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1. Executive Summary

The October 8, 2022 allision of the vessel MT Tradewind Passion with the Demerara Harbour Bridge (DHB) resulted in extensive damages to critical components of the bridge as a consequence of which the bridge was rendered inoperable, and serious physical injuries were sustained by an employee of the DHB Corporation.

To ascertain an accurate representation of the sequence of events, and/or contributing factors, directly or indirectly, to this allision, the Honourable Bishop Juan Edghill, Minister of Public Works (MOPW), pursuant to section 427(1), Guyana Shipping Act, Cap. 49:01, Laws of Guyana, caused a preliminary inquiry (PI) to be held. This PI was conducted by a Board of suitably qualified assessors led by Surveyor of Ships, Capt. Joseph Lewis. The Board of Inquiry (BOI) consisted of the following persons:

1. Capt. Joseph Lewis - Chairman
2. Lt. Cdr David Shamsudeen
3. Ms. Thandi McAllister
4. Inspector Carlos Ross
5. Mr. Patrick Thompson
6. Ms. Yurlander Hughes, and
7. Mr. Dimitri Ali

The PI was conducted October 10-13, during which period the BOI received information via interviews, and visits: aboard the Tradewind Passion, the Demerara Harbour Bridge, and the Georgetown Public Hospital Corporation.

During the conduct of this PI, several agencies and personnel were interviewed. The list of interviewees is appended to this report (**Annex I**).

1.1 Allision Overview

It has been established that on the 8th day of October, 2022, the MT Tradewind Passion, during a scheduled transit, being under the control and command of Captain Freddy Mendoza, advised by Pilot Kenneth Cort, allided with the Demerara Harbour Bridge structure, including 2 sets of 15-pile clusters situated at the north-western end of the transit passage.

Vessel transit of the bridge zone commenced at about 01:10 hrs on the said date, with the Tradewind Passion slated for southbound transit and thus, as per recommended practice and procedure, was the last of the vessels underway.

At approximately 00:20 hrs, the Tradewind Passion was advised by the DHBC Radio Control room to make its safe passage into the bridge zone. The bridge zone is that area of the Demerara River bounded by the river banks on the East and West up to the sea defense dams on either side, and on the North by an imaginary line drawn across the Demerara River from the boundary separating Plantations Rome and Houston on the Eastern Bank of the Demerara River, to the boundary separating Plantation Versailles and Goed Fortuin on the Western Bank of the Demerara River and on the South by an imaginary line drawn across the river from the boundary separating Plantations Ramsburg and Herstelling on the Eastern Bank of the Demerara River to the boundary separating Plantations Bagotville and Nismes on the Western Bank of the Demerara River.

It is established that the last northbound vessel, the MT Ocean Trader, of the scheduled transit, navigated safely through the bridge passage.

At approximately 01:48 hrs, the DHBC Shift Supervisor, Andy Duke, communicated via VHF Channel 12 to the MT Tradewind Passion that she should proceed to the bridge's passage for transit. At the time of this transmission, the MT Tradewind Passsion was

situated at a point West of the transit channel, and Northwest of the entrance port and starboard lead channel lights to the passage. The MT Tradewind Passion continued to proceed on her incorrect course to make transit through the two rear western channel markers on the northern side of the western span.

The MT Tradewind Passion proceeded towards the bridge transit passage in a south-easterly direction, deadslow ahead, and then slow ahead. At a course of 170 degrees, and a speed of approximately 1.3kts, she steadied.

The MT Tradewind Passion, at approximately 01:51 hrs, helm was placed 10 degrees, and then 20 degrees to starboard i.e., Starboard 10, and Starboard 20. She further altered East to 10, at a speed of 4.8kts, thereafter the helm was placed mid-ship and steadied.

At 01:52 hrs, the DHBC enquired from the MT Tradewind Passion whether she was starting to transit. DHBC also informed the MT Tradewind Passion that she was on a course "close to the cluster piles". MT Tradewind Passion acknowledged her course, and proceeded to move helm to starboard 10. At approximately 01:53 hrs, the MT Tradewind Passion was repeatedly warned by the DHBC that she should "turn around" and not "come through" the cluster piles. At approximately 01:54 hrs, whilst the MT Tradewind Passion was on a closer approach to the bridge, the DHBC again, repeatedly warned her to "not come through the cluster piles" but to "turn around".

