MARINE SAFETY INVESTIGATION REPORT

Ships' Name	ALHENA	YALOVA PILOT 2
IMO No	9538141	
Ships' Flag	The Bahamas	Türkiye
Location Of Accident	Yalova Anchorage / Türkiye	
Date & Time of Accident	18 July 2022	12:32 LT (GMT+3)
Fatality & Injury	1 / -	
Damage & Pollution	- / -	

Board Decision No: 10 / D-01 / 2025 Date: 14 / 04 / 2025

The sole objective of this investigation is to make recommendations for the prevention of similar accidents and incidents within the framework of the Transport Safety Investigation Center regulation.

This report neither has the value of judiciary and administrative investigation nor bears the purpose to apportion blame or liability.

LEGAL BASIS

This marine safety investigation has been conducted by the provisions of the "By-law on the Investigation of Marine Accidents and Incidents" published and enacted in the Official Gazette dated 27/11/2019 and numbered 30961.

Resolution MSC.255(84) Code of The International Standards and Recommended Practices for a Safety Investigation into a Marine Casualty or Marine Incident (Casualty Investigation Code) and Resolution A.1075(28) Guidelines to Assist Investigators in the Implementation of the Casualty Investigation Code (Resolution MSC.255(84)) have also been considered for the procedures and principles of the investigation.

CONTENTS

ABBREVATIONS

EDP Code : Embarkation & Disembarkation of Pilots Code
GMDSS : Global Maritime Distress Safety System
GOC : General Operator Certificate
GT : Gross Tonnage
IAMSAR : International Aeronautical and Maritime Search and Rescue
IMPA : International Marine Pilots Association
IMO : International Maritime Organization
ISM : International Safety Management
LOA : Length Over All
LT : Local Time
MOB : Man Over Board
MT : Metric Tonnage
NM : Nautical Miles
SAR : Search and Rescue
STCW : International Convention on Standards of Training, Certification and Watchkeeping for Seafarers
UTC : Coordinated Universal Time
VHF : Very High Frequency
VTSc : Vessel Traffic System Center

LIST OF FIGURES

SUMMARY

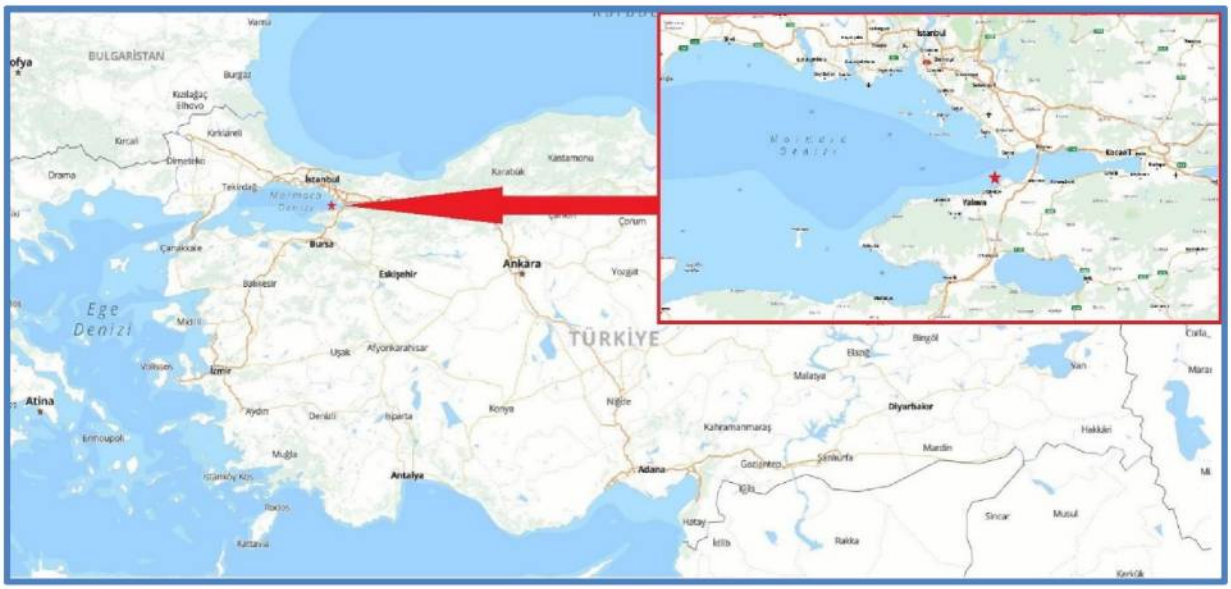

Figure 1: Location of the accident

Note: All times used in this report are Local Time (UTC +3)

On 18 July 2022, the Bahamas flagged tanker ALHENA continues its preparations at Yalova anchorage area for berthing operations to a private shipyard in Yalova shipyards region. The pilot boat YALOVA PILOT 2, which was in charge of transferring the pilot to the ship, approached the pilot station prepared on the starboard side of the ALHENA and started the transfer operations of the pilot. At around 12:32, the pilot lost his balance and fell overboard due to the hard roll of the pilot boat while the pilot was making a move to the pilot's ladder.

After the accident, the rescue operations carried out by both the ship and the pilot boat were not successful and the victim was taken from the sea and taken to the hospital with the intervention of the search and rescue (SAR) elements arriving at the scene. However, despite all interventions, the casualty lost his life.

The factors that are thought to have caused the accident are listed as follows; not waiting the leeward option during the pilotage operation, the pilot boat pushed on perpendicular ALHENA's hull in order to hold on to the moored vessel, causing the vessel to fall into hard rolls, the pilot's reflexes against hard rolls were probably slow, and the lack of a risk assessment approach for the pilotage operation.

The factors that led to the fatal outcome of the accident can be listed as follows: the pilot boat crew including the pilot did not use personal floating equipment during the pilotage operation, the first SAR made in good faith after the accident was not successful in getting the victim out of the sea and the lack of equipment that could be useful in case of man overboard.

Recommendations were made to the pilotage company and the maritime chambers of commerce based on the results of the marine safety investigation.

SECTION 1 – FACTUAL INFORMATIONS

1.1 Ship's Particulars

1.1.1 Basic Ship Particulars

	ALHENA	YALOVA PILOT 2
Flag	The Bahamas	Türkiye
Classification Society	Det Norske Veritas	-
IMO No	9538141	-
Type	Tanker	Pilot Boat
Construction Place and Year	Guangzhou, China / 2012	Tuzla, Türkiye / 2019
Gross Tonnage	30240	39,86
Length Over All	183,2 m	14,95 m
Main Engine	Man B&W – 9480 kW	FPT – 2X301 kW

1.1.2 Voyage Particulars

	ALHENA	YALOVA PILOT 2
Port of Departure	Amsterdam (The Netherlands)	Yalova / Türkiye
Port of Arrival	Shipyard / Yalova / Türkiye	Yalova / Türkiye
Passenger	-	-
Crewmember	29	2
Minimum Manning	13	2
Type of Voyage	Unlimited	Port
Cargo	In Ballast	-

1.1.3 Lay out of the Vessels

1.1.3.1 ALHENA

ALHENA is a tanker built in 2012 in Guangzhou Shipyard / China. The vessel has a total of 12 cargo tanks and has a summer carrying capacity of 52.420 MT. Her length is 183,20 meters and summer draft is 13,01 meters.

The engine room is equipped with a MAN B&W 9480 kW main engine. There is also a bow thruster, producing 811,32 Kw power. There are bow peak, stern peak and ballast tanks, 3 each port and starboard and 1 center. Total ballast capacity is 21965 m^3. The ship has a freeboard height of 10,846 meters from the centerline in ballast condition. In this respect, the pilot station is prepared in combination when the ship is in ballast (Figure 2).

Figure 2: ALHENA

1.1.3.2 YALOVA PILOT 2

YALOVA PILOT 2 is a pilot boat built in 2019 in Tuzla shipyards region. The length of the boat is 14,95 meters and the log depth is 2,24 meters. The freeboard height was measured as 1-1,20 meters.

The boat is equipped with an FPT 2X301 kW engine. There is also a generator producing 7,5 kW of power. The boat deck is covered with anti-skid material and is also equipped with two port-starboard and one in the center with a height of approximately 80 cm to hold on to during transitions on the bow. There are a total of 4 lifebuoys, two on the bow and two on the stern. Two of the lifebuoys have MOB features. It was also observed that 6 life jackets were available (Figure 3).

