



**REPUBLIC OF TURKEY
MINISTRY OF TRANSPORT, MARITIME AFFAIRS
AND COMMUNICATIONS
Accident Investigation Board**

**Report on the collision between
the RO/RO ship UND EGE and the fast ferry OSMAN GAZİ-1**

**Sea of Marmara / Off Sivriada Island
December 26, 2011**



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ABBREVIATIONS AND DEFINITIONS

Bulb	: is a bulbous protuberance at the forefoot of a ship to facilitate the navigation by displacing the water.
EBL	: Electronic Bearing Line
CPA	: (closest point of approach) is a term expressing the closest passing distance of a target being tracked.
FSB	: Fast Rescue Boat
Cable	: is a nautical unit measuring one tenth of a nautical mile equal to 185,2 m
VTS	: Vessel Traffic Service
Knot	: is the distance covered by the vessel measured in nautical miles per hour
NM	: Nautical Mile (unit of length equal to 1852 m)
SMCP	: Standart Marine Communication Phrases
VHF	: Very High Frequency
VRM	: Variable Range Marker

SYNOPSIS



Figure 1: Location of the accident

All the times in this report are local times (UTC + 2 hours).

The vessel UND EGE carrying 226 vehicles sailed on December 23, 2011 from the port of Trieste / Italy to the port of Pendik / Istanbul, and the ferry OSMAN GAZI-1 carrying 165 vehicles and 675 passengers (including drivers, 840 passengers in total) departed on December 26, 2011 from the port of Güzelyalı / Bursa to the port of Yenikapi / Istanbul.

On December 26, 2011, before the accident occurred, the vessel UND EGE was navigating on course 084° and at 19 knots speed towards the port of Pendik. Only the third mate was present on the bridge. The ferry OSMAN GAZI-1 was proceeding on course 021° and at 32 knots speed towards the port of Yenikapi. The master, first mate and chief engineer were present on the bridge.

The first VHF radio contact between the vessels was established 2-3 minutes before the accident, when they were approximately 1 nautical mile apart from each other. The master of OSMAN GAZI-1 called UND EGE to inform of the risk of collision on this course and announced that UND EGE was the vessel obliged to take action. In answer to the master of OSMAN GAZI-1, the OOW stated that he would put the helm somewhat to port. Then he called the master to report him a ferry speedily and dangerously approaching on the starboard side and invited him to the bridge. When the master of UND EGE arrived on the bridge, he sighted OSMAN GAZI-1 on the starboard side and in very close proximity.

Due to high speeds and significant delay in taking avoiding action of both vessels, the collision could not be avoided, and at 08.41 hours the vessel UND EGE scraped past the starboard bow of the vessel OSMAN GAZI-1.

The accident resulted in material damage to both vessels, and no deaths/injuries and environmental pollution were caused by the collision.

SECTION 1 – FACTUAL INFORMATION

1.1 Particulars of the vessel and accident

Particulars of the vessel UND EGE

Vessel name : UND EGE

Flag : Turkish

Port of registry : Istanbul

Vessel type : Ro-Ro cargo

Owner : UN RO-RO İşletmeleri A.Ş.

Class : DNV

Date and place of construction : 2001 / Germany

Gross tonnage : 26469

Net tonnage : 7941

DWT : 9865

IMO No. : 9215476

Call sign : TCUY

Length overall : 193 m

Width : 26 m

Draft : 6,45 m

Main engine : 2 X 8100 kw (Manufacturer: MAK)

Service speed : 21,6 knots

Number of crew : 21

Port of departure : Trieste / Italy

Port of destination : Pendik / Istanbul

Particulars of the vessel OSMAN GAZI-1

Vessel name : OSMAN GAZI-1

Flag : Turkish

Port of registry : Istanbul

Vessel type : Passenger vessel / Ro--Ro

Owner : İstanbul Deniz Otobüsleri San. ve Tic. A.Ş.

