Australian Government
Australian Transport Safety Bureau

Grounding of *Hagen Oldendorff*

Port Hedland, Western Australia on 9 April 2022

ATSB Transport Safety Report
Marine Occurrence Investigation (Defined)
MO-2022-007
Interim – 7 June 2023

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

Publishing information

Published by: Australian Transport Safety Bureau
Postal address: GPO Box 321, Canberra, ACT 2601
Office: 12 Moore Street, Canberra, ACT 2601
Telephone: 1800 020 616, from overseas +61 2 6257 2463
Accident and incident notification: 1800 011 034 (24 hours)
Email: atsbinfo@atsb.gov.au
Website: www.atsb.gov.au

© Commonwealth of Australia 2023

Ownership of intellectual property rights in this publication
Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia.

Creative Commons licence
With the exception of the Coat of Arms, ATSB logo, and photos and graphics in which a third party holds copyright, this publication is licensed under a Creative Commons Attribution 3.0 Australia licence.

Creative Commons Attribution 3.0 Australia Licence is a standard form licence agreement that allows you to copy, distribute, transmit and adapt this publication provided that you attribute the work.

The ATSB's preference is that you attribute this publication (and any material sourced from it) using the following wording: *Source:* Australian Transport Safety Bureau

Copyright in material obtained from other agencies, private individuals or organisations, belongs to those agencies, individuals or organisations. Where you want to use their material you will need to contact them directly.

Addendum

Page	Change	Date

Interim report

This interim report details factual information established in the investigation's early evidence collection phase and has been prepared to provide timely information to the industry and public. Interim reports contain no analysis or findings, which will be detailed in the investigation's final report. The information contained in this interim report is released in accordance with section 25 of the *Transport Safety Investigation Act 2003*.

The occurrence

On the morning of 7 April 2022, the 300 m Liberian registered bulk carrier *Hagen Oldendorff* (Figure 1) arrived at Port Hedland, Western Australia from Tianjin, China, to load a cargo of iron ore. By 0900 local time, the ship was all fast port side alongside at Stanley Point (SP2) berth, operated by Roy Hill Iron ore. Shortly after, the ship commenced loading.

Figure 1: *Hagen Oldendorff*

Source: Australian Maritime Safety Authority

By 1544 the following day, 8 April, *Hagen Oldendorff* had completed loading 205,465 tonnes of iron ore and was drawing forward and aft draughts of 18.34 m and 18.42 m, respectively. The ship's departure was planned for 0045 during the next tidal window, which was between 0016 and 0156 on the following day.

By 0001 on 9 April, *Hagen Oldendorff* had its main engine on standby for departure, having completed pre-departure checks, which included the testing of the steering gear, main engine, and other navigational equipment. At about 0018, a harbour pilot boarded the ship, and shortly after, the master-pilot information exchange was completed on the navigation bridge (bridge). The steering gear checks and main engine ahead and astern movement were conducted again with the pilot observing. By 0031, 3 tugs were made fast in preparation for departure with a fourth to be made fast after unberthing.

At 0048, *Hagen Oldendorff* departed the berth and shortly after, the fourth tug was also made fast. Tugs *RT Inspiration* and *RT Atlantis* were fast on the port and starboard shoulders,[1] respectively, *RT Clerke* through the centre lead aft, and *RT Darwin* on the starboard quarter.[2]

[1] The part of the ship where the curve of the bow meets the middle parallel body.

[2] Surface of the of the ship's hull aft of midship and forward of the stern on either side.

At about 0118, when *Hagen Oldendorff* was about 3.5 cables[3] (648 m) south of Hunt Point (Figures 2 and 3), *RT Darwin*, was cast off and dismissed. The ship proceeded north-east along the channel. The pilot then offered *RT Clerke*'s master a training opportunity in helping turn the ship into Goldsworthy channel using 'indirect towing'[4] (a method employed regularly in the port for the ongoing training of tug masters). The tug master accepted the pilot's offer.

At about 0126 (Figure 3), the pilot commenced a turn to port using the tug and supplemented the turn rate using the ship's rudder as necessary (port 10° and port 20°). At this time, the ship's speed[5] was about 6.4 knots.[6]

[3] One cable equals one tenth of a nautical mile or 185.2 m.

[4] In indirect towing, the tug uses its thrust to maintain a sheered position relative to the ship's heading. Towing forces are generated by drag forces on the tug's hull and transmitted via the towline. This method can generate substantially higher bollard pull at speeds through the water of greater than 6 knots.