At approximately 01:55 hrs, the DHBC warned the MT Tradewind Passion to take evasive actions to avoid hitting the cluster piles. The MT Tradewind Passion which went hard starboard with helm, allided with the cluster piles. Failing further to take appropriate evasive actions, the MT Tradewind Passion allided with the eastern and western sections of the harbour bridge; causing severe damages to critical structural bridge components and injuries to bridge personnel.

1.2 Vessel Information

The MT Tradewind Passion, IMO Number: 9483619 is a Panamanian flagged Oil/Chemical Tanker, with a gross tonnage of 5,001. The full vessel particulars are outlined in **Annex II**.

At the time and date of the allision, the MT Tradewind Passion was manned by an eighteen-member crew led by Captain Freddy Olarte Mendoza, Master. All crew members are of Filipino nationality. The official language of the vessel is English. The crew list is appended to this report and marked "**Annex III**".

At the time and date of the allision, the MT Tradewind Passion operated under a Time Charter Party agreement between Canama Tradings DE. R.L (being owners of the vessel), and the Guyana Oil Company Ltd (GUYOIL). The vessel is classed with Classification Society: Bureau Veritas. At the time of the allision, the vessel records reflect a defective bow/maneuvering thruster.

2. OVERVIEW OF THE DEMERARA HARBOUR BRIDGE

The Demerara Harbour Bridge is a state-owned public facility that is managed by the DHBC. The Bridge links the east and west banks of the Demerara River at Plantation Peters' Hall and Meerzorgen, respectively. The 1.851 km long bridge was commissioned in 1979 and consists of a two-lane steel pontoon floating structure with a retractable span approximately 300 meters from the eastern bank of the Demerara River. The bridge is usually retracted once daily for the passage of coastal and ocean-going vessels.

Considering the impending transformative development mapped for Regions 3 and 4, the bridge serves as an important connector for the regional economies and advancement of national development.

Over the years the bridge has been subjected to regular routine and periodic maintenance to ensure that it can provide a safe and reliable service to the more than 20,000 vehicles that cross in both directions daily. The DHBC works tirelessly every day to ensure that this Bridge remains viable.

2.1 Damage to the Demerara Harbour Bridge

Based on the initial assessment done by the DHBC, the collision of the Tradewind Passion with the Bridge resulted in severe damage to the bridge infrastructure at spans 7,8, 9, 10, 11 and 12. Some of the recorded damages are as follows:

- mowed down 2 sets of 15 piles clusters on the north western side of the bridge;
- damaged the pontoon, king post and panels at span 9.2;
- damaged the special connecting posts at spans 7/8 and 11/12;
- severely damaged to the transom beams at spans 7/8 and 11/12 as well as the transom beam under the ramp;
- damaged about 15 anchor blocks
- both eastern and western sections of the bridge were forced out of original alignment at approximately 45 degrees southwest, and northeast, respectively.

The final cost of the damages is estimated at about \$5million USD, and continuing.