Class : GL

Date and place of construction : 2007 / Australia

Gross tonnage : 6133

Net tonnage : 1840

IMO No. : 9372171

Call sign : TCCH5

Length overall : 87,85 m

Width : 24 m

Depth : 8,25 m

Main engine : 4 X 9655 BHP (Manufacturer: MTU)

Service speed : 36 knots

Passenger capacity : 1200

Vehicle capacity : 225 cars

Number of crew : 10

Port of departure : Güzelyalı / Bursa

Port of destination : Yenikapı / Istanbul

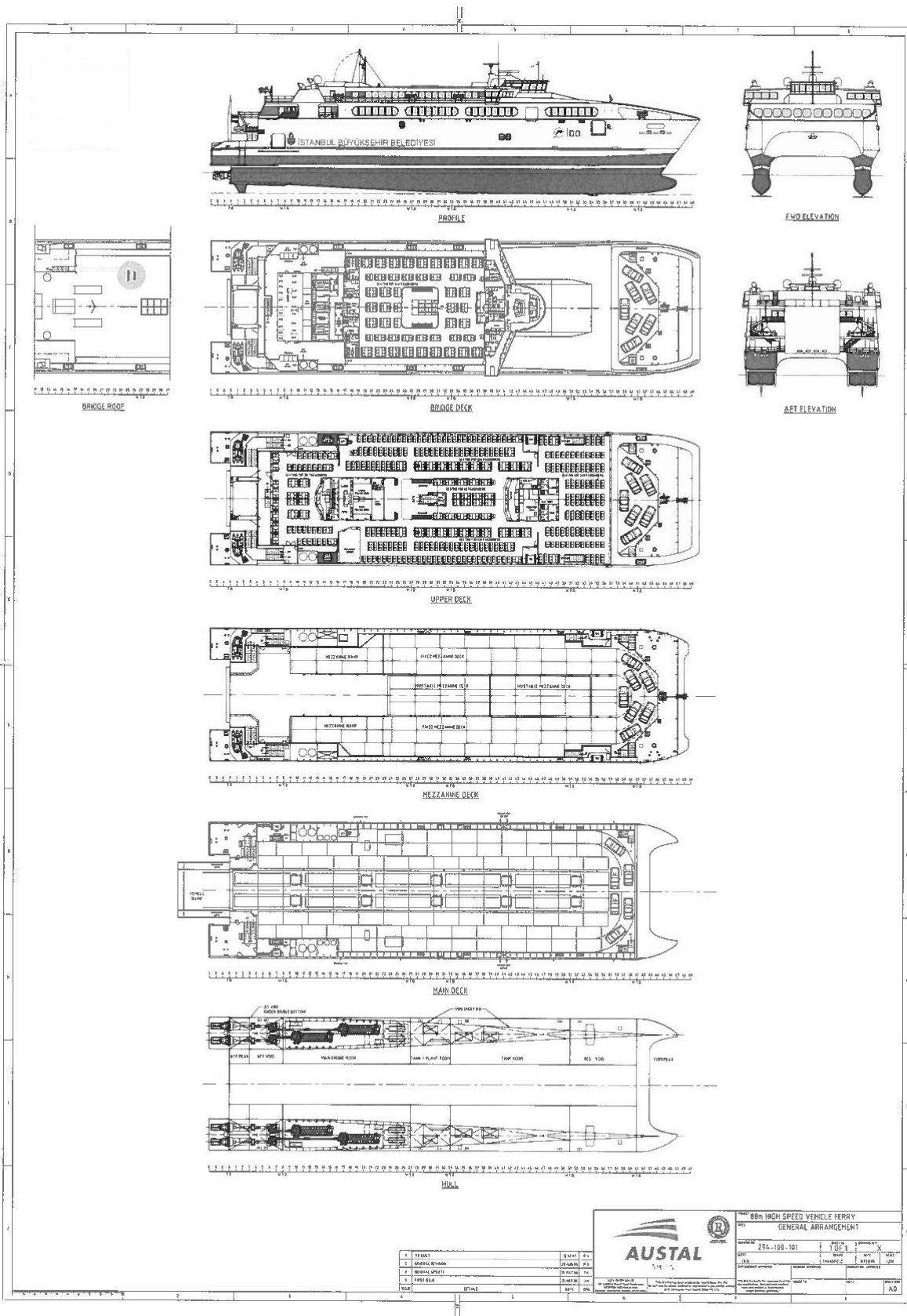


Figure 3: General arrangement plan of OSMAN GAZI-1

Accident data

Date and time	: 26 December 2011 / 08:41
Location of incident	: Sea of Marmara, 4 nautical miles southwest from the island Sivriada
Coordinates	: 40° 50',5 N / 028° 54',6 E
Deaths/injuries/ missing persons	: Nil
Damage	: Small-scale damage to both vessels in the contact area.
Pollution	: Nil

1.2 Environmental conditions

At the time the accident, weather conditions were moderate. A force 4 to 5 wind was blowing from a north-easterly (NE) direction; state of the sea was 3 to 4 on the beaufort scale. The sky was partly cloudy. There were no weather events like rain, fog, mist etc. that could negatively affect the visibility or resulting in misleading echoes on the radar screen, the visibility was relatively clear.