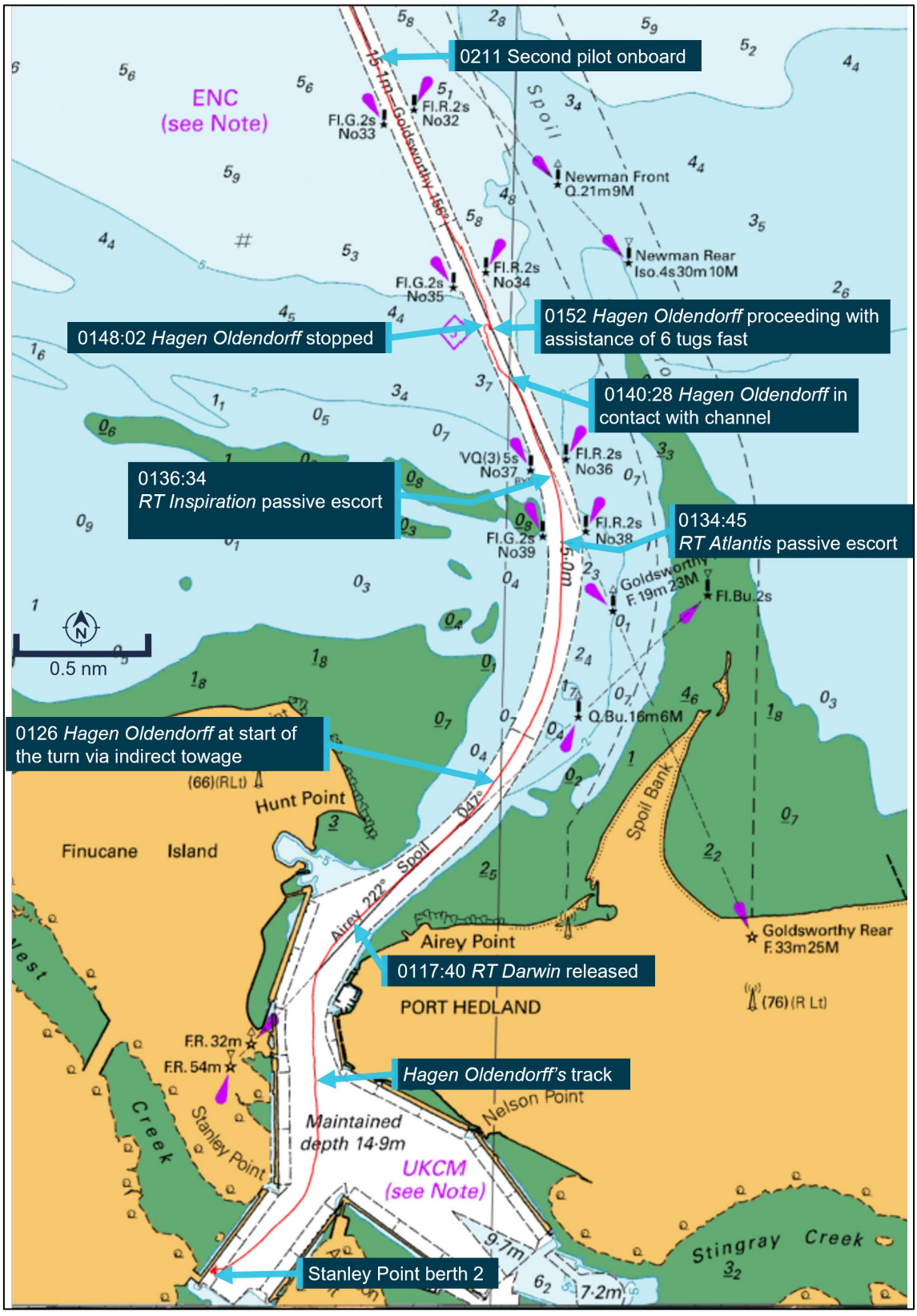
[5] All speeds referred to in this report are 'made good/over the ground'.

[6] One knot, or one nautical mile per hour equals 1.852 kilometres per hour.