Figure 3: YALOVA PILOT 2

1.2 Manning and Key Crew

1.2.1 ALHENA

The ship ALHENA was issued a Minimum Manning Certificate dated 11 April 2019 by the Bahamas Maritime Authority according to the "International Unlimited" navigation area. There are 29 personnel on board including the Master.

The 29 personnel working on board are of different nationalities and the working language is English.

At the time of the accident, the captain was on the bridge, the 2nd officer and an able seaman were at the pilot station.

1.2.1.1 Master

The master is from Greece. He was 58 years old at the time of the accident. The master holds the qualification of Unlimited Master, which is recognized by the Bahamas Maritime Administration. He held a STCW II/2 CoC with a The Bahamas CEC. The Master had served as a master since 2003. He had his contract as a Master on ALHENA which he joined 4 months before. He had the GMDSS General Radio Operator (GOC) certificate in compliance with STCW Convention's. He was conning at the bridge during the accident.

1.2.2 YALOVA PILOT 2

The boat named YALOVA PILOT 2 has been issued a "Seaworthiness" certificate by the Turkish Maritime Authority according to the "Port Voyage" navigation area. The boat is crewed by an able seaman together with the skipper.

2 personnel working on board are Turkish citizens and their working language is Turkish. In addition, all of the pilots are Turkish citizens.

At the time of the accident, the skipper was in command of the boat. The pilot and able seaman were on the bow.

1.2.2.1 Skipper

The skipper of YALOVA PILOT 2 was 54 years old and a Turkish national. He held a "Restricted Master" certificate issued by Turkish Maritime Authority. The skipper had served on board vessels since 1995. He held the "Restricted Master" certificate by the exam. He served as a skipper on YALOVA PILOT 2 for two years. Prior to this position, he had a 7-8 years of passenger boat experience as a skipper. Besides, he served as a skipper for a while at the tug YALOVA 1. He had the certificates required by STCW Convention. He was conning in the wheelhouse during the accident.

1.2.2.2 A/B

The A/B of YALOVA PILOT 2 was 33 years old and a Turkish national. He held an "A/B" certificate issued by Turkish Maritime Authority. He served as an A/B on YALOVA PILOT 2 for two months. The A/B had an experience on fishing vessels prior to this position. He had the certificates required by STCW Convention. He was at the bow with the pilot during the accident.

1.2.2.3 Pilot (Casualty)

The pilot was 64 years old and a Turkish national. He held a "Marine Pilot" certificate issued by Turkish Maritime Authority. The pilot had served as a marine pilot on board vessels for 30 years. He served as a marine pilot in Gulf of İzmit for a total of 10 years, 3 years in Yalova Pilotage. He had the certificates required by STCW Convention. He was at the bow with the A/B during the accident.

1.3 Marine Casualty Information

Date/Time Of Accident	18.07.2022 / 12:32 LT
Accident Category (IMO)	Very Serious Marine Casualty
Type of Accident	Man Over Board
Location of Accident	Yalova Anchorage / Türkiye
Injury/Fatality/Loss	- / 1 / -

1.4 Environmental Conditions

The environmental conditions data received from General Directorate of Meteorology on the day of the accident are as follows;

Wind	6 Beafourt from Northeast
Wave height	0,5 – 1 meter

Sky	Clear 25,5°C
Visibility	Good
Sea Temperature	24,8°C (Yalova Marina)

1.5 Pilotage Company

The company was established in 2017 in order to provide pilotage and tugboat services to the vessels that will maneuver to berth to or depart from the coastal facilities operating in Yalova service area and launched to provide services since 2019.

Company provides 24/7 service with 13 Pilots, 6 tugboats, 2 pilot boats, 2 mooring boats, 1 sea cleaning boat.

Marine pilots work in 3 shifts with 4 pilots in each shift. Each shift is planned as 5 days in and 10 days out.

Tugboat and pilot boat crew other than the marine pilots work 6 days in and 6 days out.

SECTION 2 – NARRATIVE

Note: The sequence, timing and location of the events leading up to the marine casualty under investigation are mostly based on eyewitness interviews.

2.1 Course of Events (Pre-MOB)

The Bahamas flagged tanker ALHENA anchored at Yalova anchorage area number 2 at 06:48 LT on 17 July 2022 for the periodic maintenance planned in Yalova shipyards area, with the port anchor at 6 shackles in the water.

On 18 July 2022, the day of the accident, the vessel commenced routine preparations for berthing. At 11:00, 1 hour notice was given to the engine control and the engine was requested to be prepared. At 12:00, the master came to the bridge and waited for the completion of the engine tests. At 12:13, with the engine ready, the anchoring maneuver launched. The maneuver was planned with the chief officer on the bow, the 3rd officer on the stern, the master on the bridge and the 2nd officer accompanying the master. Meanwhile, the other 2nd officer was assigned to supervise the preparation of the pilot station.

YALOVA PILOT 2, which would deliver the pilot assigned for the berthing maneuver to ALHENA, completed her preparations and was waiting for the pilot to embark. The pilot reached the boat at around 12:10 and then informed the Station and departed from Yalova shipyards area.

After the pilot boat left the shipyards area, the pilot contacted the vessel via VHF and asked the state of the pilot station. The master replied and informed that the pilot stations were ready from both sides in combination.

The Pilot could not wait in the boat any longer due to the weather conditions and called the vessel and informed that he would use the pilot station on the starboard side to go aboard.

At around 12:30, the pilot boat approached the vessel from the starboard side and started to push on perpendicular ALHENA's hull. Meanwhile, as the anchoring maneuver was in progress on board, the pilot boat was falling into rolls due to the effect of the seas. While the pilot boat continued to push on perpendicular ALHENA's hull in order to break the effect of the sea, the pilot and the accompanying A/B were proceeding towards the pilot ladder.

The Pilot was not successful in his first attempt to hold the ladder. While he had attempted to the ladder second time, at 12:32, he lost his balance with the boat's heavy rolling and fell overboard from the port bow of the boat. (Figure 4)