1.3 Events leading to the accident

On December 23, 2011, the Ro-ro cargo vessel UND EGE on voyage number 39/2011, carrying 226 vehicles of various type and 6 passengers sailed with her 21 crew members from the port of Trieste in Italy to the port of Pendik / İstanbul in Turkey.

The ferry OSMAN GAZİ-1 completed the previous voyage on December 25, 2011 around 22:00 hours and moored in the port of Güzelyalı / Bursa. She departed on December 26, 2011 with a crew of 10 seafarers, 675 passengers (including drivers, 840 passengers in total) and a cargo of 165 vehicles from the port of Güzelyalı / Bursa for the port of Yenikapı / İstanbul. Since the wind decreased which was a little higher in strength when departing from the port of Güzelyalı, the ferry OSMAN GAZİ-1 increased speed and began to navigate at 32 knots. As a routine watch practice, the master, chief officer and chief engineer were present on the bridge.

The chief officer on the vessel UND EGE standing his watch 04:00-08:00 hours on December 26, 2011 in the company of one lookout qualified as able seaman, set the course, with the Island of Marmara abeam, at 05:40 hours to 083°, and handed over the watch to the third officer at 08:00 hours while the vessel was proceeding on this course. As from 08:00 hours, there was only the third mate on the bridge. On the bridge, a considerably loud music was playing. The vessel was navigating on course 084° and at 19 knots towards the port of Pendik.

While proceeding on course 021° at 32 knots, the master of OSMAN GAZI-1 plotted the position of UND EGE which was on their port side. After hearing the collision signalling from the radar when the distance was approximately 5 nautical miles, he continued to monitor the vessel UND EGE both visually and on the radar.

The first VHF radio contact between the vessels OSMAN GAZI-1 and UND EGE was established at 08:38 hours. The master of OSMAN GAZI-1 called UND EGE. Meanwhile, the distance between both vessels was approximately 1 nautical mile. The OOW of UND EGE had just plotted the position of OSMAN GAZI-1 when he received the call.

When his call was replied by UND EGE, the master of OSMAN GAZI-1 informed that the course in question was associated with the risk of collision and he announced that UND EGE was the vessel obliged to take action. Further, he mentioned that there are also other vessels of UND continually breaching the rules of the Convention on the International Regulations for Preventing Collisions at Sea in this area, which he had reported to the relevant authorities and filed a complaint therefor.

In answer, the watchkeeping officer of the vessel UND EGE said that he would change his course somewhat to port and right after changed the course in autopilot mode 5°-6° to port. Later, after having monitored the movement of the opposite vessel whose position he plotted by radar for a while, he called the master of OSMAN GAZI-1 at 08:40 hours and asked whether he intended to pass ahead of UND EGE, to which the master of OSMAN GAZI-1 responded in a strict tone requesting him to immediately change his course to port.

A few seconds later, the watchkeeping officer called the master at his cabin to report him a ferry speedily and dangerously approaching on the starboard side. He said that he had therefore changed the course somewhat to port and invited the master to the bridge. Afterwards, he fixed his course in the autopilot mode 15-20° more to port so as to accelerate the turn around to port.

Since he thought that the voice of the watchkeeping officer calling him sounded not too much worried, the master of UND EGE went to the bath to wash his face and 45 seconds after the phone call, he went up to the bridge. When he arrived on the bridge, the master realised that the vessel OSMAN GAZI-1 was on the starboard side within very close distance and the third officer went into shock, losing all the control. The master immediately changed the helm from automatic to manual steering mode and put the helm hard to port. However, due to high speeds of both vessels and very close distance between them, it could not be avoided that a few seconds thereafter, at 08:41 hours, the collision occurred about 4 nautical miles southwest from the Island of Sivriada (located at 40° 50,5 N / 028° 54,6 E). The vessel UND EGE, from its starboard beam to stern, scraped past the starboard bow of the vessel OSMAN GAZI-1.

