Australian Government
Australian Transport Safety Bureau

Steering failure involving *Matthew Flinders III*

8 km north of Waterhouse Island, Bass Strait, Tasmania, on 23 July 2025

ATSB Transport Safety Report
Marine Occurrence Investigation (Defined)
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Cover photo: Bass Strait Freight

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Acknowledgement of Country and Traditional Owners

The Australian Transport Safety Bureau acknowledges the traditional owners of country throughout Australia, and their continuing connection to land, sea and community. We pay our respects to them and their cultures, and to elders both past and present.

Investigation summary

What happened

On 23 July 2025 at 2345, *Matthew Flinders III* was in transit between Bridport and Lady Barron, Tasmania, when a rudder angle feedback failure in its autopilot system caused a loss of steering. The failure caused both rudders to lock in the hard to port position and caused an uncontrolled turn to port. In response the ship's master reduced engine power and alerted the engineer.

The crew attempted to rectify the problem but were initially unable to identify the cause of the failure. Unable to reinstate steering using the rudders – and rolling heavily in the moderate swell – the crew disconnected the steering gear from the rudder crossbar and centred the rudder manually, after which they regained limited heading control using different power settings on the ship's twin propellers.

The ship slowly made its way back to Bridport, while the crew continued investigating the problem. At about 0815 the engineer identified a loose linkage arm associated with the steering control system. After re-tightening, steering was restored and the ship continued its voyage to Lady Barron.

What the ATSB found

The ATSB investigation found that the loose linkage arm caused a loss of rudder feedback to the autopilot system. This meant that neither the autopilot nor the follow-up manual steering modes were available.

The ship was fitted with a non-follow-up (or 'toggle steering') backup control system that was not dependent on the failed sensor. The toggle steering system was available throughout the occurrence and was engaged by the engineer in an attempt to reinstate rudder control. However, the master was unfamiliar with the toggle steering controls on the bridge and was unable to regain steering.

The ATSB also identified that induction training for new personnel did not adequately address the use of the backup control system and that the ship's safety management system (SMS) did not include clear instructions on its use. Additionally, controls on the bridge were not labelled, and a simple changeover procedure was not posted as required.

Finally, emergency steering drills, which would have served to increase crew proficiency with the ship's systems, did not include actual operation of the steering system in backup mode. Also, drills were not conducted at the required intervals, which meant that the master had not participated in any emergency steering drills.

What has been done as a result

Bass Strait Freight (BSF) has improved its familiarisation and induction processes to ensure its deck officers and engineers have a thorough understanding of the ship's steering system. This included the employment of an experienced master in a checking role to assess competency of new crew. The ATSB has assessed that this safety action should adequately address the safety issue.

The company has developed and posted a simple procedure for switching between steering modes, which is posted on the bridge and in the engine room. However, this action does not adequately address the safety issue and further action through appropriate emergency steering procedures is necessary. Therefore, the ATSB has issued a recommendation to BSF to address this issue.

Safety message

Shipping companies are reminded of the importance of the availability of clear and simple instructions and procedures as part of their SMS. These procedures should include robust familiarisation processes. This is especially important on ships with non-standard design features or unusual operational characteristics and for operators who may have a high turnover of casual crew.

Additionally, regular and thorough emergency drills are an essential part of ensuring and maintaining crew familiarity with their ship’s systems and emergency procedures. For steering emergencies, these drills should include practising steering in all available modes under controlled conditions while underway. This will greatly improve the chances of successfully dealing with an emergency situation.

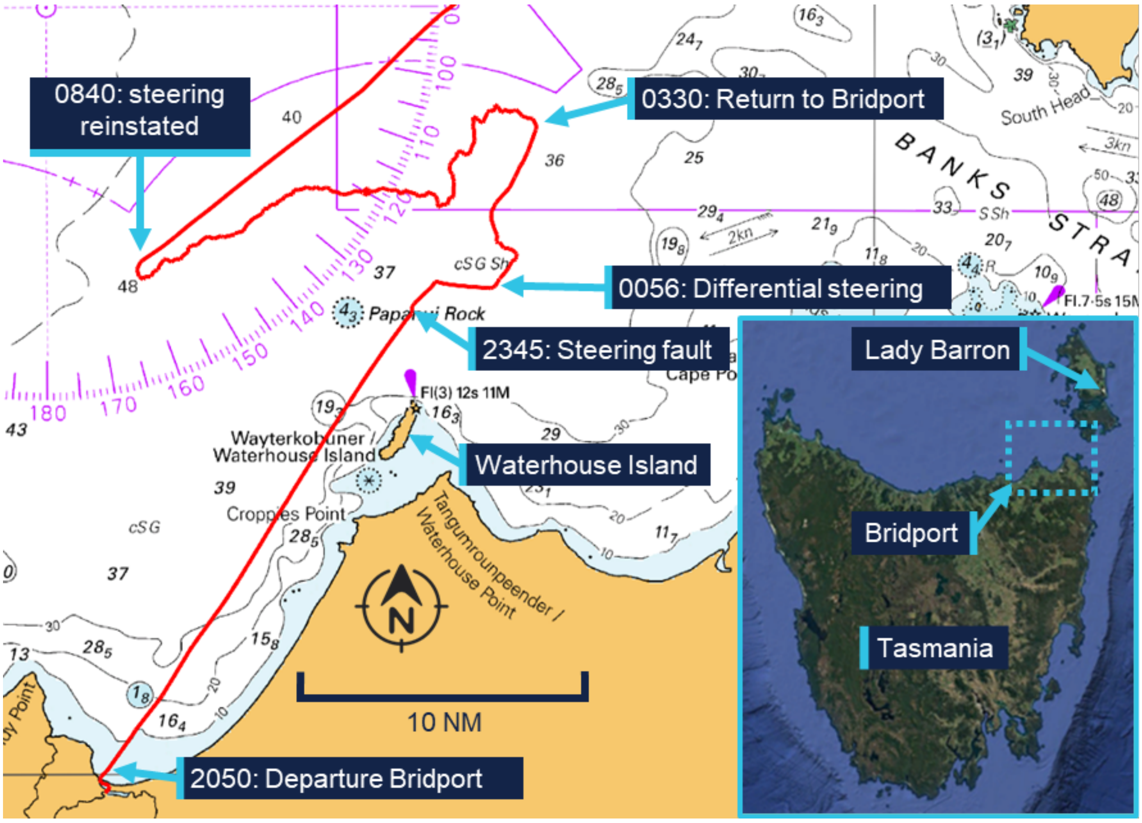
Contents

The occurrence

At 2050 local time on 23 July 2025, *Matthew Flinders III* departed Bridport, Tasmania (Figure 1) carrying a cargo of fertiliser in bulk bags and agricultural machinery. The ship was bound for Lady Barron on Flinders Island. Its crew of 5 comprised the master, chief engineer (engineer), chief mate (mate) – who was also acting as second engineer – and 2 deck ratings.

Following departure, the master manually steered through the confined Bridport channel towards the mouth of the Brid River. At 2115, after clearing the river mouth and entering Bass Strait, the master selected a heading of 033° (T) on the autopilot and remained on watch. The master later reported the wind was west-north-west at about 25 knots with a westerly swell of about 2 m.

