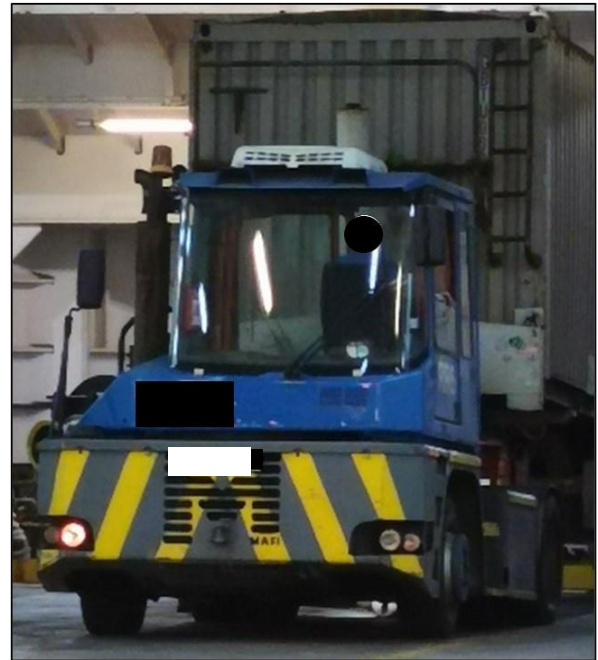


Figure 8: A representative photograph showing how the position of the driver as he was reversing the tug master at the time of occurrence



Figure 9: The right-hand side mirror's attachment was designed differently from that on the left-hand side.

⁷ Facing the semi-trailer with the driver's back to the windshield, the left-hand side mirror would be behind the driver.

⁸ The right-hand side mirror was not in line with the left-hand side mirror.

In line with the discussion above, once the driver's seat was facing backwards, the driver would not have been able to see the AB's reflection in the left-hand side mirror, but he could see him physically if he had to lean out of the side window, enough to extend beyond the extreme width of the semi-trailer. Considering that the trailer was manoeuvring very close to the side shell, it may have not been possible for the driver to lean out his head far enough to see beyond the width of the trailer⁹.

Safety gear

At the time of occurrence, the AB was reportedly dressed in his PPE, which included a safety helmet. The safety investigation noted that the AB sustained injuries to his frontal face area. A safety helmet is most used as a protection against falling objects, although it can also provide protection against crushing or sideway blows¹⁰.

It was understood that after experiencing a heavy blow, a safety helmet would have sustained some damage. However, the safety investigation observed that the safety helmet used by the AB at the time of the occurrence, had no signs of damage.

While the MSIU was unable to determine exactly why this was the case, the following hypotheses were drawn:

- either the safety helmet's strap was not fastened or loosely fastened, and the safety helmet fell off the AB's head

⁹ The angle of visibility would have been also affected by the position of the tug master in relation with the position of the semi-trailer.

¹⁰ Maritime & Coastguard Agency. (2022). *Code of safe working practices for merchant seafarers* (2015 - Amendment 7 ed.). TSO. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1118843/Code_of_safe_working_practices_for_merchant_seafarers_COSWP_amendment_7_2022.pdf

when he was caught between the semi-trailer and the transverse frame; or

- the AB had temporarily removed the safety helmet, close to the time of occurrence.

Even so, the safety investigation was of the view that due to the tightness of the accident spot¹¹, the facial injuries sustained by the AB would not have been prevented by the safety helmet.

The high reflective safety vest worn by the AB did not catch the attention of the tug master's driver because the AB was positioned out of the driver's line of sight.

Acceptance of risk

During the safety investigation, the AB explained the necessity to position himself behind the semi-trailer (albeit not directly behind, but slightly to the side of it), to ensure / check the clearance to the vessel's side, and to signal the semi-trailer's correct position for effective lashing. The AB believed that although there was enough space to escape once the semi-trailer struck him the first time, he did not have enough time to react.