The accident resulted in small-scale material damage to both vessels, and no deaths/injuries and environmental pollution were caused by the collision. Shortly after estimating the damage and verifying that there was no severe damage, both vessels reported the accident to the Vessel Traffic Service of Istanbul and proceeded to their ports of destination.



Figure 4: Damage to starboard beam of UND EGE



Figure 5: Damage to starboard stern of UND EGE



Figure 6: Damage to port bow of OSMAN GAZI-1



Figure 7: Damage to starboard bow of OSMAN GAZI-1

SECTION 2 – ANALYSIS

2.1 Positions of both vessels to each other

During interviews with them, the crews of both vessels alleged that the other vessel had violated the rules of the Convention on the International Regulations for Preventing Collisions at Sea. While the master and watchkeeping officer of UND EGE claimed that OSMAN GAZI-1 was the vessel overtaking (and approaching from a direction more than 22,5° abaft of the beam of UND EGE), the master of OSMAN GAZI-1 argued that his vessel was not the vessel overtaking and according to the applicable rule "Crossing Situations" of the International Regulations for Preventing Collisions at Sea, UND EGE was, in respect of that she sighted his vessel on the starboard side, the give-way vessel.

Both plotting of actual course and speed of vessels on the map and examination of VDR and Vessel Traffic Service (VTS) data have shown that in the accident in question the rule "Crossing Situations" of the COLREGs was violated and OSMAN GAZI-1 was not an overtaking vessel.

2.2 Obligation to give way

Rule 15 "Crossing Situations" of the COLREGs stipulates that *"When two power-driven vessels are crossing so as to involve risk of collision, the vessel which has the other on her own starboard side shall keep out of the way and shall, if the circumstances of the case admit, avoid crossing ahead of the other vessel"*. Rule 16 "Action by give-way vessel" provides that *"Every vessel which is directed by these Rules to keep out of the way of another vessel shall, so far as possible, take early and substantial action to keep well clear"*.

As indicated above, in the event of a crossing situation between vessels, the action being taken by give-way vessel shall be sharp, clear and easily understandable by the other vessel. In this accident, UND EGE is, according to Rule 15, the give-way vessel in respect of that she sighted the vessel OSMAN GAZI-1 on the starboard side. However, no *early and substantial action* was taken by the vessel UND EGE as described in International Regulations for Preventing Collisions at Sea.

2.3 Action by stand-on vessel

Rule 17 "Action by stand-on vessel" of the COLREGs stipulates that

"(a) (i) Where by any of these Rules one of two vessels is to keep out of the way the other shall keep her course and speed.

(ii) The latter vessel may however take action to avoid collision by her manoeuvre alone, as soon as it becomes apparent to her that the vessel required to keep out of the way is not taking appropriate action in compliance with these Rules.

(b) (ii) When, from any cause, the vessel required to keep her course and speed finds herself so close that collision cannot be avoided by the action of the give-way vessel alone, she shall take such action as will best aid to avoid collision.

(c) A power-driven vessel which takes action in a crossing situation in accordance with sub-paragraph (a)(ii) of this Rule to avoid collision with another power-driven vessel shall, if the circumstances of the case admit, not alter course to port for a vessel on her own port side.

However, in this accident the master of OSMAN GAZI-1 took, until shortly before the collision, no avoiding action as provided for in the Rule 17, either in the form of altering course or speed, and persistently continued to approach UND EGE, although he realised both before and after the first VHF radio contact that no *early and substantial action* was taken by UND EGE.

2.4 Situational awareness

The master of OSMAN GAZI-1 realised, at a distance of 5-6 nautical miles and about 8-9 minutes before the time of the accident that UND EGE was on a crossing course and tracked her both visually and on the radar. From his comparison of "rail system" to the vessel UND EGE when sighting her off the starboard bow and his statement of having filed a complaint for breaching the rules of the Convention on the International Regulations for Preventing Collisions at Sea against the vessels of UND shipping company, it can be concluded that he considered that the vessel UND EGE might not take the action that it is required to do and a close crossing might be the case.