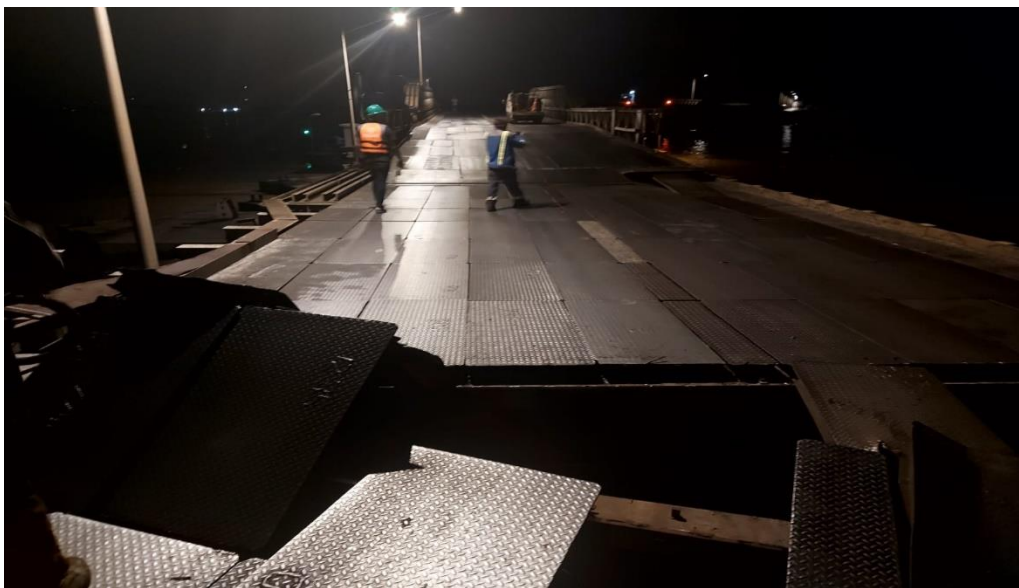


Image 1 - The damaged deck plates of Span 8



Image 2 - Damaged section of truss deck on Span 8



Image 3 - Damaged section of the retractor span

2.2 Damage to the Tradewind Passion

The damage to the Tradewind Passion was observed by members of the Board of Inquiry when a visit to the vessel was done on October 10, 2022 at the Guy Oil berth, Providence, East Bank Demerara. Image 4 is a view of the damage on the starboard bow resulting from the impact with the bridge. Image 5 is the damage to the interior frame of the starboard bow.



Image 4 - Damage to the starboard bow of the Tradewind Passion



Image 5 - Damage observed from the interior frame of the Tradewind Passion

3. WEATHER AND WATERWAY CONDITIONS

The data reflected in the weather report and tide table indicated that the navigable conditions of the Demerara River on Saturday 2022-10-08, 0130 hours to 0200 hours, the period during which the MT TRADEWIND PASSION attempted to transit the Demerara Harbour Bridge was appropriate for manoeuvres. In addition to these reports, evidence gathered during the investigating process suggested that the weather as well as the tidal conditions of the Demerara River did not operate to restrict or create any difficulty in transiting the Bridge. Below is a full report of the weather as well as details pertaining to the Demerara River's tidal information.

3.1 Weather

See **Annex IV** for detailed weather report prepared by the Hydrometeorological Service, Guyana.



National Weather Watch Center
 Hydrometeorological Service – Guyana
 Ministry of Agriculture
 Telephone: 592-261-2284/2216/3065/4489
 Fax: 261-2284
 Email: hydromet.nwwc@gmail.com

Issue No: 10/2022 - 14

Date: October 7, 2022
 Senior Meteorological Technician: Kamelia McPherson

| | | | |
|---|--|---------------|-----------|
| SEVERE WEATHER WARNINGS | None at this time. | | |
| MARINE ADVISORY | None at this time | | |
| Weather Synopsis | Ridge of high pressure is the dominant feature affecting Guyana. | | |
| Observed Conditions | Mostly fair skies were observed across Guyana today. | | |
| Weather Forecast 07:00 pm – 07:00 am | Mostly fair skies can be expected throughout Guyana tonight. | | |
| | No significant rainfall likely. | | |
| | Winds: Mostly breezy. Temperature: Coast (24 to 26) °C and Hinterland (21 to 23) °C | | |
| Tides & Advisory | Persons are advised that the above normal high tide advisory is in effect and will continue until Thursday October 13, 2022. | | |
| | Low Tide will be at 20:27 hrs at a height of 0.73 of a meter. High Tide will be at 02:43 hrs at a height of 3.08 meters which is above normal. | | |
| Sea Conditions | SLIGHT SEAS WITH EASTERLY WAVES REACHING HEIGHTS OF 1.0 TO 1.5 METER IN OPEN WATERS. | | |
| | - These waves are likely to have periods between 5 and 6 seconds. - Winds are expected to be easterly between 5 to 8 m/s. | | |
| Sunrise | 05:38 hrs | Sunset | 17:39 hrs |

For more information, visit www.hydromet.gov.gy or call Duty Forecaster, National Weather Watch Center 261-3065/4489/ 2284/2216

3.2 Demerara River

The depth of the transit channel at the Demerara Bridge stands at 4.5 metres and the height of tide at the time of the allision was at about three (3) metres. This gives a total water depth of approximately 7.5 metres. The river conditions were reportedly smooth with no waves at the time of transit. Notably, the draft of MT TRADEWIND PASSION at fresh water is 5.05 metres, therefore, there was an available under keel clearance of approximately 2.5 metres for safety and, thus, eliminating the effects of ship squat.