Figure 2: *Hagen Oldendorff's* track overlaid on chart of Port Hedland channel

Source: Australian Hydrographic Office, annotated by the ATSB

Figure 3: *Hagen Oldendorff*'s track showing location of key events



Source: Australian Hydrographic Office, annotated by the ATSB

At about 0133, the pilot ordered the release of tug *RT Atlantis* on the starboard shoulder and by 0135, *RT Atlantis* was a 'passive escort'[7]. Shortly after, the pilot ordered the release of tug *RT Inspiration* on the port shoulder and, by 0137, it too was a passive escort.

At about that time, *Hagen Oldendorff* was passing beacons 36-37 in the Goldsworthy channel (Figure 3), turning to port at a rate of turn (RoT)[8] of about 4° per minute and its speed was 6.7 knots, with the main engine set to full ahead (51 RPM). The aft tug was being utilised to control the RoT and steady the ship on the Goldsworthy leading lights (leads) line (aligned 156°-336°). At 0137:26, the ship was steady on a heading[9] of about 334° and its course over ground was 336°, when the pilot ordered starboard 10° (Table 1).

At about the same time, the pilot advised *RT Clerke*'s master of the completion of indirect towing, following which, the tug master asked the pilot whether significant rudder input had been required to supplement the tug's input's during the turn. During the subsequent conversation, the ship started to swing slowly to starboard at a rate of about 2° per minute, and the pilot ordered the rudder to midships, immediately followed by a heading order of 335°.

Table 1: Key events before the grounding

Time	Rudder angle	Rate of turn (deg/min)	Heading (True)	COG (True)	SOG (knots)	Notes
0137:26	Midships (0°)	0	334	336	6.8	RoT was 0 for preceding 5 seconds
0137:30	7° (S)	1(S)	334	336	6.8	By 0137:32, rudder was at starboard 10°
0138:21	20°(P)	0	336	338	6.9	Non follow-up mode engaged RoT remained 0 until 0138:27
0138:37	27°(P)	4 (P)	336	340	6.9	Rudder angle change with no helm order
0139:40	36°(P)	13(P)	324	338	6.7	Rudder angle hard port (maximum).
0140:10	35°(S)	10(P)	318	330	6.5	Rudder angle hard starboard
0140:28	34°(S)	5(P)	316	324	6.3	Contact with the channel edge (grounding) shortly after 0140:28
0140:53	35°(S)	19(S)	322	314	4.8	Starboard swing developed after grounding on side of channel

Source: *Hagen Oldendorff*'s VDR

Shortly after, the pilot heard 'clicking' sounds from the electrical cabinet on the bridge, followed by the lighting of the rudder angle indicators extinguishing (see the section titled *Rudder angle indicators*). The pilot later recalled that the rudder angle indicator was indicating the rudder was midships before it went dark. Recorded data from the ship's voyage data recorder (VDR) showed that by 0137:47, the ship had developed a RoT of about 3.6° per minute to starboard, and the pilot ordered port 10°, followed by port 20°. The pilot also ordered the aft tug '*RT Clerke*' to pull the ship's stern to starboard to counteract the ship's starboard swing and steady it in the channel. Moments later, at 0138:09, the pilot ordered 'non follow-up (NFU),[10] port 20°' (see the section titled *Steering Gear*).

At 0138:13, the pilot informed *RT Clerke*'s master of a 'rudder failure' and ordered 'stern to starboard, 60 tonnes'. Recorded VDR data indicated that a few seconds later, at 0138:21, NFU mode was engaged and alarms sounded on the bridge. At this time, the ship was steady on a

7 A tug that follows a ship closely but is not connected via a towline.

8 Rate of turn (RoT) is the instantaneous rate of change of the ship's heading) , expressed in degrees per minute.

9 Direction of bow of a vessel expressed in degrees, either true or magnetic. All ship's headings in this report are in degrees by gyro compass with negligible error.

10 Non follow-up (NFU) is a backup method for steering the ship. In the NFU mode, the rudder turns while the lever is held to port or starboard and remains at this angle when lever is released.

heading of 336° (Table 1). This was followed by the pilot ordering *RT Inspiration* to make fast on the ship's port shoulder and, a few second later, push at full power.

By 0138:32, the ship had started to develop an increasing RoT to port so the pilot ordered *RT Clerke* to ease to 'no weight on the line'. At 0138:36, on the pilot's orders, the master started reducing the main engine telegraph setting from 'full ahead' to reduce the ship's speed. By 0139:25, the engine setting was at 'stop'. During this time, the rudder moved from port 20° to about port 27°, without a corresponding helm order by the pilot (Table 1). In the meantime, the pilot had ordered *RT Clerke* 'stern to port' to reduce the port RoT. Also, *RT Atlantis* was tasked to push on the starboard quarter, after initially being instructed to make fast between cargo holds 2 and 3 on the starboard side. The tug then moved aft to the starboard quarter.