Figure 1: Section of navigational chart Aus 487 showing the location of key events



Source: Australian Hydrographic Office, annotated by the ATSB

At about 2345, the ship was approximately 4 miles[1] north of Waterhouse Island when an alarm activated on the autopilot system, indicating a loss of rudder response. At the same time, the master noticed that the rudder angle indicator for the ship's twin-rudders was showing the 'hard to port' position and the ship was turning to port. The master immediately responded by reducing engine power and placing the engine controls in neutral, before notifying the engineer and requesting emergency steering to be engaged.

The engineer and mate proceeded to the engine room to diagnose the fault and restore steering. The engineer initially attempted to rectify the fault by resetting the ship's

[1] A nautical mile of 1,852 m.

autopilot and global positioning system (GPS) unit. When this did not clear the fault, the engineer activated the emergency hydraulic steering system. This involved starting the electrically-driven stand-by pump, changing over the manual selector valve and switching control solenoids. The changeover to the emergency pump had no effect, with the rudders remaining hard to port.

Meanwhile, the master phoned a nearby fishing vessel, informing its master of the situation and requesting that they stay nearby to assist if required. The master also directed the deck ratings to prepare the anchors for deployment. With no headway, the ship began rolling heavily on the westerly swell.

When interviewed, the engineer stated that they switched the steering control source switch from 'autopilot' to 'emergency toggle' and informed the bridge. The master did not recall being informed and did not attempt using the emergency steering toggle.

At about 0015, the master requested the engineer to disconnect the hydraulic steering gear and centre the rudders manually. The master's intention was to steer the ship using differential thrust settings[2] on the ship's engines, as described in the ship's emergency procedures.

At 0022, the master contacted Lady Barron vessel traffic service[3] (VTS) on VHF channel 14 and informed it of the steering failure. The master also contacted an approaching gas tanker, requesting that it give *Matthew Flinders III* a wide berth.

At 0056, the engineer and the mate completed disconnecting the steering gear and used a chain hoist to centre the rudders. The master then increased engine power and the ship started making way, with some steering regained through varying rpm settings between the port and starboard engines. While the sea conditions meant that it was not possible to maintain a steady course, the limited heading control did reduce rolling and allowed the ship to continue slowly on its intended track to Lady Barron.

The engineer continued to investigate the cause of the steering failure, assisted over the telephone by the operations manager ashore. At about 0330, the master and operations manager agreed that the ship should return to Bridport, where a shore-based electrician familiar with the ship was to board and render assistance. From 0340, the ship made slow progress towards Bridport, with the master steering a west-south-westerly course to maintain a safe distance from the lee shore of Waterhouse Island and the Tasmanian coastline.

At about 0815, while the engineer was checking the rudder angle sensor (see the section titled *Steering arrangement – Steering control signals*), the master noticed a change in the indicated rudder angle on the autopilot control unit. The master informed the engineer, who then identified that the angle sensor linkage had slid down over its shaft, and that the grub screws securing it were loose. After the engineer and the mate re-aligned the linkage and secured the grub screws, the autopilot system feedback functioned normally. After reconnecting the steering cylinders, automated steering was restored and the ship continued its voyage to Lady Barron without further incident.

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2 A yawing moment can be generated in a twin-screw ship by using different thrust settings between the port and starboard propellors as a method for steering the ship.

3 The Lady Barron VTS area extends 3 miles from the port's main wharf and *Matthew Flinders III* was not in its area of operations at the time of the occurrence.

Context

Matthew Flinders III

Matthew Flinders III was a roll-on roll-off cargo ship constructed in 1995 by Bridport Marine, Tasmania. In 2011 its length was extended from 34.9 m to 44.6 m. It was registered as a 'regulated Australian vessel' (RAV) under the Commonwealth's *Navigation Act 2012*. The ship was of a monohull design with a width of 10.8 m, a maximum draught of 1.1 m and a gross tonnage (GT) of 298. It was specifically designed to navigate the shallow Brid River and strengthened to be safely beached and to rest on the seabed at low tide.

It was powered by 2 Cummins marine diesel engines producing 375 kW each, for a service speed of about 10 knots. The engines were fitted in compartments on the far port and starboard side of the hull, driving twin fixed-pitch propellers through a reversible gearbox.

The ship was operated by Bass Strait Freight (BSF) on routes between Bridport, Flinders Island and Cape Barren Island, Tasmania, and Welshpool, Victoria. It usually carried general cargo and supplies to the islands and cattle from the islands to the mainland. Cargo was loaded via a stern-mounted ramp onto the open cargo deck, with collapsible pens installed for loading cattle.

Crew

Master

The master of *Matthew Flinders III* held Australian master <45m near coastal (NC)[4] and marine engine driver grade 2 NC (MED-2)[5] certificates of competency. The master had about 40 years of marine experience, mostly on fishing vessels, with about 27 years as master on various fishing and fish farming vessels.

They had joined BSF about 6 months before the occurrence and had predominantly worked on *Matthew Flinders III* and, to a lesser extent, on the company's other ship, *Matthew Flinders IV.*

Chief engineer

The chief engineer held Australian master <25m NC and MED-2 certificates of competency. They had worked for BSF for 3 years, both on deck and as engineer in relief roles, and had been appointed as regular engineer on board *Matthew Flinders III* about 6 months before the occurrence.

Chief mate

The chief mate held Australian master <45m and MED-2 certificates of competency. They had recently joined BSF and the occurrence voyage was intended to familiarise them with the operations of the ship before taking over as master.

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4 The master less than 45 metres near coastal (formerly 'master 4') certificate of competency allows the holder to work as master on commercial vessels up to 45 metres long within Australia's exclusive economic zone.

5 The marine engine driver grade 2 near coastal certificate of competency allows the holder to work as chief engineer on vessels with an inboard engine of up to 750kW.

Steering arrangement

The ship's twin rudders were interconnected with a crossbar and actuated by 2 double-acting hydraulic steering cylinders, fitted in the port engine room (Figure 2).

Figure 2: Steering cylinders

Source: Bass Strait Freight, annotated by the ATSB

During normal operations, the ship was steered from the bridge using the autopilot system or manual steering using the follow-up[6] controllers. Additionally, a non-follow-up[7] backup mode could be used and the hydraulic solenoids could be operated locally from the engine room.

Further, the width of the ship and the outboard placement of the propellers, meant that the use of differential thrust could also provide effective control authority. This was especially the case when operating astern, as the rudders were not effective without forward thrust. Differential thrust was regularly used as the steering method when operating astern in the sheltered port areas on either end of the voyage to moor or beach the ship.

Hydraulic system

Hydraulic pressure for the steering system was provided by a mechanically-driven, constant-flow hydraulic pump mounted on the port engine.

An electrically-driven emergency pump was fitted in case the mechanically driven pump failed. Although this system used the same hydraulic steering cylinders, it incorporated an independent hydraulic reservoir and a separate steering solenoid (Figure 3).

6 In follow-up steering mode the required rudder angle is set using a handwheel or lever, the controller operates the steering solenoids to match (and maintain) the rudder feedback angle with the commanded angle.