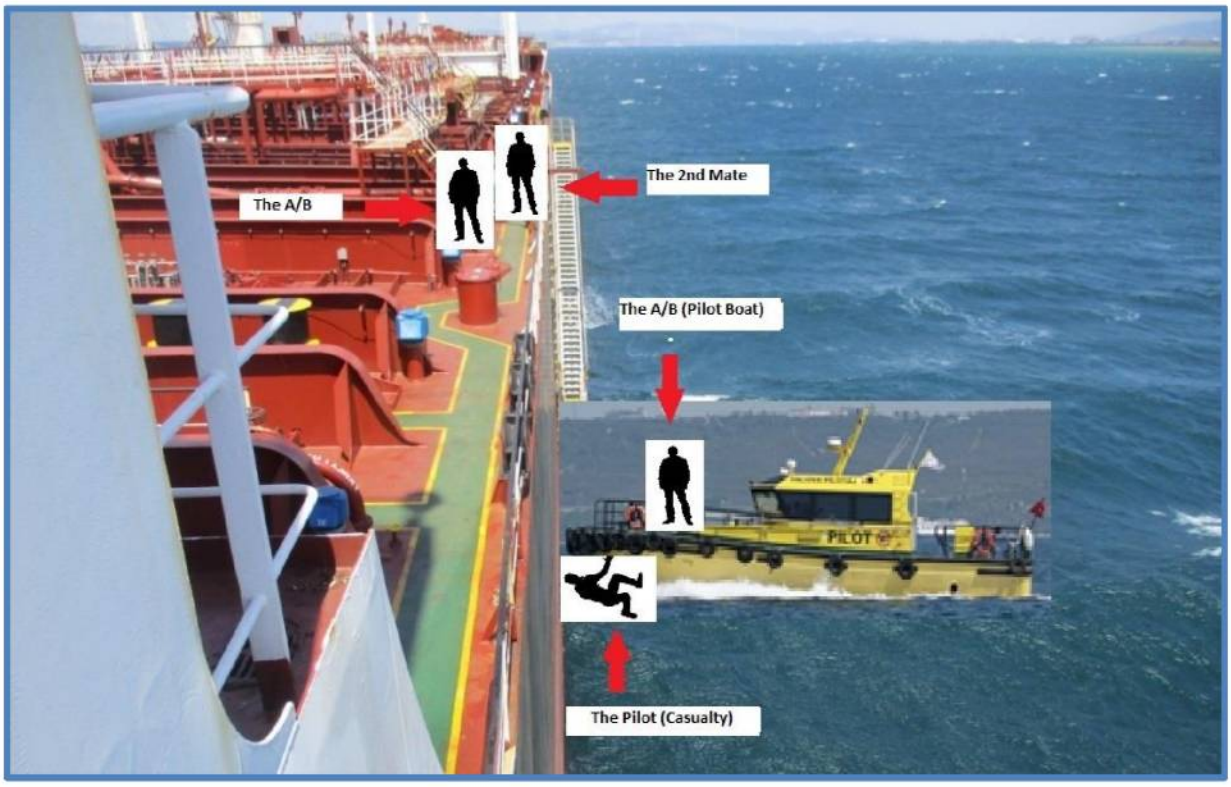

Figure 4: Demonstration of the accident

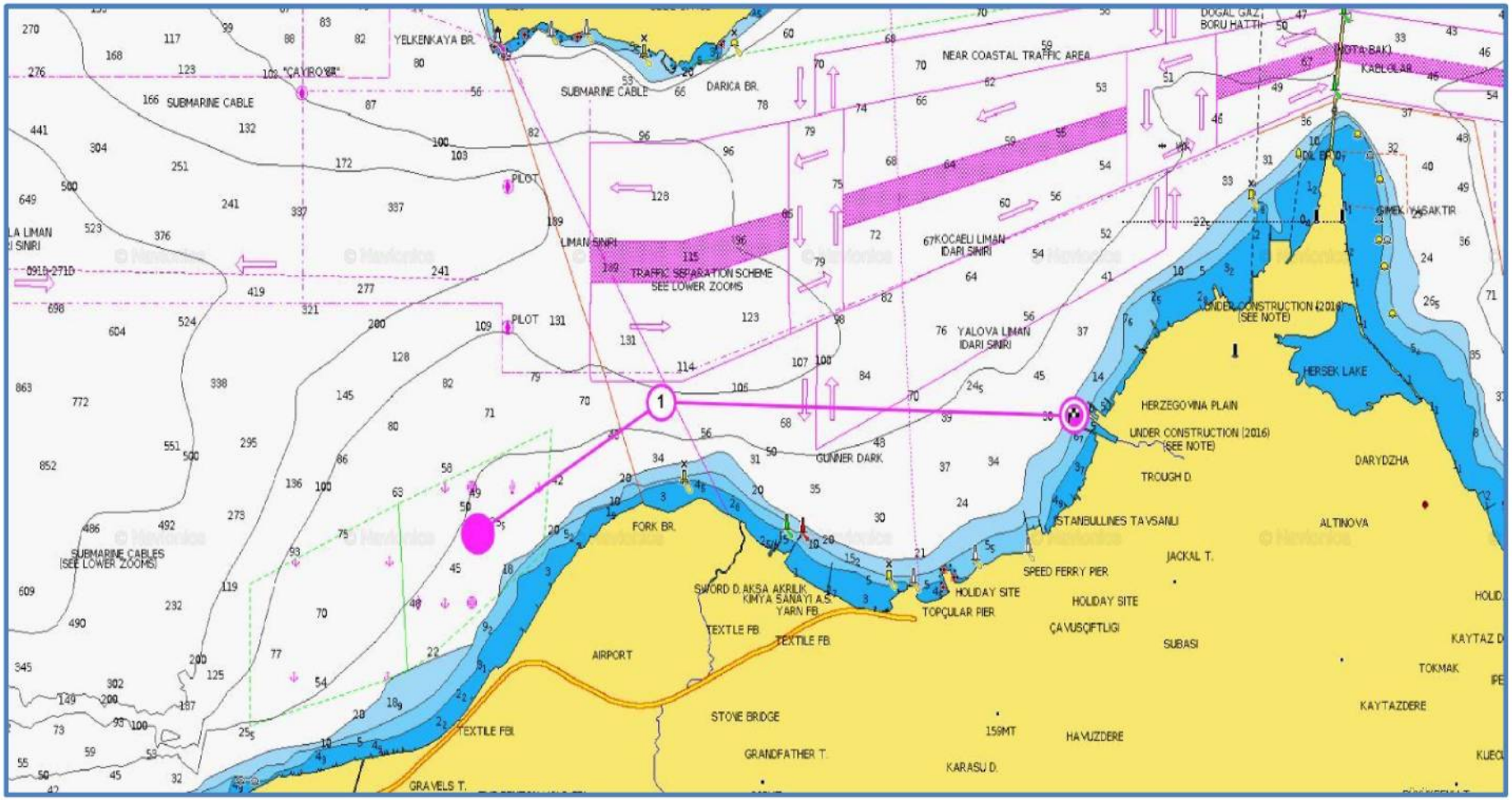

Figure 5: Yalova port area and the estimated route of the ship's pilotage

2.2 Course of Events (Post-MOB) and Search & Rescue Efforts

Soon after the accident, the skipper gave astern and cleared the boat 4-5 meters from the vessel. Afterwards, the A/B threw the lifebuoy towards the casualty. In the meantime, MOB featured lifebuoy was thrown towards the casualty by ALHENA. Yet the casualty grabbed and held the lifebuoy thrown from the pilot boat and called out "pull me".

However, since there was no manrope attached to the thrown lifebuoy, the skipper, seeing that the casualty was moving away from the boat due to the current and the wave effect, threw another rope towards the casualty. The casualty let go of the lifebuoy and grabbed the thrown rope. In the meantime, the A/B swinged a bulwark ladder from the stern. (Figure 6)

Figure 6: View of the bulwark ladder swinged from the pilot boat

The casualty was pulled towards the ladder but he could not climb the ladder by his own effort. Therefore, he called out to the boat crew "pull me up". Seeing that the casualty could not climb the ladder and thinking he was in shock, the skipper asked the A/B to assist the casualty.

Subsequently, the A/B jumped into the sea without delay and put the rope through the casualty's armpits (Figure 7).