At 0139:34, the pilot queried if the rudder was responding and then ordered 'hard to port'. The recorded data indicated that the rudder moved from its initial position of about port 27° to port 35°. At this time, *RT Clerke* was using full power to bring the stern to port and the ship's RoT was 13° per minute to port (Table 1).

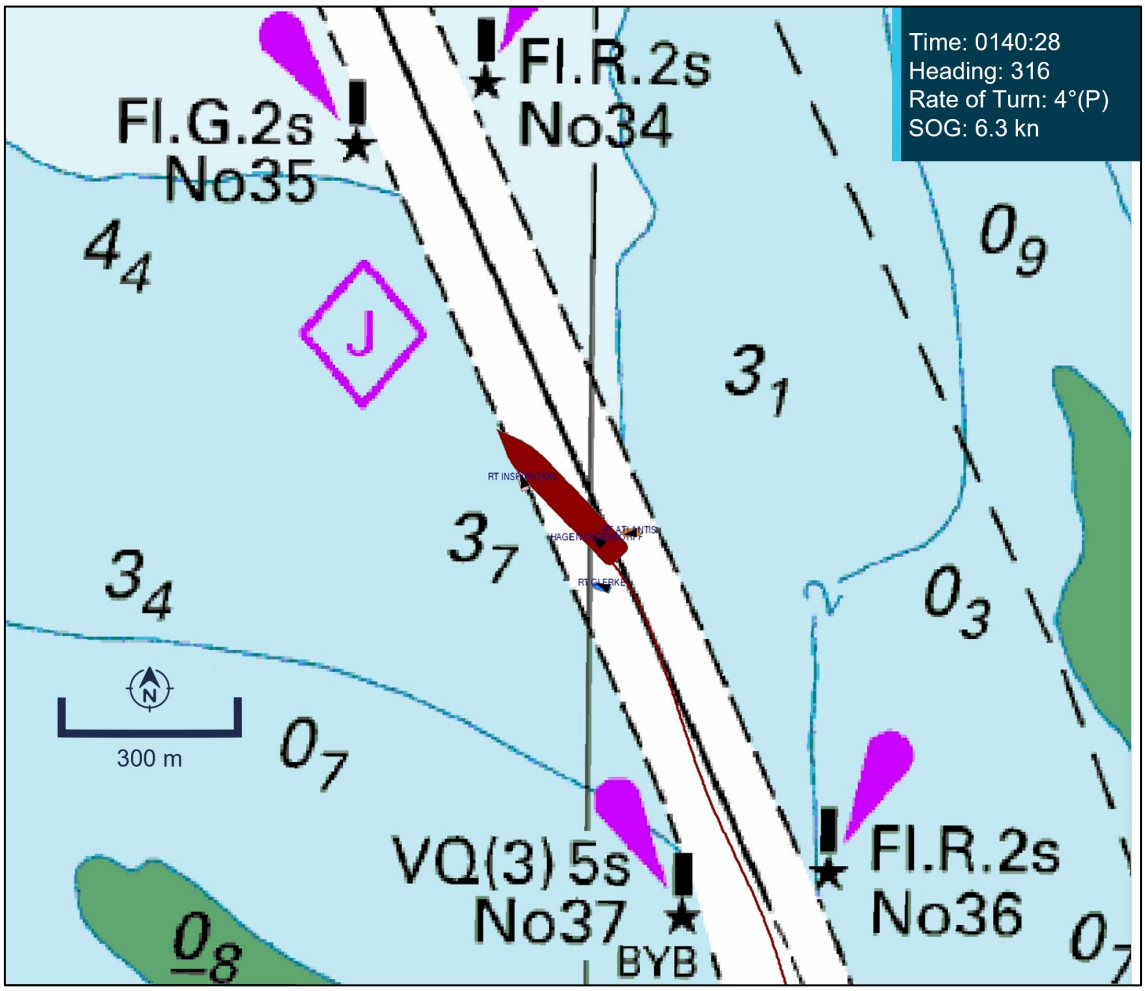
The pilot reported to the vessel traffic service (VTS) that the ship had experienced a 'rudder failure' and declared a 'Port Emergency'[11]. Shortly after, the master queried the hard to port rudder order and asked the pilot what rudder angle was needed. The pilot then asked for the rudder to be put hard to starboard. Recorded (VDR) data showed that the rudder angle then moved to 35° starboard.