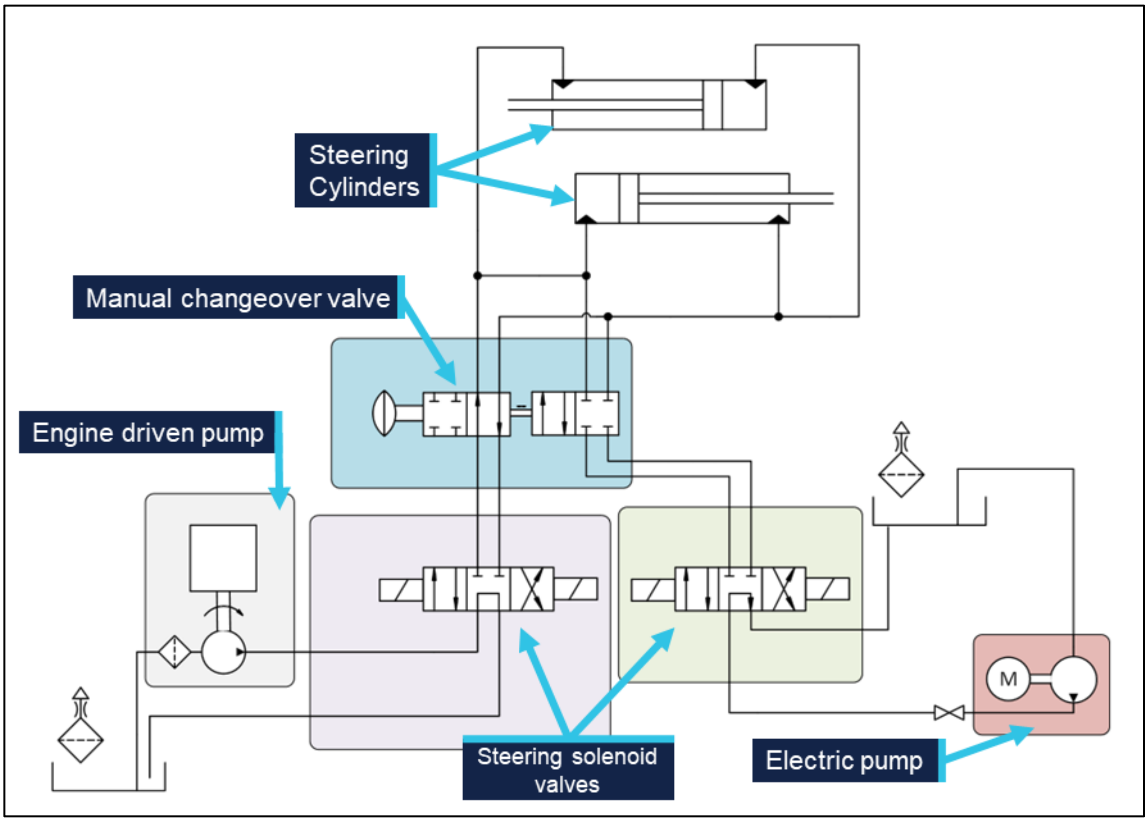
7 In non-follow steering mode, the steering toggle or switches directly control the movement of the rudder, continuously activating the steering solenoids as long as the switch is activated.

Activation of this system could only be done from the engine room and required the crew to take the following steps:

- move manual changeover valve to the emergency position
- start electric hydraulic pump
- switch solenoid control selector switch to the electric pump position.

Activation of the emergency hydraulic system did not impact the steering control systems. That is, the ship could be steered using the autopilot/follow-up system or the non-follow-up system while using hydraulic power from either pump.

Figure 3: Hydraulic system



Source: ATSB

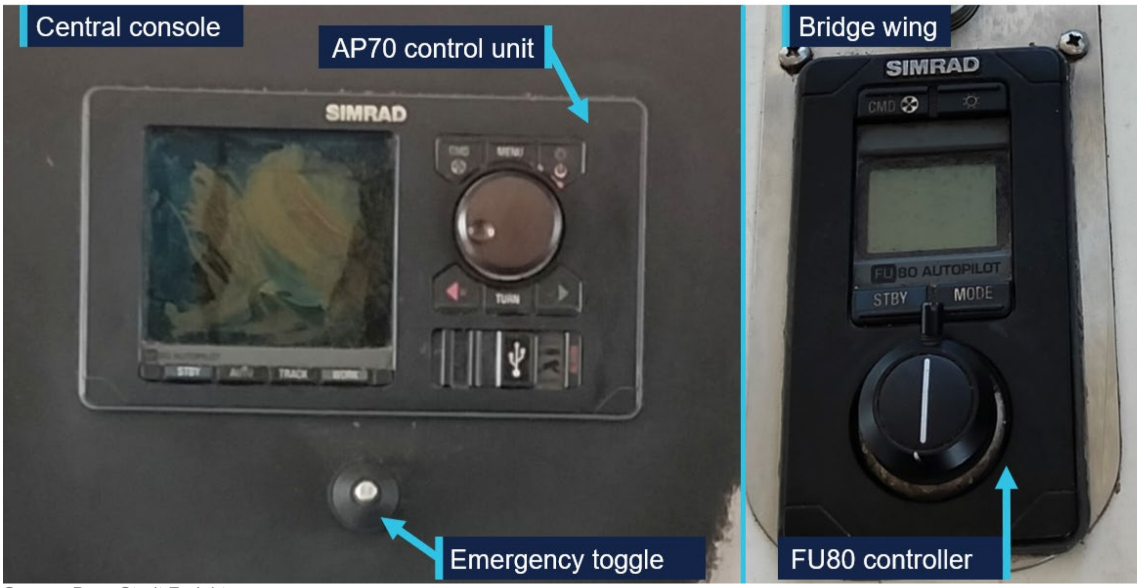
Steering control signals

Matthew Flinders III was fitted with a Simrad AP70 autopilot system (Figure 4), which consisted of several interconnected parts, including:

- an AP70 control unit
- a fluxgate magnetic compass
- a rudder interface unit
- 2 FU-80 follow-up steering controllers.

The AP70 control unit, mounted on the central control panel, controlled the ship's heading while in autopilot mode. The FU80 controllers were mounted on each bridge wing and used for manual steering.