The OOW of UND EGE plotted the position of the speedily approaching vessel OSMAN GAZI-1 by ARPA radar, immediately after the VHF radio call (2-3 minutes before the collision) Immediately after establishment of radio contact, he tried to monitor the movement of the vessel OSMAN GAZI-1 by ARPA radar, but the close distance between both vessels prevented him from taking a timely and effective action. It is considered that the watchkeeping officer did not realise that they were in a crossing situation with the vessel OSMAN GAZI-1 and the courses in question were posing a risk of collision, until he received the VHF radio call.

2.5 Look-out

Rule 5 "Look-out" of the COLREGs stipulates that

"Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision".

However, despite practising coastal navigation and sailing south of Istanbul Strait, in a navigation zone with heavy traffic, the OOW of the vessel UND EGE was alone on the bridge and at that time there was loud music playing. This shows that, contrary to the requirement of full concentration and ensuring look-out's (and even helmsman's) aid on the bridge when sailing in a zone deemed to be heavily trafficked, the existing conditions failed to meet these requirements.

2.6 Overconfidence

It is considered, that due to a number of factors such as the thought of having a faster vessel with efficient manoeuvrability compared to the other vessel and of being confronted with a watchkeeping officer less experienced than him when it comes to

professional background and experience, the master of OSMAN GAZI-1 acted despite the existence of risk of collision with overconfidence until the very last moment.

2.7 Risk of collision and effective use of aids to navigation

Rule 7 "Risk of collision" of the International Regulations for Preventing Collisions at Sea stipulates that

“ (a) Every vessel shall use all available means appropriate to the prevailing circumstances and conditions to determine if risk of collision exists. If there is any doubt such risk shall be deemed to exist.

(b) Proper use shall be made of radar equipment if fitted and operational, including long-range scanning to obtain early warning of risk of collision and radar plotting or equivalent systematic observation of detected objects.

(c) (i) In determining if risk of collision exists, such risk shall be deemed to exist if the compass bearing of an approaching vessel does not appreciably change”.

The examination of VDR data of UND EGE has shown that the ARPA radar of the vessel was in head up/relative motion and off-center mode. Although the radar display being in off-center mode would be advantageous upon high sea and in less trafficked zones with respect to be able to observe over long distances in heading direction, it also creates disadvantages of detecting vessels approaching from a direction more than 22,5° abaft of the beam when navigating in heavily trafficked zones. Therefore, the recommended practice requires that the radar display is not set permanently in off-center mode in heavily trafficked waters and is used in a manner allowing full control in a radius of 360 degrees around the vessel.

2.8 Extreme fatigue

Interviews with crews of both vessels and examinations of data collected retrospectively for the last 48 hours on working and resting conditions have shown no indications of extreme fatigue/sleeplessness and related lack of concentration that may be associated with the causes of the accident.

2.9 Proper and effective communication

Communication at sea should be done using SMCP (IMO Standard Marine Communication Phrases). These phrases are important in terms of avoiding accidents caused by possible misunderstandings, even between those who speak the same language.

In this accident, in addition to the fact that the first VHF radio contact was established shortly before the collision, the communication in question contains indistinct and vague statements. The offensive language used by the master of OSMAN GAZI-1 led to watchkeeping officer being in panic and uncertain and resulted in that both parties were mistaken in taking avoiding action.

2.10 Vessel Traffic Service (VTS)

One of the main functions of Vessel Traffic Service is to help ensuring navigational safety by tracking vessel traffic within its area of responsibility. VTS controls whether vessels are in compliance with national and international regulations and warns, in cases of violations, the vessel in question to take action to correct the violation.

Where a crossing situation is observed, it provides necessary warnings by calculating the Closest Point of Approach (CPA) and the Time to CPA (TCPA) and questioning the vessel on whether they are aware of each other and have taken the necessary action to avoid collision.

However, it is the responsibility of the master to take decisions and actions in line with the warnings and information provided. Recommendations and instructions of VTS do not release the master from his obligation to manage the vessel with professional knowledge and competence, and VTS cannot be held responsible for the decisions and actions of the master.

In the accident in question, both vessels were navigated at high speed and the first VHF radio contact between the vessels was established 2 - 3 minutes before the accident, when they were approximately 1 nautical mile apart from each other. The VTS operator realised that the vessels were approaching each other in a manner likely to cause a collision but did not intervene due to ongoing communication between them about taking evasive action (and with consideration of the fact that any intervention from him would disturb the communication, distract them and increase the risk of collision) so as to ensure that an agreement could be reached in due time on necessary actions.