Shortly after 0140:00, on the pilot's order, the master put the main engine astern to reduce the ship's speed, which was 6.2 knots. At about 0140:24, the pilot said, 'no rudder, no rudder' and then asked if the rudder was at hard starboard. The master confirmed that it was.

Shortly after 0140:28, there was a sharp reduction in both the ship's speed and its RoT to port. Recorded data confirmed that the ship had contacted the steep channel batter (the side of the navigable channel) (Figure 4). The ship's bow then swung away from the side of the channel to starboard. In less than a minute, the RoT had increased to 19°(starboard). The ship's speed at that time was 4.8 knots (Table 1).

[11] An event that poses significant risk to the safe or continued operation of the port by affecting safety of personnel in the port area, shipping channel, port assets or infrastructure

Figure 4: *Hagen Oldendorff*'s position at 0140:28, close to the time of grounding



Source: Australian Hydrographic Office, annotated by the ATSB

At 0140:35, the VTS made a radio broadcast on the port's very high frequency (VHF) working channel requesting available tugs to assist with *Hagen Oldendorff*'s emergency and notified the harbour master about the incident. The masters of 5 tugs (*FMG Dusky*, *Iron Ibis*, *Iron Whistler*, *RT Darwin* and *Iron Kestrel*) confirmed they were responding.

Meanwhile at *Hagen Oldendorff*'s location (at about 0140:40), *RT Atlantis*, was squaring up to push on its starboard quarter. The pilot then instructed it to proceed to the bow and ordered *RT Clerke* to pull the stern to starboard. The pilot also instructed *RT Inspiration,* which was on the port bow to stop pushing. *RT Atlantis* proceeded forward, while *RT Clerke* continued pulling the stern to port. At about 0141, *RT Inspiration* was fast on the port shoulder.

Shortly after 0142, the pilot informed VTS that the ship 'might have grounded' and, while the engine was available, the steering gear was not responding in any mode, including NFU. The pilot also asked VTS to call the next duty pilot.

At about 0145, the master informed the pilot that the crew had engaged the emergency steering local controls in the steering gear room.

In the meantime, the tugs *FMG Dusky* and *Iron Ibis* had arrived at the ship's location. At 0147:20, the pilot informed VTS that the ship's emergency steering system was available, and the plan was to take the ship to the anchorage.

By 0148, *FMG Dusky* and *Iron Ibis* were fast on the starboard quarter and forward centre lead, respectively. At this time, *Hagen Oldendorff* was stopped in the channel, south of beacon 35 (Figure 3). Shortly after, the tug *Iron Whistler* was made fast on the port quarter.

At about 0152, the ship began moving along the channel under its own power with 6 tugs fast. About a minute later, the pilot asked for the ship's forward, port ballast tanks to be sounded (for water ingress). Shortly after, the tugs *RT Darwin* and *Iron Kestrel* arrived and were instructed to position themselves off the port and starboard quarters and follow the ship.

At 0158, VTS advised the pilot that the harbour master had been informed that the ship had engaged emergency steering and was cleared to proceed to anchorage.

At about 0211, when the ship was past beacons 32-33, a second pilot boarded the ship via helicopter to assist (Figure 3). The second pilot then took charge of communications with various parties to assist the pilot conducting the ship. Shortly after, VTS advised the pilot that there was sufficient tidal window for the ship to exit the channel at C1.

At 0239, after repeated inquiries by the pilot about ballast tank soundings, the master advised that soundings had indicated no water ingress. The pilot asked for the tanks to be sounded again after 30 minutes.

At about 0303, the ship cleared beacons 15-16 (about 8.8 miles north-north-west of Hunt Point). Shortly after, *FMG Dusky* was cast off and dismissed and *Iron Kestrel* was made fast in its place on the starboard quarter.

At about 0327, the master reported that the latest tank soundings had confirmed no water ingress.

Shortly after 0430, the ship cleared the channel (beacons C1-C2) and all tugs, except *RT Clerke*, were dismissed. By 0530, the ship had anchored outside the port limits in a position 24 miles north-north-west of Hunt Point (Figure 2). Soon after, *RT Clerke* was cast off and dismissed and the pilots left the ship via helicopter.