Figure 4: Autopilot control units and central console emergency toggle



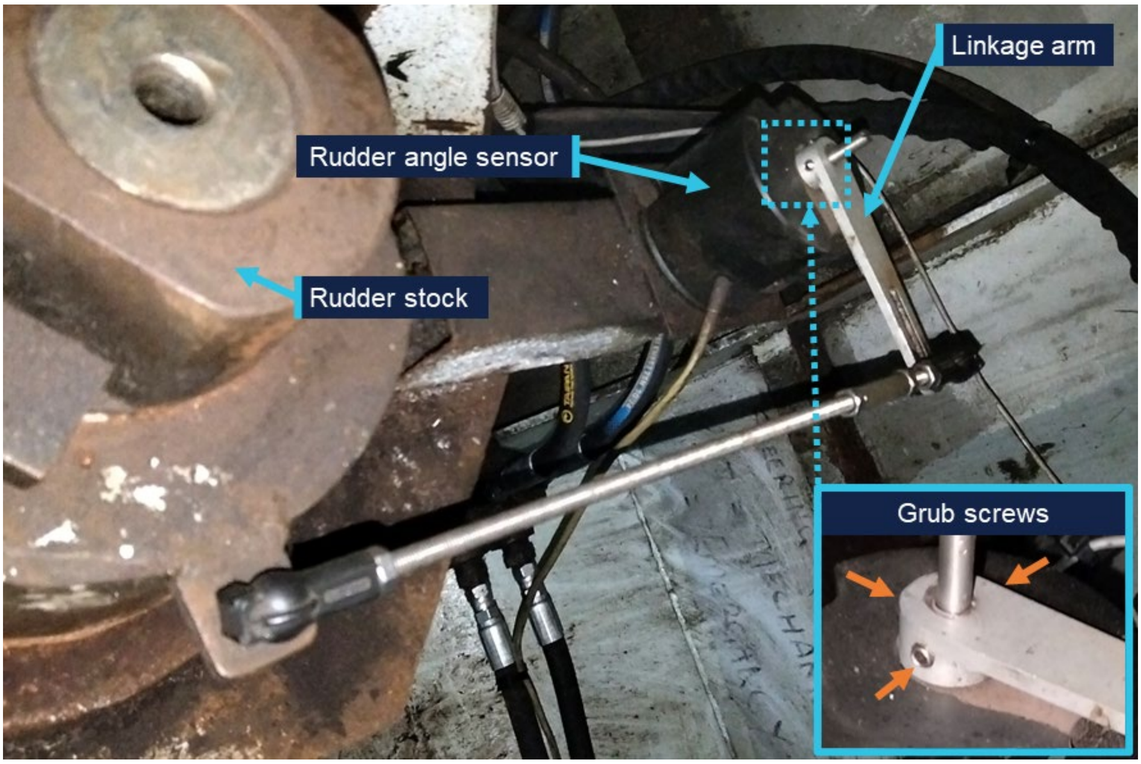
Source: Bass Strait Freight

The interconnection of the manual controllers with the autopilot meant that, during normal operations, the control signals for both manual and autopilot steering were generated by the autopilot system.

Both the autopilot and follow-up modes were closed-loop systems that required a feedback signal. The required rudder angle set point value (as selected by the autopilot or the operator) was continuously compared to the actual (or feedback) value. The system then used the difference between these values to generate a control signal to the appropriate rudder solenoid, adjusting the rudder angle until it aligned with the selected setting.

The required feedback signal for both modes was provided by a single dedicated rudder angle sensor, actuated via a linkage arm off the port rudder stock (Figure 5). The linkage arm was secured on the angle sensor shaft by 3 grub screws.

Figure 5: Rudder angle sensor and grub screws

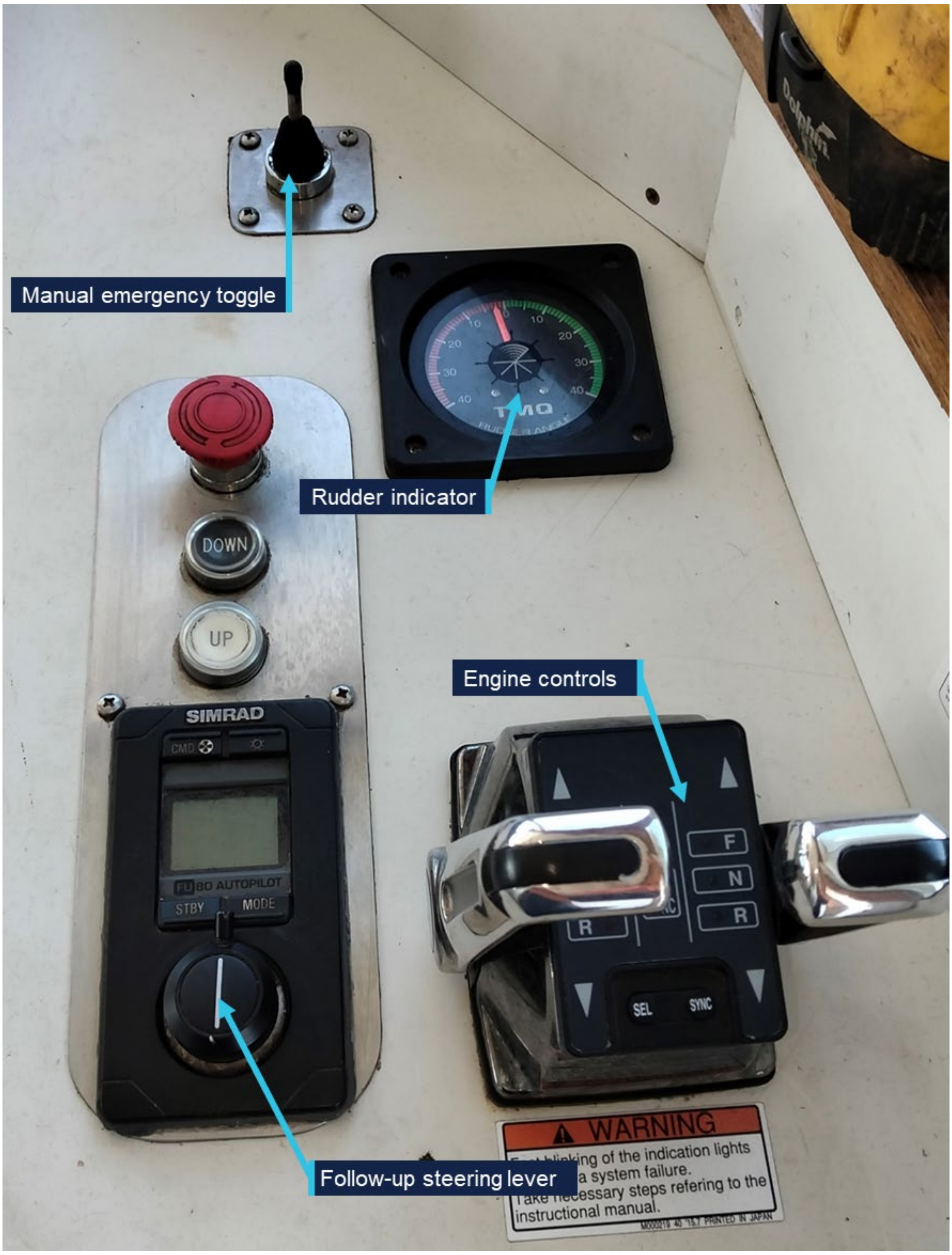


Source: Bass Strait Freight, annotated by the ATSB

A backup control system was installed in case of autopilot system failure. It consisted of 3 unlabelled steering toggles, one mounted on the centre console and one at each wing control station (Figure 6).

The toggles activated the port or starboard solenoid of the selected (main or emergency) system, allowing for steering control in open-loop or non-follow-up mode. Activating any of the 3 toggle switches moved the rudder in the appropriate direction until the rudders reached their end stop, or the toggle was released.