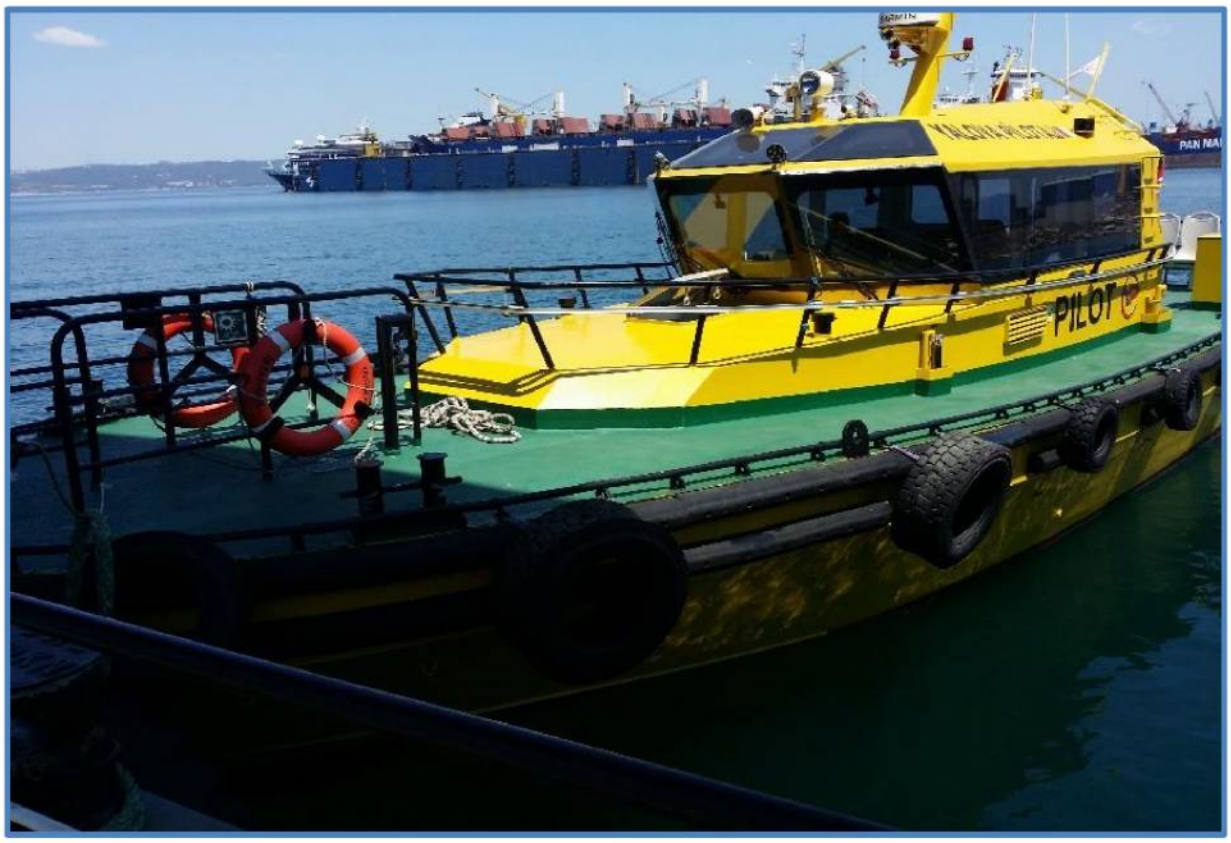

Figure 7: The used lifebuoy and the rope for rescue

Soon after, the A/B tried to put the casualty's foot on the ladder but not succeeded. As a result of many efforts, the casualty remained unresponsive and recumbent. Meanwhile, the exhausted A/B climbed on board with a last attempt and fell in a faint on the deck.

Just then, the skipper fastened the rope to the boat so as to prevent the casualty to drift away.

At 12:40, the master of ALHENA made a call to Sector Yalova and reported the accident and requested assistance.

At 12:43, Sector Yalova called ALHENA and advised her to launch the rescue boat for emergency assistance.

At 12:48, ALHENA anchored again in a position close to her previous anchorage.

At 12:52, ALHENA prepared the rescue boat and launched it. The chief officer and an A/B were on the boat (Figure 8).

Figure 8: ALHENA's rescue boat

The rescue boat had proceeded towards the pilot boat, however, due to rough seas, they suspended the operation and returned to the vessel. In the meantime, the skipper took the opportunity to call the Yalova Coast Guard and requested assistance. The Coast Guard rescue boat arrived at the scene around 13:13 and launched rescue assistance (Figure 9).

Meanwhile, one more pilot boat arrived at the scene and joined the rescue assistance. The rescue team, said to be 5 people in total, could not manage to take the casualty on board despite all efforts.

In the following minutes, one more rescue boat arrived at the scene and participated in the rescue. With the zodiac type inflatable boat, the team had recovered the casualty from the sea with using life buoys and proceeded towards Yalova Marina. Along the way, the rescue team provided first aid support, as well.

The casualty was delivered to the medical team waiting at the shore around 13:30. During the transfer to the hospital, the medical team continued to intervene. Unfortunately, the casualty had lost his life when the hospital was reached.

2.3 Autopsy Report

The data and conclusions obtained from the autopsy report of the casualty are as follows;

"Considering the information and findings recorded above from the autopsy and examinations performed by the Forensic Medicine Institution Related Morgue Specialization Department on 18/07/2022;

1. According to the report of the Specialized Department of Chemistry; the person was not intoxicated at the time of his/her death, as a result of the analysis of blood and urine samples, the active ingredient of the drug named "Carvedilol" was found, no toxic substance or narcotic/drug was found in his/her body,

2. Considering that external examination of the autopsy revealed superficial abrasions and ecchymoses, and internal examination revealed no skull fracture, intracranial hemorrhage, cerebral hemorrhage, brain hemorrhage, brain tissue destruction, internal organ and large vessel injuries, there is no medical evidence that the person died due to traumatic effects,

3. That bone fractures of the sternum detected at autopsy can be treated with resuscitation intervention,

4. That the death of the person whose autopsy revealed findings of cardiovascular disease and hypertrophy of the heart according to the report of the histopathology examination branch was ***caused by drowning in water****,*

5. An opinion report stating that no other cause of death has been identified."

SECTION 3 – ANALYZES

While analyzing the marine casualty under investigation, it is aimed to identify and determine the factors that caused the accident by considering the sequence of events and data obtained during the investigation as well as to draw useful conclusions that lead to the safety recommendations on root causes.

3.1 Procedures For Pilotage

3.1.1 ALHENA

A range of procedures are existed to be followed by the stakeholders for the safe execution of the pilot transfer operations. These procedures are put into service as of a Code by taking into consideration the best industry practices.

In this code, which is known as EDP Code, the procedures recommended to be followed by the vessels during the transfer of pilots are as follows in the context of this casualty:

- *Ships have a duty to rig their pilot ladders in accordance with The International Convention for Safety of Life at Sea (SOLAS) Regulation V/23 and IMO resolution A 1045(27) as amended. A copy of the poster showing IMO requirements and IMPA recommendations – "Required Boarding Arrangements for PILOT" is included in Annex 1 to this Code. Local requirements relating to the ship's side required and height above the water should be passed via radio prior to the ship's arrival.*
- *During Pilot transfer, the responsible officer, should be in direct contact with the bridge. This should normally be by radio.*
- *During a Pilot transfer operation, a ship should not be stopped in the water, or its engines put astern, except in an emergency or when requested by the pilot boat coxswain.*

Considering the abovementioned provisions, it was understood that the vessel prepared the pilot station on the starboard side in accordance with the pilot request and after prepared the pilot station on the port side upon a new request of the pilot. Moreover, a deck officer was ready

at the pilot station with a VHF radio and the vessel was still at anchor and therefore the engine speed was not given while the pilot boat was approaching.

The parties did not report any non-compliance as to whether the pilot station was properly prepared or not. The investigation team investigated the pilot ladder rigged on the port side of ALHENA and non-compliance was not found in regard to the relevant IMO Resolution.

Figure 9: ALHENA – Rigged combination ladder at the port side

3.1.2 Pilotage Company

In general, it is a known fact that pilotage companies settle their approach within the framework of the legislation in force and industry practices and consider administrative legislation to be adequate instead of establishing own internal procedures.

Furthermore, after many years of experience on board vessels, pilots acquire their qualifications through a series of theoretical and practical trainings within the scope of

administrative legislation. Indeed, a similarity is in place for the crew of pilot boats. Companies employ the crew fully trained according to the administrative legislation and experienced on similar boats.

According to the interviews and data obtained during the marine safety investigation, the pilotage company does not have any formal and written standard operating procedures and a self-regulation list prepared according to these procedures. Indeed, there was no evidence which indicated a formal, structured approach of familiarization and refresher training programs for either the pilots or the crew of the pilot boat.

The UEİM is of the view that whilst effective, experience-derived knowledge may not necessarily be enough to impart adequate awareness on the specific risks related to the embarkation and disembarkation of the pilot.

3.1.3 Pilot Boat

The procedures of the General Directorate of Coastal Safety, which provides pilotage services in the Turkish Straits, until the embarkation of the vessel, that the pilot, the dispatcher and pilot boat should comply with are as follows:

a-) The pilot:

The pilot makes preparation to board the vessel informed by the dispatcher in accordance with the service plan drawn up, in coordination with the relevant VTSc to perform the service.

He/she uses the personal protective equipment provided to him/her in accordance with the relevant regulations and good seamanship rules.

The pilot should take the necessary safety precautions while embarkation and disembarkation (lee, etc.).

Approaching the ship, the pilot should stay in the wheelhouse until the boat decelerates and passes to the lee of the vessel. Extra attention should be paid to the vessels that does not have the possibility to make a lee.

Once all is clear for service, the pilot should follow the A/B to a position in clear sight of the skipper of the boat.

Before stepping the ladder, the pilot should observe the ladder to be rigged in accordance with the requirements of SOLAS Chapter V Rule 23 and IMO Res. A.889.

The pilot should be able to contact with the vessel before stepping on the ladder. If there is no one at the station, he/she should not attempt to step it.
He/She should ensure that the pilot boat and its crew are fit and ready. The boat's deck lights should be switched on before proceeding to the ladder at night.
Further, while the boat is approaching, the A/B should raise the pilot's ladder so as not to allow to squeeze between the vessel and the boat.
In order to assist the pilot to step up, the A/B should hold railings with one hand and should hold the ladder with the other hand and one foot facing the bow of the boat.
The pilot has the right to refuse to provide service in case he/she observes non-compliance with the rules and unsafe conditions of rigging equipment.
The boat and its crew should not leave without ensuring safe embarkation is completed to the vessel.
After the pilot has safely embarked, the Skipper should inform the dispatcher via VHF.
b-) The dispatcher:
Contact the served vessel via VHF and ensure the pilot's ladder is rigged in accordance with the requirements of SOLAS Chapter V Rule 23 and IMO Res. A.889 requirements.
He/she should inform the Pilot regarding the type of the served vessel, the maneuvering/current speed and the pilot transfer system, the position of the vessel and the vessels in vicinity by means of the AIS, if any."