4. INJURIES

On Saturday October 8, 2022 at the time of the allision of the Motor Tanker Tradewind Passion and the Demerara Harbour Bridge, the undermentioned employees were on duty, on the bridge:

1. Andy Duke - Shift Supervisor
2. Ahmad Khan - Mechanical Engineer
3. Nicholas Morrison - Electrical Technician
4. Joel Frederick - Electrical Technician
5. Kenn Melville - Electrical Technician
6. Lennox Fraser - Retractor Operator
7. Keith Boyce - Traffic Warden
8. Marissa Browne - Radio Operator
9. Clint Moore - Maintenance Mechanic
10. David Daniels - Mechanic

4.1 Physical Injury

Mr. Andy Duke, who was the Shift Supervisor, and stationed at the eastern end of the Retractor span, reported that he was forced to run for his life, after the Tradewind Passion allided with the Bridge. The vessel's impact on the bridge, caused the deck plates to loosen and lift up, thereby causing Mr. Duke to fall and hurt his leg, and thus had to be assisted off the bridge. He was subsequently taken to the hospital where the Doctors diagnosed that his left femur was broken (just above the knee cap of his left leg).

Consequently, he underwent surgery on Tuesday October 11, 2022 and was discharged from hospital on Thursday, October 13, 2022 on an initial 42 days medical leave as prescribed. He has, however, been advised that he will be unable to work for a few months.

4.2 Psychological Injury

The Tradewind Passion's allision with the DHB has left Mr. Andy Duke and the other nine aforementioned employees, particularly David Daniels who was under the bridge at the time of the retraction, heavily traumatized. Effects of the trauma, were apparent at the time of interview, and may result in psychological injuries.

Hence, clinical interventions may become necessary.

5. BRIDGE LIGHTING AND MAINTENANCE

There is adequate lighting for night transit through the Demerara Harbour Bridge retractor span. All four beacons assisting navigation through the retractor span have been installed according to IALA (International Association of Lighthouse Authority) guidelines, and are maintained by MARAD.

6. PERSONNEL INFORMATION

Tradewind Passion Bridge Team

MASTER

At the time of the accident, the 44-year old master, Freddy Olarte Mendoza had been employed by **CANAMA TRADING S.A (C/O TRADEWIND TANKERS PTE. Ltd.)** for two years. He reportedly has nine years previous experience as master onboard other vessels of similar class and purpose. He has been Master onboard the MT Tradewind Passion for six months pursuant to his current contract. He is due for vacation. He holds a Standard of Training, Certification and Watchkeeping (STCW) certificate as a master, meaning he met the minimum safety and competence standards of the STCW code¹ and is licenced for vessels of any gross tonnage from maritime institution in the Philippines, the country of his birth and residence. He is also qualified to work on oil tankers. As part of his qualification, the master is certificated in Bridge Resource Management as well.

¹ The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers was the first international agreement to set qualification standards for masters, officers, and watch personnel on seagoing merchant ships. STCW was adopted in 1978 by the International Maritime Organization (IMO) in 1978 and entered into force in 1984. Significant amendments in 1995 created the STCW Code, which set stringent standards for mariners, and required that mariners obtain a certificate of their compliance with those standards.

His contract rotation is six months on and three months off. He does not conduct a bridge watch. However, during all maneuverings of the vessel he is in command of the Navigation Bridge, and during the vessel's sea passage he has oversight over all of the vessel's operations.

The master was on the Bridge from 20:00 hrs on October 7, 2022, while the MT Tradewind Passion was at anchorage at the Seabouy to pick up the pilot for the vessel's entry into the Harbour of Georgetown. Prior to this contract, the master had made several round trips with the MT Tradewind Passion to Georgetown and transiting the Demerara Harbour Bridge since coming on board as master. The master stated that he was well rested on the day of the bridge allision and was not on medication. His latest physical examination was done in the Philippines in April, 2022 prior to him joining the vessel, MT Tradewind Passion.

SECOND OFFICER

Second Officer Randolph Cruz Pasaludos is 47 years old and a Philippines national with a Chief Officer's endorsement and has completed all required STCW mandated courses, inclusive of Bridge Resource Management, to work as a Second Officer onboard the Tradewind Passion. He was on his third contract as a second officer at the time of the allision. He stated that he was the navigation officer, tasked with care of the navigation equipment, maintaining a portfolio of charts, and preparing passage plans. He further stated that his duties as watch officer when a pilot was on board was to check the vessel's position, make sure navigation equipment operated satisfactorily, to carry out the engine order when instructed by placing the engine throttle in the required position as requested and keep the bell book. *"Every once in a while"* he would check the helmsman to ensure that the pilot's helm orders were carried out correctly.