Figure 6: Starboard wing control station

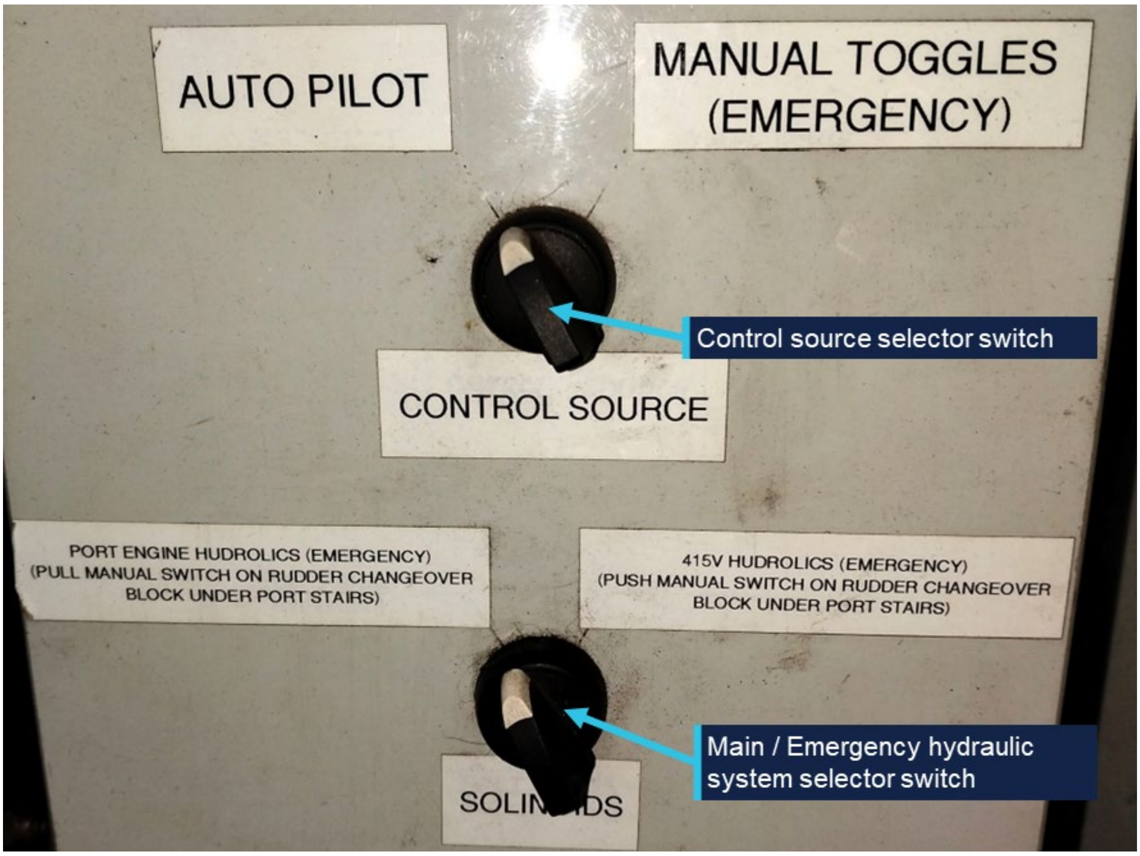


Source: Bass Strait Freight, annotated by the ATSB

Feedback to the operator was provided by 2 rudder angle indicators, one mounted at each wing control station, with their signals coming from a single rudder angle sensor that was additional to the autopilot rudder angle sensor.

The backup control could only be activated from the rudder control panel in the engine room. This required switching the control source switch to the ‘manual toggles (emergency)’ position (Figure 7).

Figure 7: Engine room rudder control panel



Source: Bass Strait Freight, annotated by the ATSB

Regulations and guidance

Matthew Flinders III was constructed in accordance with the Uniform Shipping Laws (USL) Code in force at that time. As a RAV of less than 300 GT, it was not required to be certified to SOLAS[8] requirements. Instead, it was issued with an Australian Maritime Safety Authority (AMSA) certificate of survey under schedule 2 (2.2) of AMSA's Marine Order 31.[9]

Under Marine Order 31, non-SOLAS RAVs were required to comply with certain parts of the marine orders.[10] This included Marine Order 21,[11] which implements the steering gear testing and drill requirements of SOLAS V,[12] including:

- testing a ship's steering gear before departure from port
- providing clear operating instructions, including a block diagram showing changeover procedures to be displayed on the bridge

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8 International Maritime Organization, 2014, The International Convention for the Safety of Life at Sea (SOLAS) 1974 as amended, IMO, London.
9 Australian Maritime Safety Authority, 2019, Marine Order 31 – SOLAS and non-SOLAS certification, AMSA, Canberra.
10 Marine orders, also described as regulatory instruments or legislative regulations, are legal instruments made by AMSA pursuant to powers under Commonwealth legislation.
11 Australian Maritime Safety Authority, 2016, Marine order 21 – Safety and emergency arrangements, AMSA, Canberra.
12 SOLAS Ch V/Reg 26.

- ensuring that all officers operating and maintaining steering gear were familiar with its operation
- conducting 3-monthly emergency steering drills, which included alternative controls and power supplies.

Marine Order 31 also required BSF to develop and implement a safety management system (SMS) for *Matthew Flinders III*. The SMS was not required to be audited and certified as compliant with the International Safety Management (ISM) Code[13] by an external recognised organisation. Instead, BSF could self-certify its SMS and issue a declaration that the ship's SMS complied with Part A of the ISM Code as though Chapter IX of SOLAS applied.

Prescriptive requirements for the design of steering systems as per SOLAS II-1,[14] including the requirement for the ability to change steering system modes from the helm position, did not apply to *Matthew Flinders III* as a non-SOLAS RAV.

Best practice requires controls and displays on ships' bridges to be clearly and unambiguously marked according to their function, and promulgated by the International Maritime Organization (IMO).[15]

Bass Strait Freight

Bass Strait Freight, based in Bridport, operated freight and passenger services between Bridport, Flinders Island, Cape Barren Island, Tasmania, and Port Welshpool, Victoria. The company operated the 2021-built *Matthew Flinders IV,* which carried passengers and freight, as well as the older *Matthew Flinders III,* which was exclusively used for cargo.

The cargo transported was predominantly agricultural, including cattle, with strong seasonal variations in demand. Due to the irregular nature of operations, most of the crew were employed on a casual basis.

The company employed few onshore personnel; it was managed by a director and had appointed a marine operations manager about 6 months before the incident. The operations manager had worked previously as a deck hand and engineer on board both BSF ships. As part of their role, they sometimes conducted (part) of the familiarisation of new ships' crew. Ship maintenance was mostly outsourced to local contractors who were familiar with the ship, having been involved in its construction and lengthening.

Safety management system

The ISM Code sets general standards on the content and purpose of a ship's SMS. One of its requirements[16] directs shipping companies to identify potential shipboard emergency situations and develop and implement appropriate instructions and procedures to prepare for and respond to them.

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13 International Maritime Organization, 2018, International Management Code for the Safe Operation of ships and for Pollution Prevention (ISM Code) as amended, IMO, London.

14 SOLAS Ch II-1/Reg 29.

15 International Maritime Organization, 1999, Maritime Safety Committee Circular 982: Guidelines on ergonomic criteria for bridge equipment and layout, section 5.3.5, IMO, London.

16 ISM code, Part A/Section 8.

Matthew Flinders III's SMS was contained in a single manual, which included company level policy documents, risk assessments, workplace health and safety requirements. It also contained ship- and port-specific instructions, procedures and information. There were several parts related to emergency preparedness and response.