In the framework of the abovementioned procedures, it is considered that the boat crew, mainly the pilot, did not use the personal floating device during the transfer operation and the lee option was not taken into consideration even though the sea would seriously effected the pilot boat.

3.2 Managing Risks

3.2.1 Self-Floating Device

It is a well-known fact that similar accidents involving man overboard during embarkation/disembarkation operations by pilot or other service boats are frequently encountered. Although some of these accidents resulted without loss of life or injury, fatal accidents are considerable. It is known embarkation and disembarkation operations are

dangerous and are affected by various factors that increase the risk of accidents, such as weather conditions, limited movement space on the boat and the ladder, some of the people transferred are not seafarer and not familiar with the operation.

Among the marine accidents investigated, common factors were found, such as casualties not wearing life vests or other buoyancy-capable equipment, inter alia. Further factors were identified in these accidents, such as the casualties' efforts to stay at sea surface, restricted swimming ability, carrying of a backpack, and low sea temperature, which can cause cold shock.

Considering the factors revealed in the analysis of the aforementioned marine accidents, it can be concluded that the use of a life vest or other equipment with buoyancy capacity during the embarkation period would contribute significantly to avoiding panic and minimizing the stress of the individual's body to keep at sea surface.

In light of the above, it is concluded that the use of personal life vests or other flotation devices is a key factor for effective emergency response to man overboard accidents during embarkation / disembarkation.

Currently, no legislation regulates the mandatory use of buoyancy-capable devices in the embarkation / disembarkation operations of pilot and other service boats; however, the Occupational Health and Safety Law No. 6331 stipulates the use of appropriate personal protective equipment in workplaces where the risks cannot be mitigated.

During the interviews and investigations carried out, it was observed that inflatable life jackets (Figure 10-11) were provided to the pilots but the use of them was discretionary. It can be said that the fact that the pilotage organization did not have an internal directive on the use of life vests and its use was under initiative can be said to be one of the factors affecting the fatal outcome of the accident. However, there is no clear data as to why the casualty did not use the lifejacket, and it could not be more than a rumor, difficult to make an assessment.

Figure 10: Illustration of a self-inflatable life vest provided to the pilots

Resim 11: Inflatable life vest seen on the pilot boat

3.2.2 Prevailing Weather & Sea Conditions

Weather and sea conditions are among the important risks to be considered in pilotage operations. Effective management of such risks can only be possible with the coordination of the vessel and the pilotage organization.

In this sense, the procedures that parties should pay attention to while preparing for the weather / sea condition under the EDP Code are listed below:

- *Dynamic and formal risk assessments should be undertaken to identify environmental limits of boarding and landing operations. A framework of safe operational limits may be published, to enable operational staff and port stakeholders, to be aware of weather conditions likely to delay or suspend pilot transfer operations.*

- *In assessing such a framework, where established, consideration should be given to*
  - *Wind speed and direction anemometers*
  - *Wave rider buoys or equivalent, to determine wave height*
  - *Local meteorological forecasting services or apps*
  - *Record keeping of weather conditions, by boat crews.*

- *In marginal conditions the pilot boat crew, in conjunction with the Pilot, should make a dynamic assessment of the conditions at the boarding area, before confirming it is safe to commence or continue boarding and landing operations.*

- ***Particular caution should be taken when serving a ship at anchor, which is unable to manoeuvre to make a lee, particularly at slack water. The ship may need to be underway and making sufficient way so that the pilot boat can maintain position alongside the vessel before a Pilot transfer operation.***

- *The decision to put a pilot boat alongside a ship is the responsibility of the pilot boat coxswain. In all cases, the decision to board the ship is the responsibility of the Pilot involved. In making the decision, the pilot should take into consideration factors including but not limited to:*

a) Environmental conditions,

b) Physical capabilities of the Pilot

c) Suitability of boarding arrangements

d) Conduct and condition of the vessel

- *In such weather conditions the risk associated with boarding operations are heightened. Neither the Pilot nor the deck hand should proceed from the cabin until the pilot boat is in the lee of the ship and decision to proceed with transfer has been made by the coxswain.*

Considering the above-mentioned provisions as a holistic view in the context of this accident, it is assumed that the pilotage company does not have a routine and written risk assessment against such situations, it might be a dynamic risk assessment which is solely at the discretion of the pilot.

Additionally, as understood from the interviews and the records, although meteorological warning was broadcasted for the planned time of pilotage, the pilot probably intended to be aboard the vessel considering the leeward of the vessel, after de-anchoring

As a matter of fact, while the pilot boat was proceeding towards the vessel, the pilot anticipated that due to the weather conditions de-anchoring would take longer than he expected and instructed the skipper to approach the starboard pilot station in order not to wait any longer in those weather conditions.

As seen in Figure 12, the skipper considered that he would need quite considerably engine power to keep the boat alongside in the current position in such weather conditions, thus he pushed the boat vertically to the ALHENA's hull in full engine speed.

Naturally, such a size boat trying to keep in this position will have heavy rolling angles. Therefore, it is obvious that proceeding along the narrow path and embarking the vessel will become riskier.

In fact, the pilot had proceeded by holding the railings and while hands off to grasp the ladder, he lost his balance and fell overboard due to the heavy roll of the boat.

As a result, it is considered that the lack of a holistic risk assessment of the weather and sea conditions and conceding the operation completely to the pilot's initiative was one of the factors that contributed to the accident.