Post incident actions

At 0530 on 9 April, the harbour master notified the Australian Maritime Safety Authority (AMSA) about *Hagen Oldendorff*'s grounding and that the ship was at the anchorage. At 0600, AMSA issued the ship's master a detention[12] order.

At about 1000, the master notified VTS that the ship was taking water in number 1 and 2 port double-bottom water ballast tanks, had developed a trim by the head, and requested tug assistance. In response, the harbour master ordered 2 dive boats to the ship's location. Shortly after, the master reported that one ballast pump was coping with pumping out the water from the breached tanks. Later that day, the master advised that all other compartments (ballast and fuel tanks) were intact.

On 11 April, an underwater hull inspection identified substantial damage on the ship's port side and bottom shell plating in way of the breached tanks. The damage included holes in the shipside shell plating and the failure of the transverse bulkhead between the tanks, allowing flooding between them. Several frames and internal strength structures had also buckled or fractured.

On 18 May, following the temporary repairs at the anchorage, the ship's flag State (Liberia) approved the ship to undertake a direct voyage to its discharge port in China before proceeding to the shipyard for permanent repairs.

---

[12] A detention is an intervention action taken by the port state when the condition of the ship or its crew does not correspond substantially with the applicable conventions. The action is taken to ensure that the ship will not sail until it can proceed to sea without presenting a danger to the ship or persons onboard, or without presenting an unreasonable threat of harm to the marine environment, whether or not such action will affect the scheduled departure of the ship.

At 2000 on 19 May, AMSA released *Hagen Oldendorff* from detention. At 2154, the ship departed for Lianyungang, China, to discharge its cargo. After discharging the cargo, the ship sailed to the shipyard in Zhoushan, China, for permanent repairs to be carried out.

Context

Hagen Oldendorff

Hagen Oldendorff was a Liberian registered, 208,588 deadweight (DWT) cape size[13] bulk carrier built in 2020 by Cosco Shipping Heavy Industry (Yangzhou, China). At the time of the grounding, the ship was managed and operated by Wah Kwong Ship Management Hongkong and classed with Lloyd's Register (LR).

At the time of the incident, *Hagen Oldendorff* was crewed by 20 Chinese nationals, including the master. The bridge team comprised the master, third mate, helmsman, and the pilot. The engine room was manned by the chief engineer, second engineer and duty oiler.

Steering gear

Hagen Oldendorff was fitted with a Kawasaki electro-hydraulic 4 ram steering gear. The steering gear had 2 identical hydraulic systems; each system powered by one hydraulic pump.

The steering gear could be operated in auto or manual steering (follow-up mode) from the bridge. Manual steering in non follow-up (NFU) mode was also available in case follow-up mode malfunctioned. In an emergency, the steering gear could also be operated locally from the steering gear room.

In auto mode, the ship could be set up to follow the set heading. In this mode, the rudder follows the helm orders provided by the autopilot. The feedback signal from the rudder maintains the rudder at the ordered position.

Similarly, in hand steering mode, when the helm is moved (manually), the feedback signal maintains the rudder at that commanded position.

In the NFU mode, when the spring-loaded lever (Figure 5) is moved in one direction, the rudder continues to move in that direction until the lever is released (or the mechanical rudder limit is reached). When the lever is released, the rudder angle reached will be maintained. Changing the rudder angle requires the lever to be operated in the required direction.

Rudder angle indicators

The ship was fitted with a Yokogawa RAIS 100 rudder angle indicator system which included a rudder angle transmitter (in steering gear room) and 6 rudder angle indicators. The system had a common power supply with one circuit breaker provided at the junction box located in the cabinet on the bridge. A 3-face rudder angle (omnidirectional) indicator was mounted on the deckhead of the bridge, along the ship's fore and aft centreline, above the manoeuvring console. An additional rudder angle indicator was provided in the bridge front instrument cluster. The bridgewings (port and starboard), engine control room and steering gear room were also fitted with a rudder angle indicator.

The autopilot display unit had an electronic rudder angle indication available (Figure 5) with its own independent power supply. The rudder (helm) order and feedback could be viewed on the display.