The second officer stated that he assumed duty from 0000 hrs on October 8,2022 and came off duty at 0400 hrs on the said day.

HELMSMAN

Helmsman Able-bodied seaman Marianito Vinas De La Cruz. The helmsman, age 45, is a Philippines national and has had multiple contracts with the Company onboard the Tradewind Passion as an Able-bodied seaman, his present contract of nine months and he is one and half months into it. His position as able -bodied seaman attest to his knowledge and ability to physically handle the wheel and to understand helm commands.

The AB assumed duty at 0000hrs on October 8,2022 and stated that during the events leading to the allision with the Demerara Harbour Bridge, he was only concentrating on the steerage of the vessel from commands given and was not observing anything around the vessel.

CONTRACT PILOT

Kenneth Cort aged 66 years has been a river pilot for over 32 years and is on contract with the Guyana National Shipping Corporation Agency (GNSC). Prior to becoming a river pilot, he worked on coastal vessels through the ranks to become Master attaining his master license from the Maritime Administration Department of Guyana. Pilot Cort has conducted several hundred transits through the Demerara Harbour Bridge under various tidal conditions and weather conditions during daylight and night transits.

7. TOXICOLOGICAL TESTING

The contract pilot was tested for alcohol on the morning of October 8, 2022 at 05:50 hrs,it was determined that there was no trace of alcohol in his breath (.000%). Subsequently, on October 13,2022 a full vision examination/test and an otologic examination was done at the Eureka Atlantic Offshore Medical Services and the report from the facility states that Pilot Cort has a 20/25 vision (without glasses) and a 20/20 vision with glasses. Further a color-blind test was done by the Ishihara method and it was noted to be normal. The result on the hearing test was reported to be normal. These results are appended to this report, and marked **Annex V**.

8. CONDITION OF BRIDGE LIGHTING

The markers used to transit the Demerara Harbour Bridge were in the form of aids to navigation (transit lights situated on the port and starboard cluster piles). Maritime Administration Department serviced all aids to navigation during the year, 2019. In addition, all navigation lights were replaced and the Maritime Administration Department continues to monitor their functionality. During the process of the investigation, none of the River Pilots as well as Sea Pilots, Master of Vessel nor Bridge employees indicated that the aids to navigation at the Demerara Harbour Bridge were insufficient or required structural adjustment.

9. CONTRACT PILOT AND BRIDGE TEAM RESPONSIBILITIES

In designated areas of inland waterways, local regulations, policies and operational procedures require ships to carry licensed and / or contract pilots. The navigable waters beyond the southern limits of the Harbour of Georgetown were so designated as a non-compulsory pilotage area to provide navigation guidance to ship's master and as such the advice of local/river pilots is recommended for all foreign registered vessels as they (local/river pilots) provide invaluable local knowledge and experience at transiting the river system inclusive of the Demerara Harbour Bridge and really adding to the crew with a specialty that would be very hard to maintain on an oceangoing ship and as such it must be noted that pilots operates in an advisory capacity and the master always maintains control and command of the vessel.

9.1 The Safety Management System (SMS)

SMS specifies underway operational policies and procedures such as passage planning, bridge watch setting duties, bridge team roles and responsibilities, compliance with regulations, use of navigation equipment, and bridge activity record keeping. The SMS describe the company's expectations for bridge team management, including maintaining a focused watch, open exchange of information, prevention of distraction,

and creation of a team environment. Of particular significance in this allision, the master and duty officer were to remain alert to the pilot's handling of the vessel and be prepared to intervene when necessary to safeguard personnel, environment, vessel, or cargo.