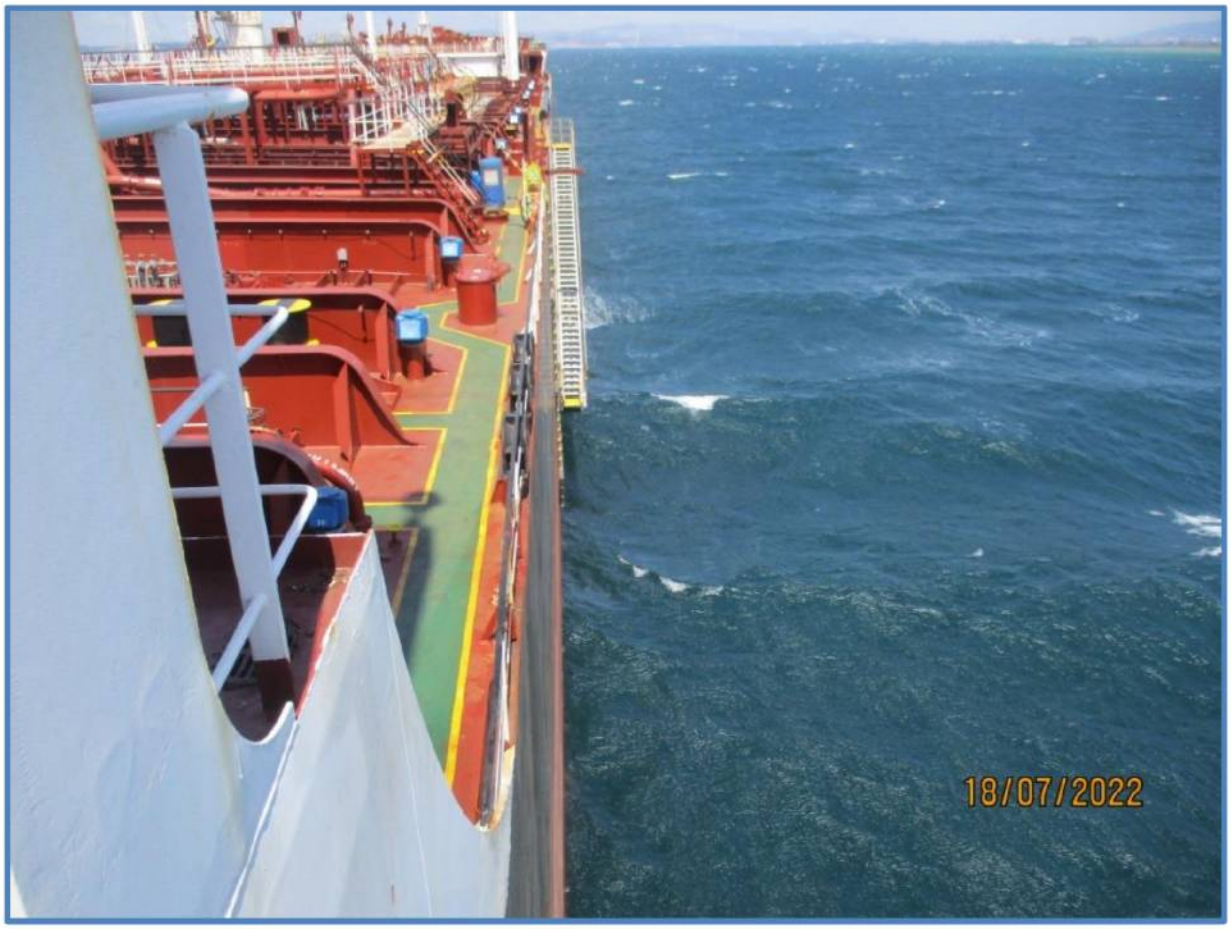

Figure 12: Image taken shortly after the accident

3.2.3 Fitness for Duty and Physical Competence of the Pilot

The pilot was 64 years old when the accident occurred. He has a total of 30 years of pilotage experience, 13 years of which were in regional ports. In this respect, it is understood that he was very familiar with pilotage operations. However, it was learned from the data obtained during the marine safety investigation that his BMI (Body Mass Index) was 43 kg/m² and that he had previously broken his leg. After his leg healed, he continued to work as a pilot without any problem. However, it is not possible to conclude whether this situation delayed the pilot's movements, especially during embarkation / disembarkation, based on a single incident.

The relevant section of the Diagnostic Codes table in Annex E of the Guidelines on the Medical Examination of Seafarers published by the ILO (Geneva: ILO-2013) is as follows:

G) MINIMUM PHYSICAL CAPACITIES FOR SEAFARERS:				
ICD-10 ***(diagnostic codes)***	**Condition *(justification for criteria)***	**Incompatible with reliable performance of routine and emergency duties safely or effectively** **– expected to be temporary (T)** **– expected to be permanent (P)**	**Able to perform some but not all duties or to work in some but not all waters (R)** **Increased frequency of surveillance needed (L)**	**Able to perform all duties worldwide within designated department**
E65-68	**Obesity/abnormal body mass – highor low** ***Accident to self, reduced mobility and exercise tolerance for routine and emergency duties. Increased likelihood of diabetes, arterial diseases andarthritis***	T – If safety-critical duties cannot be performed, capability or exercise test (Appendix C) performance is poor P – Safety-critical duties cannot be performed; capability or exercise test performance is poor with failure to achieve improvements Note: Body mass index is a useful indicator of when additional assessment is needed. National norms will vary. It should not form the sole basis for decisions on capability	R, L – Time limited and restricted to near coastal waters or to restricted duties if unable to perform certain tasks but able to meet routine and emergency capabilities for assigned safety-critical duties	Capability and exercise test (Appendix E) performance average or better, weight steady or reducing and no co-morbidity

**An obese person may interfere with evacuation procedures. Persons with a body mass index of more than 30 kg/m2 should be assessed for their ability to climb stairs and pass-through hatches (fitness) and safety limits for rescue equipment should be observed. They should be assessed for balance and adequate grip/grip strength in the upper limbs and hands.

A Body Mass Index of more than 40 kg/m2 should lead to a more careful examination of functional capacity and the ability to move safely on board. If these capacities are not met, a report will be issued stating that the person cannot become a seafarer until they meet the required capacities.

Within the scope of the relevant principles, it is foreseen that seafarers who exceed the indexes determined in the ILO legislation may be subject to special examinations regarding their movement restrictions. The examination standards for seafarers who are Turkish citizens are declared in the Seafarers Health Directive published by the General Directorate of Border and Coastal Health, based on the Guidelines on Medical Examination of Seafarers published by STCW, MLC 2006, and ILO.

Moreover, according to **Annex 1 Recommendation on the Training and Certification of Pilots other than Offshore Pilots** in the relevant Assembly Resolution IMO (A.23/Res.960), the medical fitness criteria of Marine pilots are stated as follows:

"4 Medical fitness

4.1 Each pilot should satisfy the competent pilotage authority that his or her medical fitness, particularly regarding eyesight, hearing and physical fitness meets the standards required for certification of masters and officers in charge of a navigational watch under the international Convention on Standards of Training, Certification and Watchkeeping for Seafarers, 1978, as amended, or such other standards as the competent pilotage authority considers appropriate.

4.2 If a pilot has experienced a serious injury or illness, there should be a re-evaluation of his or her medical fitness prior to return to duty."

In addition, the relevant provision of the Regulation on Seafarers and Pilots under the title of ***"Validity, suspension and withdrawal of pilot's certificate of competence";***

"ARTICLE 71 –

...

(4) Pilots are required to have the medical reports prescribed for the competence of oceangoing master in every two years.

(5) The certificates of the holders of any pilot's license are withdrawn by the Administration in the following cases and this situation is recorded in the log:

a) Having attained the age of sixty-five,

b) Not to serve as a pilot for five years consecutively,

c) Losing the medical and criminal conditions required for being a pilot.

..."

And the article under the title of ***"Prohibitions and Obligations"*** *of the Regulation on Pilotage and Towage Services;*

"ARTICLE 17 –

...

(11) Refresher trainings required to be taken by the Pilots in accordance with the relevant legislation and the follow-up of their health conditions are under the responsibility of the competent pilotage organization."

In accordance with the IMO, ILO and national provisions mentioned above, it is understood from the medical report given to the surviving pilot that he was medically competent.

As a result, there is no aspect of the medical competence of the pilot that is incompatible with the applicable legislation and there is no objective data proving the direct relation between the physical condition of the pilot and the accident.

3.2.4 Structural Suitability of the Pilot Boat

The EDP Code states that in considering the safest route from the pilothouse to the pilot ladder, the following, as well as other factors, should be taken into account:

"a) The width of the deck.

b) The location and usability of the safety rail.

c) If the inboard route is taken, the likelihood of the boat rolling against the side of the ship, restricting the area between the deckhouse of the pilot boat and the flat of the ship side...

d) The exposure to the elements especially when a good lee is not possible, or there is passing traffic if the outside route is used.

e) The heel of the pilot boat during transfer.

f) The ability of the coxswain to view the transfer operation."

Based on the investigation carried out on board the pilot boat, it was observed that there was a satisfactory passing corridor on both sides of the pilothouse, which was considered to be sufficient for the safe transfer of a trained person, taking into account the physical dimensions of the vessel and the extreme weather conditions in which the pilot boat was supposed to operate.

The pilot boat is fitted with an all-round railing extending from the pilothouse entrance, running around the bow and the front of the pilothouse and back to the pilothouse entrance on the other side (Figure 13).

The boat was also fitted with an additional handrail on the bow to ensure a safe fore-and-aft transit. Therefore, it was observed that the boat's handrail arrangement was sufficient for a person to exit the pilothouse and walk easily in the starboard-port and fore-and-aft directions.

It should also be noted that the anti-slip feature of the deck walkway coating was satisfactory and the pilothouse was designed with a 360-degree view of the pilothouse in order to monitor the transfer operation.