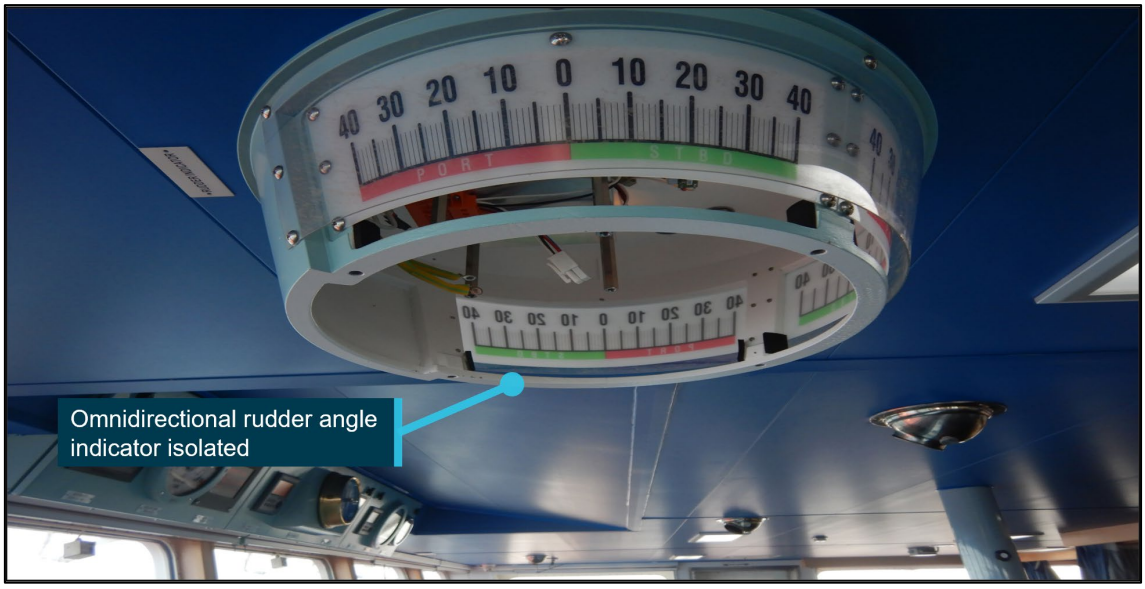
[13] Dimension larger than that allowable for transit of Panama Canal

Figure 5: *Hagen Oldendorff's* bridge console layout showing the control and display unit

Source: Wah Kwong ship management, annotated by the ATSB

The post-incident shipboard investigation identified that the tracking motor of the omnidirectional rudder angle indicator (Figure 6) had burnt out, causing a short circuit. This short circuit tripped the common circuit breaker in the bridge cabinet. Hence, all rudder angle indicators lost power and stopped functioning at the time of the incident. Light and dimmers for the rudder angle indicators were also supplied from the same circuitry, resulting in the loss of all indicator illumination. When the omnidirectional indicator was isolated post-incident, all other rudder angle indicators were found to be functional.

Figure 6: Bridge omnidirectional rudder indicator (isolated and partly dismantled)



Source: Australian Maritime Safety Authority, annotated by the ATSB

Port Hedland

Port Hedland, located in the Pilbara region of Western Australia, is the world's largest bulk export port. The port has 19 operational berths and a 22-mile dredged, channel that allows a single ship to traverse it at any given time. This unidirectional channel is also tidally restricted for most laden ships. More than 6,000 shipping movements (in and outbound) take place annually, facilitating an annual throughput of more than 500 million tonnes of cargo (mainly iron ore).

The port's unidirectional channel is divided into 6 zones to mitigate channel blockage risk. Zones 1 and 2 form part of the inner harbour, while zone 3 extends from Hunt Point to beacons 36-37 and features a 110° turn, lining up with the Goldsworthy leads. Zone 4 extends from beacons 36-37 to 30-31 (Figure 2). Both zones 3 and 4 have steep channel batters, which become shallower from zone 5 onwards. Zone 5 extends from beacons 30-31 to beacons 15-16. Zone 6 extends from beacons 15-16 to beacons C1-C2 (Figure 2 and Figure 3). The channel has a minimum width of about 162 m in the Goldsworthy and Newman sections of the channel (zones 4 and 5). *Hagen Oldendorff* grounded on the western side of the channel in zone 4, between beacons 37 and 35.

Pilbara Ports Authority

Port Hedland is managed by the Pilbara Ports Authority (PPA), which has overarching responsibility for safe and efficient port operations under the Western Australia state legislation.

Port Hedland Pilots

Port Hedland Pilots (PHP) was contracted by PPA to provide pilotage services in Port Hedland. The individual pilots were employed by PHP and licensed by PPA.