Emergency steering procedures

A description of the emergency steering system was contained in a chapter covering safety features, practices and precautions. It contained a brief description of the steering system, including the option of changing over its hydraulic power source from the port engine to the electrically powered pump and the location of the hydraulic changeover valve. It also noted the location of the changeover switches from 'pilot steering' to 'toggle steering' in the engine room. The SMS did not describe the system in detail, and the location and usage of the bridge controls were not specified.

The emergency procedures chapter of the SMS manual contained a loss of steering procedure that consisted of a list of actions to take in case of a steering casualty. The list contained some general actions, including the need to be aware of other traffic and navigational hazards in the area, proactive communication and the consideration of dropping an anchor. It did note the use of emergency steering, but did not distinguish between the use of the emergency electric hydraulic steering pump and the non-follow-up control system.

The procedure included the following actions related to the steering gear:

- Upon the realisation of the loss of steering, maintain course and speed to the best of ability using the twin screw design of the vessel if navigationally safe to do so. (crew safety measure as to managing the vessels tack against the sea direction)
- Prompt engineer to engage emergency steering.
- Investigate the initial cause of the loss of main steering system.
- If main steering cannot be regained, abort voyage and return to homeport on emergency steering or by the use of the twin screw vessel design.

Following the loss of steering on this occasion, it was initially not possible for the master to maintain heading on differential steering due to the hard to port position of the rudders. Subsequent actions by the crew were consistent with the procedure – maintaining heading into the prevailing sea and returning to Bridport.

Drills

Regulations required the crew of *Matthew Flinders III* to conduct emergency steering drills at least once every 3 months.[17] These drills were intended to test the emergency steering procedures, including direct control of the rudders from the steering gear compartment, communications with the bridge and the operation of alternative power supplies.

At the time of the occurrence, the last recorded drills were conducted on 20 March 2025 and did not include an emergency steering drill. The last recorded emergency steering drill was conducted on 27 October 2024, before the master and chief mate had joined the company. The 27 October drill had been conducted in conjunction with 8 other drills and

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17 Marine Order 21, sub-section 14(6).

involved the master at the time walking the crew around the ship and explaining the different emergency systems. There was no record of the backup control system being activated during the drill and, because the ship was alongside at the time, it was not actually steered.

New crew familiarisation

The SMS manual contained procedures for the induction and training of crew members. These included a safety induction procedure, a general safety induction form and department-specific induction forms for the bridge and engine room. Normally, new crew members were inducted by the crew member they were relieving or, alternatively, by shore management if the crew member being relieved was unavailable.

Section 1 of the general safety induction form covered emergency response and contained a total of 20 items, which the new crew member was required to sign in acknowledgment of receiving instruction for each. One of the line items covered the location and use of the emergency steering system. The bridge familiarisation and bridge induction forms referenced manual and autopilot steering, but they did not include the emergency steering or non-follow-up system.

During interview with the ATSB, the master stated that their familiarisation included an explanation of the function of the electric emergency hydraulic pump and how to switch over from the main (engine-driven) pump. The master did not recall having been instructed about the toggle controls on the bridge and was unfamiliar with the central control toggle. They reported being aware of the emergency toggles on the bridge wing control panels, but were not familiar with their function.

During interview, the master, operations manager and director all indicated that they understood ‘emergency steering’ to mean the use of the electrical hydraulic pump. They all acknowledged that the ship could alternatively be steered using different power settings between the port and starboard engine. As this was the normal mode of steering when manoeuvring astern, the masters and mates were familiar with this method of emergency steering.

Safety analysis

On 23 July 2025, *Matthew Flinders III* was in transit between Bridport and Lady Barron when a rudder angle feedback failure in its autopilot system caused a loss of steering, locking both rudders hard to port. The ship's crew were initially unable to identify the cause of the failure and made use of the main engines to regain some limited steering capacity to keep the ship clear of the coast. About 8 hours later, the crew identified the cause of the failure and restored steering.

This analysis will consider the triggering event for the loss of steering – the loose rudder angle sensor linkage – and the response by the crew to manage the emergency. It will also cover the documentation of the steering system, implementation of emergency procedures including drills and the familiarisation of the ship's crew.

Steering system

Feedback failure

The autopilot system included both automatic heading and a follow-up steering modes. Both modes were closed-loop controls and relied on a single feedback signal from a shared rudder angle sensor.

The rudder angle sensor shaft was connected to the rudder stock via a linkage arm that was secured by 3 grub screws. Movements of the rudder would be transferred from the rudder to the angle sensor and then transmitted electronically to the autopilot system.

When the linkage connecting the rudder to the sensor slipped, the feedback angle was no longer aligned with the actual rudder angle. Consequently, the feedback signal to the autopilot froze in a fixed position, resulting in the autopilot system continuing to output a signal to the port solenoid. This resulted in the rudders locking hard over to port, a 'rudder not responding' alarm being generated by the autopilot system and an uncontrolled turn to port.

Contributing factor

Loose grub screws on the rudder angle sensor linkage arm led to a loss of the rudder feedback signal to the autopilot system. This resulted in the failure of the autopilot and non-follow-up steering system, locking the rudders hard to port.

Non-follow-up system

Matthew Flinders III was equipped with a backup non-follow-up (NFU) steering system that did not require a feedback signal to function. It controlled the rudder solenoids using one of 3 toggle switches mounted on the bridge. Feedback to the helmsman was provided through 2 rudder angle indicators, mounted on the bridge wing control station that used an angle signal from a single independent angle sensor.

However, NFU steering could only be activated from a control panel in the engine room. It was not used for routine operations, nor had its use been practised during drills. As a result, the ship's crew and shore-based management personnel had little awareness of the system and its function.

The master, who was the only person on the bridge during the occurrence, was not familiar with any part of the NFU system. Consequently, the master was unaware of the requirement to use the NFU steering toggles when the engineer changed over the control switch as part of their trouble-shooting efforts.

Contributing factor

Crew on board *Matthew Flinders III* had a limited understanding of the steering system. This resulted in an incorrect response to the control failure.

Posted instructions and labels

Clear operating instructions, including a block diagram showing the procedures for changing between systems, were not displayed on the navigation bridge and in the steering compartment as required under the requirements of Marine Order 21. Additionally, industry guidance for bridge control design recommended that all control elements should be clearly labelled with their function.

Having relevant system information readily available on the bridge would have assisted the crew in identifying the correct steps to change over between control modes during the emergency. Additionally, it probably would have increased the master's familiarity with NFU steering mode during his time spent on board the ship, as well as provide guidance during emergency steering drills.

Contributing factor

A simple emergency steering changeover procedure was not adequately documented and posted on bridge and engine room, as required under Marine Order 21, and the control elements on the bridge were not labelled. These contributed to the lack of understanding of the steering system by the crew.

As a non-SOLAS RAV, prescriptive requirements on the design of steering systems did not apply to *Matthew Flinders III*. This meant that it was not required to have controls for changing steering system mode at the helm position. However, the ability to switch steering modes on the bridge would allow for a rapid response to faults in the steering control system.

In combination with correct labelling and posted instructions, having a switch available on the bridge would probably have improved the crew's understanding of the different available steering modes.

Other factor that increased risk

The switching of steering modes from the autopilot system to the non-follow-up toggles could only be done from the engine room. This delayed the recovery of steering following failure of the autopilot or the connected follow-up system.