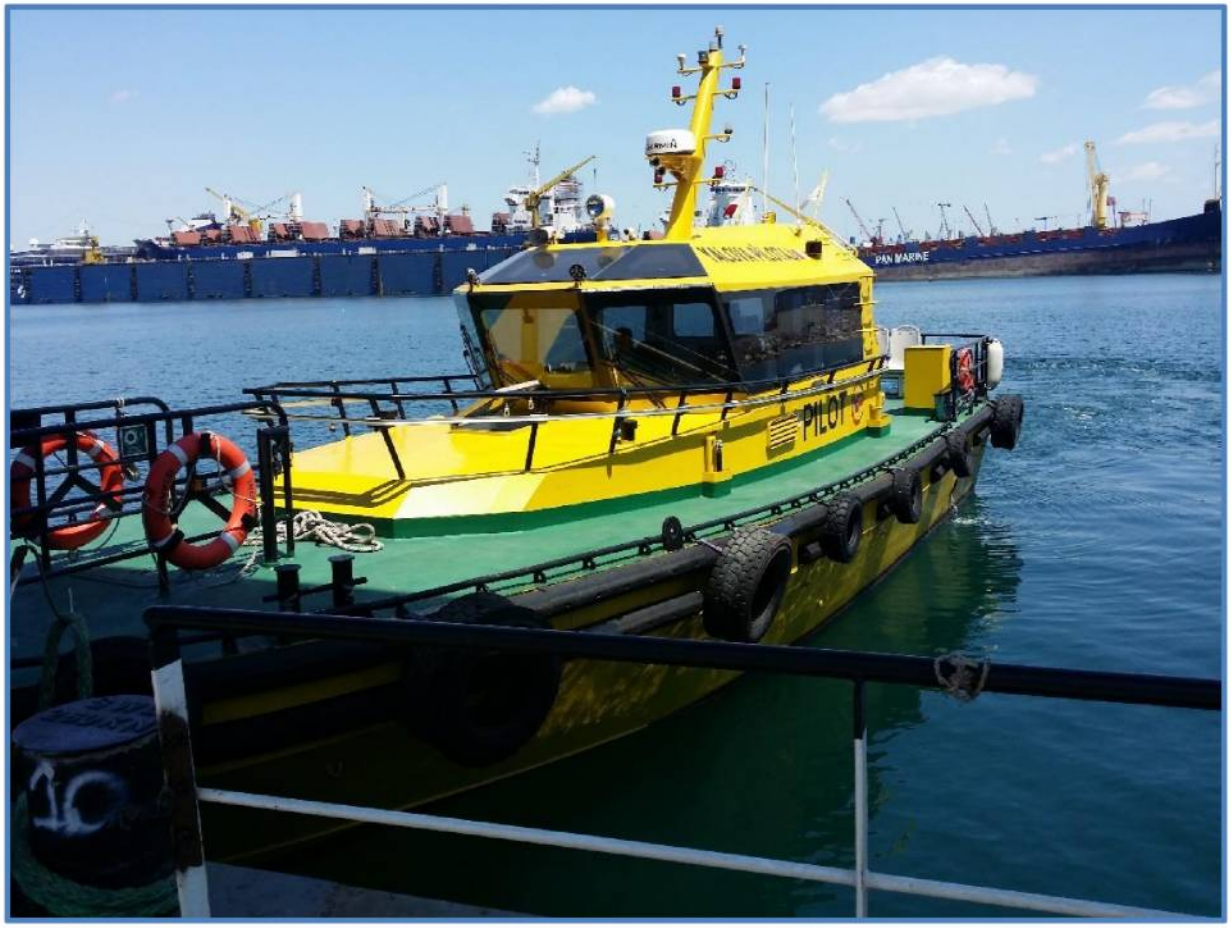

Figure 13: A view of the pilot boat

3.3 Search and Rescue

Rescue professionals reveal that the success of the rescue from the water in man overboard accidents is directly related to the following items:

a) The competence and training of those undertaking the rescue.
b) Familiarity with all recovery equipment and emergency life support skills, including artificial resuscitation.
c) The ability to identify and provide treatment for cold-water shock, and hypothermia.
d) The personal survival skills of the casualty in the water.

Therefore, it is essential, all persons involved in pilot boat transfer operations, who may be involved in rescue from the water, should be competent in these areas as a minimum.

Furthermore, a series of legislations have been adopted by the IMO for the rescue of people from the water on the basis of the above principles.

According to SOLAS Chapter III/17-1 "**Rescue of Persons from Water**";

"1 All ships shall have ship-specific plans and procedures for recovery of persons from the water, taking into account the guidelines developed by the Organization.

** The plans and procedures shall identify the equipment intended to be used for recovery purposes and measures to be taken to minimize the risk to shipboard personnel involved in recovery operations. Ships constructed before 1 July 2014 shall comply with this requirement by the first periodical or renewal safety equipment survey of the ship to be carried out after 1 July 2014, whichever comes first.*

** Refer to the Guidelines for the development of plans and procedures for recovery of persons from the water (MSC.1/Circ.1447)."*

According to the "**Guidelines for the development of plans and procedures for the recovery of persons from the water**" referred to in the relevant article of SOLAS (MSC.1/Circ.1447);

"1 The Maritime Safety Committee, at its ninety-first session (26 to 30 November 2012), approved the Guidelines for the development of plans and procedures for recovery of persons from the water, set out in the annex, aiming at providing additional guidance on the application of the requirements in SOLAS regulation III/17-1.

2 Member Governments are invited to bring the annexed Guidelines to the attention of all interested parties.

Annex

Guidelines for the Development of Plans and Procedures for Recovery of Persons from the Water 1 Genel

1 General

1.1 Life-saving and other equipment carried on board may be used to recover persons from the water, even though this may require using such equipment in unconventional ways.

1.2 These Guidelines should be read in conjunction with the Guide to recovery techniques (MSC.1/Circ.1182) and the Guide for cold water survival (MSC.1/Circ.1185/Rev.1).

1.3 In particular, the Guide to recovery techniques (MSC.1/Circ.1182) provides a number of examples of how certain types of equipment can be used to recover persons from the water; and can also be used for the development of plans and procedures for recovery of persons from the water.

1.4 The initiation or continuation of recovery operations should be at the discretion of the master of the recovering ship, in accordance with the provisions of SOLAS regulation III/17-1.

1.5 The plans and procedures should be considered as a part of the emergency preparedness plan required by paragraph 8 of part A of the International Safety Management (ISM) Code.

2 Matters to be considered when developing plans and procedures

2.1 A risk assessment should be conducted and documented when developing plans and procedures for recovery of persons from the water, including equipment intended to be used, taking into account the anticipated conditions and ship-specific characteristics.

2.2 The recovery plans and procedures should facilitate the transfer of persons from the water to the ship while minimizing the risk of injury from impact with the ship's side or other structures, including the recovery appliance itself.

2.3 To the extent practicable, recovery procedures should provide for recovery of persons in a horizontal or near-horizontal ("deck-chair") position. Recovery in a vertical position should be

avoided whenever possible as it risks cardiac arrest in hypothermic casualties (refer to the Guide for cold water survival (MSC.1/Circ.1185/Rev.1)).

2.4 If carried, dedicated recovery equipment should be clearly marked with the maximum number of persons it can accommodate, based on a weight of 82,5 kg per person.

2.5 Recovery operations should be conducted at a position clear of the ship's propellers and, as far as practicable, within the ship's parallel mid-body section.

2.6 A source of illumination and, where required, a source of power should be available for the area where the recovery operation is conducted.

2.7 Ship-specific procedures for the recovery of persons from the water should specify the anticipated conditions under which a recovery operation may be conducted without causing undue hazard to the ship and the ship's crew, taking into account, but not limited to:

.1 manoeuvrability of the ship;

.2 freeboard of the ship;

.3 points on the ship to which casualties may be recovered;

.4 characteristics and limitations of equipment intended to be used for recovery operations;

.5 available crew and personal protective equipment (PPE);

.6 wind force, direction and spray;

.7 significant wave height (Hs);

.8 period of waves;

.9 swell; and

.10 safety of navigation.

3 Competence and familiarization

Drills should ensure that crew are familiar with the plans, procedures and equipment for recovery of persons from the water. Such drills may be conducted in conjunction with routine man-overboard drills."

With the aforementioned set of provisions, IMO has adopted the principles of rescue operations from the water. Moreover, these principles have been reinforced by various regulations such as IAMSAR Manual Volume III and EDP Code.

In this context, the assessment of the activities of the entities involved in the rescue and recovery operation is as follows:

3.3.1 ALHENA

Based on the interviews and technical examination conducted during the marine safety investigation, the approach of ALHENA crew after the accident was analyzed within the scope of the above-mentioned legislation and good maritime practices.

It was understood from the statements that immediately after the accident, the MOB featured lifebuoy at the pilot station was thrown towards the casualty, yet the casualty held the lifebuoy thrown from the pilot boat. The vessel had ceased the heaving up operation and anchored again after the accident. Then notified the accident to Sector Yalova (VTSc) and waited for further instructions.