It is considered that shortly after the crossing situation was realised by the VTS operator a recommendation, warning or instruction to OSMAN GAZI-1 and UND EGE just at the moment where there was enough distance between them for taking action would be effective in terms of avoiding the accident.

SECTION 3 – CONCLUSIONS

The safety issues related to the occurrence of the accident are as follows:

3.1 Although UND EGE was the give-way vessel according to the “International Convention for the Prevention of Collisions At Sea”, she did not take appropriate and timely action to avoid collision as provided in the Convention.

3.2 Although OSMAN GAZI-1 realised that the opposite vessel did not take avoiding action, she had not introduced any preventive measures (altering speed or course) in due time to avoid collision.

3.3 The OOW was alone on the bridge, although the master should be present there in the company of at least one lookout and helmsman, in a situation such as this where the vessel was sailing in a heavily trafficked zone.

3.4 The OOW of UND EGE only realised after the establishment of VHF radio contact that OSMAN GAZI-1 was approaching on the starboard side in a manner likely to cause a collision and then he plotted the vessel's position by ARPA radar.

3.5 The master of OSMAN GAZİ-1 used the obligation of UND EGE being the give-way vessel as means of oppression and continued to insist on not taking action until just a few seconds before the collision, although he had the possibility (enough space to manoeuvre and technical capacity of the vessel) to avoid collision.

3.6 The VHF radio call between the vessels was far from being in compliance with international standards of communication at sea and contained statements misleading the parties as to the actions to be taken.

3.7 Although the vessels were approaching each other in a manner likely to cause a collision, no recommendation, warning or instruction was given by the VTS.

SECTION 4 – RECOMMENDATIONS

4.1 To the managing company of UND EGE (UN RO-RO İşletmeleri A.Ş.):

4.1.1 In UND EGE breaches of Bridge Team Management (BTM) principles and company procedures to be followed in critical navigation areas were found. It is therefore recommended that, in particular regarding the matters set out above (navigation in heavily trafficked zones, inshore navigation, navigation in poor visibility etc.) all vessels in the fleet are repeatedly recommended to earnestly and strictly comply with the company's procedures, national and international navigation regulations and these vessels monitored in this respect.

4.2 To the managing company of OSMAN GAZİ-1 (İstanbul Deniz Otobüsleri San. ve Tic. A.Ş.):

4.2.1 Their high speeds allow fast ferries to cover large distances within a relatively short time period. This may sometimes cause that other vessels in the position of being give-way vessels notice them too late and cannot take avoiding action in due time and proper form. It is therefore recommended to repeatedly inform all masters of the fleet by circular that they always take this into consideration and take avoiding action spontaneously as soon as they notice that the opposite vessel does not perform the expected manoeuvre, which should never take place by passing ahead of the other vessel.

4.2.2 Due to the difficulty in avoiding collisions with high-speed vessels through routine actions to avoid collision and in view of the fact that this sometimes causes collisions, an approach and practice is starting to take hold and be accepted worldwide that provides that high speed vessels should give way to the others (although it is not reflected in written international rules and there is no such practice yet in our country). The existing approach may lead the master being confronted with a crossing situation with a high speed vessel to think of having the right of way and as a result thereof to refrain from or delay in taking action.

It is thus considered that in cases where they are confronted with such crossing situations and don't see any evasive action by other vessels although they have the right of way, it would be more convenient that masters of fast ferries report the situation to VTS operators while there is enough time and distance, instead to enter into an argument with the master/OOW of the opposite vessel. It is therefore recommended to repeatedly remind all masters of the fleet about these issues.

4.3 To the Directorate General of Coastal Safety (Vessel Traffic Service):

4.3.1 Istanbul Strait is one of the most trafficked and risky waterways of the world with traffic counts of about 2500 domestic voyage per day. In an active area such as this, monitoring the traffic, providing information flow and making necessary arrangements is only possible with highly qualified personnel and technical equipment.

There is no doubt that continuous monitoring of all local traffic vessels (fast ferries, city lines etc.) in and around Istanbul Strait, having the status of passive user without reporting obligation is technically impossible. However, vessels having the status of active user (in the accident in question, UND EGE has the status of active user) must be tracked in a controlled manner. It is therefore recommended that an internal review of working conditions (number of personnel, motivation of personnel, shift times etc.) is carried out, with a view to more controlled monitoring of traffic flow and to minimise problems associated with human factor.