Safety management

In accordance with Marine Order 31 for non-SOLAS regulated Australian vessels, Bass Strait Freight had in place a safety management system (SMS) that defined company-specific policies and procedures and provided port and ship-specific information. The SMS included sections on emergency response actions as well as procedures for training and familiarisation of new crew members.

Familiarisation and drills

Newly joining crew members to *Matthew Flinders III* received an initial onboard induction intended to familiarise them with the operation of the ship's systems and their roles in emergencies. Inductions were required under marine regulations, which included specific requirements for personnel involved in the operation or maintenance of steering systems.

The inductions were guided by several forms that were part of the ship's SMS. The general induction form included a line item requiring the new crew member to be instructed in 'the location and use of emergency steering'. However, no specific information was provided on what should be included. The bridge familiarisation and induction forms included autopilot and manual steering but did not include any reference to emergency steering modes.

The function of the NFU (or 'toggle') steering system was not well understood among both ship and shore-based staff. In combination with the limited documentation of the system, this meant that the inductions for new crew member did not adequately address the use of the system. This was compounded by the limited scope of emergency steering drills, which likely did not include actual steering using the alternative systems. Additionally, the low frequency of drills meant that neither the master nor the mate had ever participated in an emergency steering drill.

As a result, while the master was aware of the emergency hydraulic steering system, their induction did not include the use of the NFU system. Consequently, they were unfamiliar with its function and instead relied on steering using differential thrust during the occurrence, which limited control in the prevailing sea conditions.

Contributing factor

Training of new personnel on board *Matthew Flinders III* did not adequately cover the use of the different steering modes. Additionally, drills were not conducted in line with regulatory requirements, which meant critical crew had not participated in any steering drills. Training and drills focused on hydraulic failures and did not include the use of the emergency toggles nor practice local control in the engine room. These elements likely contributed to the lack of systems knowledge among the ship's crew, resulting in an incorrect response to the failure. (Safety issue)

Inadequate emergency steering procedures

The ISM code required companies to identify potential emergencies and establish response procedures in its SMS. Bass Strait Freight had identified steering failure as an emergency and the SMS contained a description of the steering system as well as a ship-specific emergency steering procedure.

In the steering system description, reference was made to the electric emergency steering system and the manual changeover valve; it also identified the location of the NFU steering switch in the engine room. However, it did not include any further information on the use of the NFU system's use and the location and nature of the controls on the bridge.

The emergency steering procedure required engaging the emergency steering system but did not specify whether this referred to the emergency pump or the NFU steering. It did not include any other guidance on activating the backup control system, instead focusing on maintaining the ship's heading using differential thrust from the 2 engines.

The ambiguity and lack of details in the procedure and the checklist meant that the crew were not made aware of all the different steering modes. That resulted in the master being unable to switch over to the available non-follow-up mode when prompted by the engineer.

Contributing factor

The emergency steering section of Bass Strait Freight's safety management system did not adequately explain the alternative non-follow-up control mode and instead emphasised the use of differential thrust for emergency steering. As a result, the master focused on controlling the ship using differential thrust, rather than changing over to a control mode, which would have restored rudder authority. (Safety issue)

Emergency response

Marine rescue services stress the importance of early, proactive communication when there is a potential for an emergency to arise. Early notification allows for timely mobilisation of rescue assets and reduces the communication workload in case of escalation.

In this case, *Matthew Flinders III*'s master promptly notified Lady Baron vessel traffic service (VTS) and nearby ships of the situation, after initial attempts to restore steering were unsuccessful. Even though the ship was outside the VTS area of responsibility during the occurrence, the master's actions ensured that shore-based authorities were aware of the situation and increased the likelihood of timely assistance if it had been required.

Other finding

Though the ship was not in the Lady Barron vessel traffic service (VTS) area when the steering failure happened, the master communicated proactively with VTS and surrounding traffic, making sure that assistance was available in case of escalation.

Findings

ATSB investigation report findings focus on safety factors (that is, events and conditions that increase risk). Safety factors include 'contributing factors' and 'other factors that increased risk' (that is, factors that did not meet the definition of a contributing factor for this occurrence but were still considered important to include in the report for the purpose of increasing awareness and enhancing safety). In addition 'other findings' may be included to provide important information about topics other than safety factors.

Safety issues are highlighted in bold to emphasise their importance. A safety issue is a safety factor that (a) can reasonably be regarded as having the potential to adversely affect the safety of future operations, and (b) is a characteristic of an organisation or a system, rather than a characteristic of a specific individual, or characteristic of an operating environment at a specific point in time.

These findings should not be read as apportioning blame or liability to any particular organisation or individual.

From the evidence available, the following findings are made with respect to the steering failure involving *Matthew Flinders III*, 8 km north of Waterhouse Island, Bass Strait, Tasmania, on 23 July 2025.

Contributing factors

- Loose grub screws on the rudder angle sensor linkage arm led to a loss of the rudder feedback signal to the autopilot system, this resulted in the failure of the autopilot and non-follow-up steering system, locking the rudders hard to port.
- Crew on board *Matthew Flinders III* had a limited understanding of the steering system. This resulted in an incorrect response to the control failure.
- A simple emergency steering changeover procedure was not adequately documented and posted on bridge and engine room, as required under Marine Order 21, and the control elements on the bridge were not labelled. These contributed to the lack of understanding of the steering system by the crew.
- The switching of steering modes from the autopilot system to the non-follow-up toggles could only be done from the engine room. This delayed the recovery of steering following failure of the autopilot or the connected follow-up system.
- **Training of new personnel on board *Matthew Flinders III* did not adequately cover the use of the different steering modes. Additionally, drills were not conducted in line with regulatory requirements, which meant critical crew had not participated in any steering drills. Training and drills focused on hydraulic failures and did not include the use of the emergency toggles nor practice local control in the engine room. These elements likely contributed to the lack of systems knowledge among the ship's crew, resulting in an incorrect response to the failure**. (Safety issue)
- **The emergency steering section of Bass Strait Freight's safety management system did not adequately explain the alternative non-follow-up control mode and instead emphasised the use of differential thrust for emergency steering.**

As a result, the master focused on controlling the ship using differential thrust, rather than changing over to a control mode, which would have restored rudder authority. (Safety issue)

Other findings

- Though the vessel was not in the Lady Barron vessel traffic service (VTS) area when the steering failure happened, the master communicated proactively with VTS and surrounding traffic, making sure that assistance was available in case of escalation.

Safety issues and actions

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues. The ATSB expects relevant organisations will address all safety issues an investigation identifies.

Depending on the level of risk of a safety issue, the extent of corrective action taken by the relevant organisation(s), or the desirability of directing a broad safety message to the marine industry, the ATSB may issue a formal safety recommendation or safety advisory notice as part of the final report.

All of the directly involved parties were provided with a draft report and invited to provide submissions. As part of that process, each organisation was asked to communicate what safety actions, if any, they had carried out or were planning to carry out in relation to each safety issue relevant to their organisation.

The initial public version of these safety issues and actions will be provided separately on the ATSB website on release of the final investigation report, to facilitate monitoring by interested parties. Where relevant, the safety issues and actions will be updated on the ATSB website after the release of the final report as further information about safety action comes to hand.