The pilot onboard *Hagen Oldendorff* had about 14 years sea going experience prior taking up the role of a pilot in 2004. They had worked as a pilot in several ports around Australia, before joining

PHP in 2016. At the time of the occurrence, the pilot held an unrestricted pilot's licence for Port Hedland and had conducted a total of about 4,000 shipping movements.

Tug services

The tugs in Port Hedland were operated under licences granted by PPA to Broken Hill Proprietary Towage Services (BHPTS) and Pilbara Marine by the PPA (Table 2). Rivtow operated tugs under the BHPTS licence, while Kotug operated under the Pilbara Marine towage licence.

Table 2: Tugs in Port Hedland

Licensee	Type of Tug	Bollard Pull (tonnes)	Number of Tugs
BHPTS	Z-Tech	63	2
BHPTS	RT80-32	80	5
BHPTS	ART80-32	80	4
BHPTS	RAstar85	85	6
Pilbara Marine	RT80-32	80	1
Pilbara Marine	ART85-32W	85	8

Safety action

Following this incident, PPA issued a marine notice requiring that a suitably qualified and competent person stands by in the steering gear room during a ship's transit of the Port Hedland channel.

Further investigation

Initial formal notifications of the incident in April 2022 reported that *Hagen Oldendorff* had an issue with its steering due to faulty rudder indicators during its outbound transit of the Port Hedland channel. A few weeks later (in May), BHP reported to ATSB (via telephone) that the ship had grounded and sustained substantial damage. In late July, BHP presented the ATSB additional information, including recorded data.

The ATSB then reassessed the available information, obtained further information from PPA and PHP, and commenced an investigation into this serious incident. Subsequently, ATSB investigators attended the offices of PPA, PHP and BHP in Port Hedland to interview relevant persons and collect available evidence. The ATSB also obtained VDR and other relevant digital and documentary evidence from the ship's mangers, PPA, PHP and BHP.

The investigation is continuing and will include:

- a review of PHP's operating procedures, practices, and training regime
- analysis of the conduct of the pilotage and the effectiveness of bridge resource management
- a review of PPA's policies, procedures and their application
- a review of towage practices and procedures in Port Hedland
- assessment of *Hagen Oldendorff*'s steering gear arrangement, controls and indicators
- a review of the ship's procedures and emergency readiness.

Should a critical safety issue be identified during the course of the investigation, the ATSB will immediately notify relevant parties so appropriate and timely safety action can be taken.

A final report will be released at the conclusion of the investigation.

General details

Occurrence details

Date and time:	9 April 2022 – 0140 Western Standard Time	
Occurrence class:	Serious incident	
Occurrence categories:	Grounding/stranding	
Location:	Port Hedland, Western Australia	
	Latitude: 20°16.470'S	Longitude: 118°35.004'E

Ship details

Name:	*Hagen Oldendorff*	
IMO number:	9870355	
Call sign:	D5VK2	
Flag:	Liberia	
Classification society:	Lloyd's Register	
Departure:	Port Hedland, Australia	
Destination:	Lianyungang, China	
Ship type:	Bulk Carrier	
Builder:	Cosco Shipping Heavy Industry, Yangzhou, China	
Year built:	2020	
Owner(s):	CL Marina, Liberia	
Manager:	Wah Kwong Ship Management (Hong Kong)	
Gross tonnage:	107,549	
Deadweight (summer):	208,588 t	
Summer draught:	18.42 m	
Length overall:	299.95 m	
Moulded breadth:	50 m	
Moulded depth:	24.937 m	
Main engine(s):	MAN B&W 6G70ME-C9.2-Tier II	
Total power:	15,131 kW	
Speed:	14 knots	
Injuries:	Crew – 0	Passengers – 0
Damage:	Substantial hull damage with double bottom water ballast tanks breached.	

Australian Transport Safety Bureau

About the ATSB

The ATSB is an independent Commonwealth Government statutory agency. It is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers.

The ATSB's purpose is to improve the safety of, and public confidence in, aviation, rail and marine transport through:

- independent investigation of transport accidents and other safety occurrences
- safety data recording, analysis and research
- fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia, as well as participating in overseas investigations involving Australian-registered aircraft and ships. It 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. This is done 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.

Terminology

An explanation of terminology used in ATSB investigation reports is available on the ATSB website. This includes terms such as occurrence, contributing factor, other factor that increased risk, and safety issue.