The AB's intention was to safely guide the reversing semi-trailer into position. He understood that whilst the positioning of the semi-trailer could be corrected relatively easily, physical damage to the vessel and / or the cargo unit would lead to several repercussions, including possible delays to the ship. Therefore, the close monitoring of the semi-trailer manoeuvre within the lane necessitated the crew member to position himself close to the semi-trailer, coinciding with the tug master's blind area (unless, as indicated above, the driver's head was far out enough to see the crew member).

¹¹ The space between the semi-trailer and frame 158 was estimated as 0.3 m.

Fatigue, drugs and alcohol

The safety investigation was not aware of any drug and alcohol tests carried out on the tug master's driver. As such, it could not be determined whether the driver was under the influence of drugs and / or alcohol. However, there were reports of neither erratic behaviour nor of parking manoeuvres, which would have led crew members to suspect that the driver was not in full control of the vehicle.

The Company also clarified that since the ambulance had immediately taken the injured AB to a local hospital, and considering the extent of injuries, an alcohol test was not carried out on board. Only a drug test was conducted at the hospital, returning a negative result.

While the AB's records of hours of work / rest indicated that he had met the relevant requirements, the safety investigation was unable to determine the quality of his rest.

Nonetheless, the AB's actions and behaviour did not suggest that he was fatigued and / or under the influence of alcohol at the time of the occurrence. Therefore, the safety investigation did not consider fatigue and drug / alcohol consumption as contributory factors to this occurrence.

CONCLUSIONS

1. The AB was stationed behind the reversing semi-trailer and was caught between the semi-trailer's side and the vessel's transverse frame.
2. Loud noises on Deck 3 generated by the running ventilator fans and the movement of wheeled cargo, may have contributed to the driver not hearing the whistle.
3. The close monitoring of the semi-trailer manoeuvre within the lane necessitated the crew member to position himself close to the semi-

trailer, coinciding with the tug master's blind area (unless, as indicated above, the driver's head is far out enough to see the crew member).

4. Whilst the AB may have had space to escape from the semi-trailer, he did not expect the semi-trailer to continue reversing and therefore, he did not have the time to react in time.

SAFETY ACTIONS TAKEN DURING THE COURSE OF THE SAFETY INVESTIGATION¹²

Following this occurrence, the Company issued a circular across its fleet on the accident on board *Eurocargo Catania* and highlighted the need to keep adequate safe distance from the semi-trailers' rear end and to always have visual contact with the driver and utilise the tug master's rear-view mirrors.

RECOMMENDATIONS

No safety recommendations have been issued as a result of the safety investigation.

¹² **Safety actions shall not create a presumption of blame and / or liability.**

SHIP PARTICULARS

Vessel Name:	<i>Eurocargo Catania</i>
Flag:	Malta
Classification Society:	Registro Italiano Navale
IMO Number:	9503627
Type:	Ro-ro
Registered Owner:	Malta Motorways of the Sea Limited
Managers:	Valiant Shipping S.A., Greece
Construction:	Steel
Length Overall:	193.3 m
Registered Length:	187.6 m
Gross Tonnage:	29,429
Minimum Safe Manning:	15
Authorised Cargo:	Wheeled cargo

VOYAGE PARTICULARS

Port of Departure:	Catania, Italy
Port of Arrival:	Salerno, Italy
Type of Voyage:	Short International Voyage
Cargo Information:	207 ro-ro units
Manning:	25

MARINE OCCURRENCE INFORMATION

Date and Time:	09 July 2022 at 20:05 (LT)
Classification of Occurrence:	Serious Marine Casualty
Location of Occurrence:	Salerno, Italy
Place on Board	Cargo Deck no. 3
Injuries / Fatalities:	One seriously injured crew member
Damage / Environmental Impact:	None
Ship Operation:	Moored; Cargo Operations – loading shore-to-ship
Voyage Segment:	Alongside
External & Internal Environment:	Clear sky, with a moderate sea, a Northeasterly fresh breeze, and a swell of 0.5 m height. The air and sea temperatures were recorded as 26 °C and 22 °C, respectively.
Persons on board:	26