9.2 Voyage Data Recorder (VDR)

VDR recordings from the *TRADEWIND PASSION* revealed the bridge team's conversation and interaction, navigation decision making, and concerns expressed by the bridge officers, pilot from another vessel within the vicinity and also by the supervisor of the Demerara Harbour Bridge as the vessel approached the Demerara Harbour Bridge and despite procedures prescribed by the SMS, none of the vessel's bridge team countermanded or challenged the contract pilot's direction to steer toward a bridge transit and as the vessel continued on its course, no attempt was made by the contract pilot or bridge team to verify the vessel's position in relation to the Demerara Harbour Bridge using other means than visual and with the aid of the ECDIS. The SMS assigned responsibility for obtaining vessel position fixed to the duty watch officer (2nd Mate) who was not on the helm position but at the engine control throttle position. The SMS stated the "helmsman shall have no other duties when assigned to the helm" and as such the duty officer should have been verifying the vessel's position at regular intervals.

Just before the allision with the Demerara Harbour Bridge, the second mate when questioned why he did NOT observe that the vessel was not heading as planned stated that he observed the vessel was not in the correct position but he cannot tell the Master that as "that is the captain and he cannot tell captain that the vessel is not in the right position."

Images of the VDR at the time 1:44 to 2:00hrs are appended and marked Annex VI.

9.3 Use of Navigation Equipment

The bridge of the *TRADEWIND PASSION* was outfitted with up-to-date navigation technology, including a Voyage Data Recorder, Global Positioning System, radar, AIS, VHF radios, and Electronic Chart Display and Information System (**Annex VII**).

The bridge team did not attempt to verify that the lights they observed matched what the equipment displayed, since as stated by the second mate, the vessel has no paper charts. The contract pilot told the Board that he could not see the equipment display as he was concentrating on the transit, lights and vessels in the vicinity.

All such navigating tools are vital to proper vessel operation and should be used in concert when appropriate rather than individually to the exclusion of other navigation equipment. With the development of electronic navigation equipment, concern was expressed that deck officers might rely too heavily on such tools rather than their own knowledge and observations.

In the case of the *TRADEWIND PASSION*, however, the opposite was true. The bridge team and contract pilot focused almost exclusively on the Demerara Harbour Bridge as they approached the Harbour Bridge, albeit from the incorrect direction. While focusing on the visual aspects, they ignored electronic tools, particularly the ARPA and ECDIS, alarms all of which were heard from the VOYAGE DATA RECORDER information (as verified by second mate). Had the captain looked at the equipment (or the second mate informed him of his observation) it could have provided ample information about the Demerara Harbour Bridge's proximity and the vessel's position in the waterway relative to the transit channel.

The ECDIS was also capable of displaying the correct lighting scheme for the bridge, the bridge officers could have checked against what they were actually seeing. At a minimum, the ECDIS could have provided enough information to warrant the bridge

team slowing the vessel to assess its approach. Because they did not access such resources, the Board of Inquiry concludes that the contract pilot and the bridge team failed to effectively utilize all navigation tools, such as the electronic charting system and radar, as they approached the Demerara Harbour Bridge.

9.4 Safety Management System and Practices

Under the ISM Code the Management Company was required to develop, implement, and maintain a functional Safety Management System (SMS), and the master of the *TRADEWIND PASSION* was responsible for supporting those safety policies and motivating the crew to ensure each individual's personal commitment to safety. He was required to be sufficiently familiar with the procedures and instructions contained within the SMS to ensure that he and the crew applied those measures as appropriate. Commitment from both the company and the master was essential to realizing the full potential of SMS safeguards developed for the *TRADEWIND PASSION*.

The *TRADEWIND PASSION's* SMS defined roles and responsibilities of all personnel (crewmembers and contract pilots), provided safe ship operation and navigation practices, and established safeguards against specific risks. The SMS was available both in electronic file format and in print.

Under the ISM Code, the company was required to appoint a DPA, in part to allow crewmembers to express safety-related concerns to an individual who could convey these concerns to the highest levels of company management. The vessel had a defective bow thruster which has not been operational for nearly three years and although captain, second mate, chief engineer stated that several reports were sent to the owners it has not been made operational.

An operational bow thruster could have avoided the impact or lessen the impact of the allision with the Demerara Harbour Bridge.

The SMS requires a bridge team/pilot exchange prior to each voyage which should be documented by a signed master/pilot exchange card. The Board of Inquiry reviewed the completed voyage packages provided by the TRADEWIND PASSION. It was observed that the pilot card was created during the Board Members visit to the vessel on Monday October 9,2022 and the pilot card was not signed by the pilot. The vessel later sent to the Board another format of the pilot card on October 13,2022, and this one was signed by master and pilot.