It is confirmed by the records that the rescue boat commanded by the chief officer was launched approximately 20 minutes after the accident had occurred, but due to the rough sea, it could not approach the casualty and join the rescue operation and they ended the operation on behalf of the vessel.

It is difficult to say that ALHENA has actively participated in the rescue response other than reporting. The reasons for this should be analyzed;

Although the rescue boat was launched, the attempt to retrieve the casualty from the sea could not be completed due to weather and sea conditions. This situation makes the place of the rescue boat in planning questionable. The fact that the rescue boat was launched with the recommendation of the Administration and then could not even approach the casualty or that a decisive plan was not made to approach and retrieve the casualty, and that an effective rescue management was not carried out by communicating with the pilot boat personnel participating in the rescue stand out as remarkable attitudes. As a matter of fact, when man overboard drills

are examined, we encounter duplicate scenarios. In this sense, it is clear that an effective rescue operation cannot be considered to be carried out by the ship.

It is obvious that there is an ineffective professionalized rescue management on board ships. It can be said that the lack of training such as rescuing a person from the water is a handicap for seafarers, apart from the known trainings such as using a lifeboat and staying alive at sea against such situations.

In this sense, the lack of a professional understanding of rescue assistance on board the ships and the insufficient or non-existent practice stand out as a factor affecting the process that develops after the accident.

3.3.2 Pilot Boat

The rescue and assistance activities performed by the crew of the pilot boat after the accident were also analyzed during the marine safety investigation period.

Failure to throw a lifebuoy instead of MOB featured one to the casualty immediately after the accident, the A/B risking his own life by diving into the sea without using any personal floating device to take the casualty on board, and most importantly, the frantic effort to take the casualty from the sea instead of ensuring that the casualty remained safely over the water until the rescue assistance arrived were the noteworthy situations.

In addition to this, the inadequacy of the equipment of such personnel carrier boats in case of man overboard was another issue that drew attention. It was once again revealed that the lack of equipment such as hoist, jason's cradle, zodiac boat, etc. in this type of boats, of which freeboard height is such as to prevent a person who has fallen overboard from easily re-boarding the boat, adversely affects the rescue activities.

Furthermore, it can be said that the lack of competence and practice of the boat crew in rescue assistance complicated the situation and affected the post-accident recovery period.

Within the framework of the above-mentioned, it is considered that the inadequacy of the rescue equipment of the boat and the lack of competence of the crew in rescue affected the post-accident period.

3.3.3 Other Aids

As the pilot boat personnel could not get any positive result from their efforts to retrieve the casualty from the sea and the ship's lifesaving boat could not approach the casualty and participate in the retrieval operation due to weather and sea conditions, assistance was requested from the SAR elements. After the accident, the first SAR element reached the scene and started rescue and assistance activities. It is understood from the statements taken that the casualty was unconscious at that time.

Considering that the first SAR element that came to the intervention was not different from the pilot boat in terms of structure and had almost the same freeboard height, it can be understood that structurally similar conditions emerged.

However, the fact that the casualty could not be retrieved from the sea despite the participation of more personnel in the rescue assistance operation indicates that similar problems were encountered in terms of rescue techniques.

After the weather conditions allowed the zodiac-type boat to make way to reach the scene of the accident, an attempt to take the victim from the sea was initiated with the SAR element arriving at the scene and it was successfully concluded. However, the casualty, who was unconscious when he was taken into the boat, did not survive despite the first aid provided.

3.4 Fatigue

In the course of the investigation process no evidence emerged that could lead to a conclusion that fatigue affected the performance of the both pilot and pilot boat crew. Accordingly, fatigue cannot be considered to have been a contributing factor on examined marine casualty.

3.5 Similar Accidents (ENKI-HURKUS[1])

The Saint Kitts&Nevis flagged tanker ENKI, anchored at the southern entrance C of the Strait of İstanbul, during the crew handover on 03 March 2022, the crewmember planned to embark on board fell overboard at 12:15 while ascending the pilot ladder from the servo boat named HURKUS. The vessel and the servo boat crew-initiated search and rescue operations to retrieve the casualty from the sea. The casualty was recovered from the sea at 12:50 with the

[1] https://ulasimemniyeti.uab.gov.tr/uploads/pages/safety-investigation-reports/enki-final-marine-safety-investigation-report-06-06-2023.pdf

rescue boat launched by the vessel and first aid was rendered to resuscitate but the casualty passed away.

The factor that makes both accidents similar is that both victims were not wearing any personal flotation equipment.

SECTION 4 – CONCLUSIONS

4.1 At the time of the accident, north-easterly wind of force 6 and wave height of half to one meter were prevailing at the accident site.

4.2 No non-conformities were found in the pilot station arrangement and rigging in accordance with the relevant provisions.

4.3 The pilotage company does not have formal written standard operating procedures and a self-regulatory list prepared according to formal written standard operating procedures, nor any internal training procedures for its crew.

4.4 The crew of the boat, in particular the casualty pilot, did not use personal floating device during the transfer operation and the lee was not considered as an option although the wind force and sea state created a challenging condition for the pilot boat.

4.5 The management of the existing risks in the pilotage operation was solely at the discretion of the pilot instead of the participation of all stakeholders.

4.6 The ergonomic structure of the pilot boat's bow and stern railings, deck clearance and floor and pilothouse are satisfactory for pilotage operations.

4.7 The fact that the commercial vessels such as ALHENA could not have a professional rescue assistance mentality in general and also the lack or inadequate practice undermines the strength of the initial response in this kind of rescue operations.

4.8 The inadequacy of the rescue facilities of the pilot boat and the lack of competence of the crew in rescue operations had a detrimental effect on the post-accident period.

4.9 The other rescue unit, arrived at the accident site with a zodiac type boat, managed to recover the unconscious casualty from the sea.

4.10 The cause of the casualty's death is drowning, according to the autopsy report.

4.11 Fatigue is not a factor that leads to the casualty.

SECTION 5 – ACTIONS TAKEN

5.1 Measures taken by the Maritime Administration:

- With the regulation dated 29.08.2024 made by the Maritime Administration regarding seafarers and pilots, it is stipulated that pilots and pilot boat personnel shall wear winter or summer life jackets according to the season in each transfer.
- With the regulation dated 29.08.2024 made by the Maritime Administration regarding seafarers and pilots, it has been ruled that the medical examinations of pilots over the age of 60 will be carried out within the scope of general examination.
- With the regulation dated 26.04.2024 made by the Maritime Administration regarding the safety of pilotage services, it is stipulated that the boats used in pilotage services must have a MOB retrieval equipment.
- With the regulation dated 26.04.2024 made by the Maritime Administration regarding the safety of pilotage services, it is stipulated that the personnel working on the boats used in pilotage services shall receive training on pilotage services and periodic man overboard drills shall be carried out.

5.2 Measures taken by the Pilotage Company:

- Within the scope of the Directive on the Safety of Pilotage Services, a total of 2 pilot boats in the Company's fleet were equipped with man overboard retrieval equipment.
- Within the scope of Directive on Safety of Pilotage Services, “Pilot Safe Transfer Procedure”, “Emergency Management Plan”, “Training and Instruction Procedure” and other procedures and instructions were established. Man overboard drills are conducted regularly in 3-month periods for man overboard rescue within the scope of the Directive. Pilot boat personnel who actually work in pilotage services are subjected to training by the administration in periods not exceeding 24 months within the scope of “Pilot Safe Transfer Procedure”.
- Technological and best practices in the world and in our country in the maritime sector are followed and company policies and procedures are and will be updated when necessary in this context. Company policies and procedures are periodically reviewed.
- Both within the scope of the Directive on Safety of Pilotage Services and as per the company policy, all pilot boat personnel wear life jackets in accordance with the directive. The pilots constantly check whether the boat personnel are using life jackets or not and the continuity of life jacket use is ensured without interruption.

SECTION 6 – RECOMMENDATIONS

The following recommendations are directed by considering the analysis and conclusions obtained from the accident investigation.

To the Pilotage Company:

01/01-25 Taking effective measures such as video recording of the pilots and boat crew using life jackets during the operations and checking the records by the company,

To IMEAK Chamber of Shipping:

02/01-25 Circulating the report to the members in order to minimize or avoid similar accidents,

To Mersin Chamber of Shipping:

03/01-25 Circulating the report to the members in order to minimize or avoid similar accidents,

is recommended.