Familiarisation and drills

Safety issue description

Training of new personnel on board *Matthew Flinders III* did not adequately cover the use of the different steering modes. Additionally, drills were not conducted in line with regulatory requirements, which meant critical crew had not participated in any steering drills. Training and drills focused on hydraulic failures and did not include the use of the emergency toggles nor practice local control in the engine room. These elements likely contributed to the lack of systems knowledge among the ship's crew, resulting in an incorrect response to the failure.

Issue number:	MO-2025-009-SI-01
Issue owner:	Bass Strait Freight
Transport function:	Marine: Shipboard operations
Current issue status:	Closed – Adequately addressed
Issue status justification:	Bass Strait Freight has updated its familiarisation checklists and introduced closer oversight and competency checks by experienced personnel, which should adequately address the safety issue.

Proactive safety action taken by Bass Strait Freight

Action number:	MO-2025-009-PSA-01
Action organisation:	Bass Strait Freight
Action status:	Closed

Bass Strait Freight (BSF) has implemented changes in ship-specific familiarisations for *Matthew Flinders III*. Every crew member is required to complete a crew systems and anchoring competency assessment under the supervision of an experienced crew member or instructor. This assessment explicitly includes the switchover procedures for the different steering modes.

In addition, BSF has appointed an experienced master as check captain and introduced a structured captain competency assessment, that is to be completed by each master under the supervision of the check captain.

Inadequate emergency steering procedures

Safety issue description

The emergency steering section of Bass Strait Freight's safety management system did not adequately explain the alternative non-follow-up control mode and instead emphasised the use of differential thrust for emergency steering. As a result, the master focused on controlling the ship using differential thrust, rather than changing over to a control mode, which would have restored rudder authority.

Issue number:	MO-2025-009-SI-02
Issue owner:	Bass Strait Freight
Transport function:	Marine: Shipboard operations
Current issue status:	Open – Safety action pending.
Issue status justification:	To be advised

Response by Bass Strait Freight

Bass Strait Freight (BSF) has advised that it will review and amend the relevant safety management system procedures, which should address the safety issue.

ATSB comment

The ATSB acknowledges the advice by BSF of the intention to improve safety management system procedures. However, noting the limited detail, including any anticipated timeframe, the ATSB remains concerned that the safety issue will not be addressed. Consequently, the ATSB has issued the following safety recommendation to BSF.

Safety recommendation to Bass Strait Freight

The ATSB makes a formal safety recommendation, either during or at the end of an investigation, based on the level of risk associated with a safety issue and the extent of corrective action already undertaken. Rather than being prescriptive about the form of corrective action to be taken, the recommendation focuses on the safety issue of concern. It is a matter for the responsible organisation to assess the costs and benefits of any particular method of addressing a safety issue.

Recommendation number:	MO-2025-009-SR-01
Responsible organisation:	Bass Strait Freight
Recommendation status:	Released

The Australian Transport Safety Bureau recommends that Bass Strait Freight takes safety action to address this safety issue.

General details

Occurrence details

Date and time:	23 July 2025 – 2345 Australian Eastern Standard Time	
Occurrence class:	Incident	
Occurrence categories:	Machinery failure	
Location:	8 km north of Waterhouse Island, Bass Strait, Tasmania	
	Latitude: 40.7281° S	Longitude: 147.6412° E

Ship details

Name:	*Matthew Flinders III*
IMO number:	8957364
Call sign:	VNTE
Flag:	Australia
Departure:	Bridport
Destination:	Lady Barron
Ship type:	Roll-on roll-off
Builder:	Bridport Marine
Year built:	1995
Owner(s):	Furneaux Freight
Manager:	Bass Strait Freight
Gross tonnage:	298
Deadweight (summer):	270 t
Summer draught:	2.2 m
Length overall:	44.26
Moulded breadth:	10.8
Moulded depth:	3.9
Main engine(s):	2 x Cummins KTA-19M
Total power:	746 kW
Speed:	10 knots
Damage:	Nil

Glossary

AIS	Automatic Identification System
AMSA	Australian Maritime Safety Authority
BSF	Bass Strait Freight
IMO	International Maritime Organization
ISM	International Safety Management
GPS	Global Positioning System
GT	Gross tonnage
MSC	Maritime Safety Committee
NC	Near coastal
NFU	Non-follow-up steering
RAV	Regulated Australian Vessel
SMS	Safety management system. A systematic approach to organisational safety encompassing safety policy and objectives, risk management, safety assurance, safety promotion, third party interfaces, internal investigation and SMS implementation.
SOLAS	The International Convention for the Safety of Life at Sea, 1974, as amended.
USL	Universal Shipping Laws
VHF	Very high frequency
VTS	Vessel traffic service

Sources and submissions

Sources of information

The sources of information during the investigation included:

- the master and chief engineer of *Matthew Flinders III*
- the director and operations manager of Bass Strait Freight
- Recorded Automatic Identification System (AIS) data

References

Australian Transport Council, 1993, Uniform Shipping Laws code – section 9, Engineering, AMSA, Canberra. Available at www.amsa.gov.au

International Maritime Organization, 2000, MSC. Circular 982 – Guidelines on ergonomic criteria for bridge equipment and layout, IMO, London. Available at www.imo.org

International Maritime Organization, 2014, International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, IMO, London. Available at www.imo.org

International Maritime Organization (IMO) 1995, International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code) as amended, IMO, London. Available at www.imo.org

Australian Maritime Safety Agency, 2016, Marine Order 21 (Safety and emergency arrangements), AMSA, Canberra. Available at www.amsa.gov.au

Australian Maritime Safety Agency, 2019, Marine Order 31 (SOLAS and non-SOLAS certification), AMSA, Canberra. Available at www.amsa.gov.au

Submissions

Under section 26 of the *Transport Safety Investigation Act 2003*, the ATSB may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. That section allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the following directly involved parties:

- the master and chief engineer of *Matthew Flinders III*
- Bass Strait Freight
- Australian Maritime Safety Authority.

Submissions were received from:

- the master of *Matthew Flinders III*
- Bass Strait Freight.

The submissions were reviewed and, where considered appropriate, the text of the report was amended accordingly.

About the ATSB

The **Australian Transport Safety Bureau** is the national transport safety investigator. Established by the *Transport Safety Investigation Act 2003* (TSI Act), the ATSB is an independent statutory agency of the Australian Government and is governed by a Commission. The ATSB is entirely separate from transport regulators, policy makers and service providers.

The ATSB's function is to improve transport safety in aviation, rail and shipping through:

- the independent investigation of transport accidents and other safety occurrences
- safety data recording, analysis, and research
- influencing safety action.

The ATSB prioritises investigations that have the potential to deliver the greatest public benefit through improvements to transport safety.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, international agreements.

Purpose of safety investigations

The objective of a safety investigation is to enhance transport safety through:

- identifying safety issues and facilitating safety action to address those issues
- providing information about occurrences and their associated safety factors to facilitate learning within the transport industry.

It is not a function of the ATSB to apportion blame or provide a means for determining liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings.

At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

The ATSB does not investigate for the purpose of taking administrative, regulatory or criminal action.

About ATSB reports

ATSB investigation final reports are organised with regard to international standards or instruments, as applicable, and with ATSB procedures and guidelines.

Reports must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

An explanation of ATSB terminology used in this report is available on the ATSB website.