9.5 Bridge Team Performance and Vessel Operations

Aspects of bridge team performance examined in this investigation included passage planning, bridge team and contract pilots' roles and responsibilities, and use of available navigation references and monitoring of shipboard equipment.

9.6 Passage Planning

Under IMO regulations, the *TRADEWIND PASSION* crews were required to formulate a passage plan for each voyage.¹⁴ The ship operations manual stated:

The Passage Plan encompasses the navigation of the vessel from berth to berth taking into consideration all pertinent information. Passage planning should be carried out in accordance with STCW bridge team management guides. The plan shall be entered into the [electronic charting system], printed, and reviewed by the Navigation Officer and the Master prior to sailing.

The purpose of the passage plan was to ensure all members of the navigation team had the same expectations for the voyage. It was to be created in advance to provide a step-by-step description of how a voyage is to proceed and identify hazards and was to be monitored as the vessel progressed along the route.

Passage planning for the *TRADEWIND PASSION* differed based on whether the vessel was operating on a river or in open waters. The second mate told Board of Inquiry

that the plan was only prepared on and for the Electronic Chart Display and Information System (ECDIS) as the vessel is exempted from paper charts. The Board of Inquiry requested on October 11,2022 through the vessel owners' Attorney that such exemption be made available to the Board and up to the time of the compilation of this report such exemption was not received.

In the preparation of a passage plan - Guidelines For Voyage Planning- IMO RESOLUTION A.893(21) a passage plan must be guided by the following:-

- a) Objectives
- b) Appraisal
- c) Planning
- d) Execution
- e) Monitoring

The vessel's passage plan was inspected and was considered to be drafted correctly as per requirements and company's policies and as such guidelines Objectives, Appraisal and Planning were deemed by the Board of Inquiry to be consistent with the regulation however the Board was convinced that the execution and monitoring of the passage plan was extremely poor as a result of the breakdown of the BRIDGE RESOURCE MANAGEMENT.

10. FINDINGS OF THE BOARD OF INQUIRY

1. The weather conditions, the vessel's steering and propulsion system, the physical condition of the crew and the pilot, influence of alcohol or illegal drugs, and the operation of other vessels in the vicinity, the Demerara Harbour Bridge and its operations were neither causal nor contributory to the allision.
2. The Inquiry found that the probable cause of the allision of the MT TRADEWIND PASSION with Demerara Harbour Bridge as follows:
 - i. the bridge team's exclusive reliance on the contract pilot's incorrect navigational direction,
 - ii. the bridge team's total reliance on looking at the Harbour Bridge and disregarding the alarms of the electronic equipment on the vessel as the vessel approached the bridge,
 - iii. failure to use all available navigation tools to verify the safety of the vessel's course.

At the time of the accident, all of the navigation lights on the DHB were operational, including the lights marking the main navigation span and transit channel, which was the intended route of the vessel.

3. The Captain failed to assume command of the vessel in a timely manner and manoeuvre her safely into the channel and through the transit.
4. The passage plan provided adequate information for safe navigation of the bridge zone, but the plan was not properly executed and monitored.
5. The Captain and bridge team overly relied on the direction of the River Pilot, even though the vessel was out of the channel and this resulted in the captain attempting to manoeuvre the vessel from "a point of no return" west of the transit line.
6. The contract pilot and Captain failed to effectively utilize all navigation tools, for the safe manoeuvrability of the vessel.
7. The *Tradewind Passion* safety management system although implemented was not effectively managed on board the vessel to safely navigate the vessel, and avoid the allision.

8. At the time of the allision the Maritime Administration Department had no oversight of the River Pilots, hence the safety of vessels' operation beyond the southern limits was not guaranteed.
9. There was no clear and direct path of communication on the vessel's bridge as the Inquiry found that several persons were giving commands at the same time, thereby contributing to chaos on the bridge.
10. The Tradewind Passion was not equipped with a Bow Thruster which could have enhanced the maneuverability of the vessel thereby steering it away from the DHB or alternatively reducing the impact of the allision.
11. The expertise, duties, and responsibilities of the contract pilots under Guyana National Shipping Corporation were inadequately defined.
11. The contract pilot was known to have an arrogant disposition and was often times very difficult to communicate with. This is similarly reported as being the general disposition of the Master of the Tradewind Passion, yet no reports nor warnings /disciplinary actions were ever taken against either party.
12. Major inconsistencies were found with the pilot / master exchange of information as bell book had entries of such information as well as the preparation of a pilot card but the pilot did not sign such a card. This suggests tampering of ship's records subsequent to the allision.
13. The ship's Bell Book records for October 8, 2022, are ad variance to the VDR retrieved from the ship's bridge. The second officer indicated that a scrap was kept on board the ship during transit which is later transcribed into the Bell Book. This strongly suggests that there was tampering of the records.
14. The VDR Hardware was also removed from the bridge and crew members initially refused to hand over information to the members of the Board. See **Annex VIII**.
15. The Guyana Shipping Act provides for the "Collision Regulations" to be followed. However, no such regulations have been promulgated.

11. RECOMMENDATIONS OF THE BOARD OF INQUIRY

1. With immediate effect the River Pilotage Service should come under the administration of MARAD;
2. The southern limit of Port Georgetown should be statutorily extended to the Grove anchorage area; further MARAD and the competent authority should enlist MARAD pilots who are certified for BERBICE BRIDGE transit to be the pilots for the DHBC transit until such time other MARAD pilots are certified for the DHBC transit
3. The DHBC should review the arrangement and size of the cluster piles to provide for most robust protection of the retractor area of the bridge and consider adjusting the height of the pedestal of the lights so as to avoid background lights from interfering with mariner's line of sight of all transit lights.
4. Night work in way of welding must not be done during ship transit.
5. The bridge retraction schedule when prepared by the DHBC should be approved by MARAD before publication
6. More DHBC staff on duty in the retraction area should be equipped with radio communication devices and night shift supervisor provided with night vision binoculars.
7. The night shift supervisor found it very difficult to identify the TRADEWIND PASSION when he first observed a vessel moving west of the transit area and as such the DHBC must work in collaboration with the Georgetown Lighthouse to identify errant vessels in a timely manner so that early warnings could be relayed.
8. All single screw convention size vessels transiting the DHB should be tug assisted.
9. No vessels with steering, mechanical and adverse stability condition deficiencies must be allowed to transit the DHB unless such deficiencies is verified by MARAD and contingencies are in place to facilitate transit.
10. Light house attendants to be provided with night vision binoculars for better coverage of the Port area;
11. Light house attendants should monitor channel 12 which is used by the DHBC for vessels transiting the retractor span to provide any assistance that may be necessary such

as to relay messages to vessels that cannot be reached by DHB communication centre and Shift supervisor.

12. Pilots should be subjected to annual medical fitness tests including vision (color blindness to be part of), hearing tests and periodical psychological evaluation of all transit pilots.

13. Pilot Kenneth Cort who was on the TRADEWIND PASSION MUST be suspended for a period of not less than 24 months and only be allowed to return to duty after a process or recertification, assessment of his competency to operate as a pilot by MARAD.

14. The DHBC, Guyana National Shipping Corporation were not equipped with any documented reports of pilots and ship masters conduct that were not in compliance with good practices for safe transit of the DHB although there were numerous verbal reports of such and had such reports been reported to relevant authorities for action pilot would not have been onboard the TRADEWIND PASSION. Therefore, with immediate effect all shipping agencies, DHBC and MARAD must set policies and guidelines for all mariners transiting the DHB and all reports of breach of such policies set must be documented, investigated and appropriate actions taken.

15. Policy directives should specifically address bridge zones and bridge control areas by grid coordinates and to outline control mechanisms for the various zones.

16. Communication policies for the DHBC should include 24 hours monitoring by all stations including the main Radio Room. Policies must also direct mandatory communication testing.

17. Major Shipping Companies should seek professional guidance on ship requirements according to international and local laws before contractual services are finalized.

18. Infrared as well as CCTV security cameras should be installed at the DHBC to assist the process of identifying any approaching policy breaches regarding bridge transit. These cameras will also aid the investigating process should there be any breaches.

19. All vessels transiting the DHBC should be mandated to possess Protection and Indemnity (P&I) insurance policies.

20. International Collision Regulations/Convention to which Guyana is party must be implemented as a matter of priority, in light of impending increase in marine traffic.

21. The acquisition and operationalization of adequate and appropriate vessel monitoring systems, and maritime surveillance systems should be prioritised for all maritime zones, including internal waters.