



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

Accident Investigation Report On
The Collision Between TANAIS DREAM & SULTANAHMET

Istanbul Strait / Sarayburnu
18th of December 2014

Report Number: 04/2015



TANAI DREAM



SULTANAHMET

PURPOSE

This marine accident was investigated in accordance with the Bylaw on the Investigation of Marine Accidents and Incidents which came into force after being published at the Official Gazette No.29056 on 10th July 2014. Investigation procedures and principles are further applied by considering Resolutions of International Maritime Organization concerning International Standards and Recommended Applications for Safety Investigations Directed to MSC 255(84) (Accident Investigation Code) and Resolution A.1075(28) Sea Accidents or Incidents, and European Union Directive 2009/18/EC.

Purpose of the Marine Accident Investigation is to provide the improvement of the legislation and applications directed to the safety of life, goods and environment by achieving the real reasons which cause the occurrence of marine accidents, and thereby, to avoid a repeat in occurrence and to provide the mitigation of negative impacts and consequences following the accident.

Marine accident investigation shall be inadmissible in any judicial and administrative proceedings whose purpose or one of whose purposes is to attribute or apportion liability or blame,

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SUMMARY

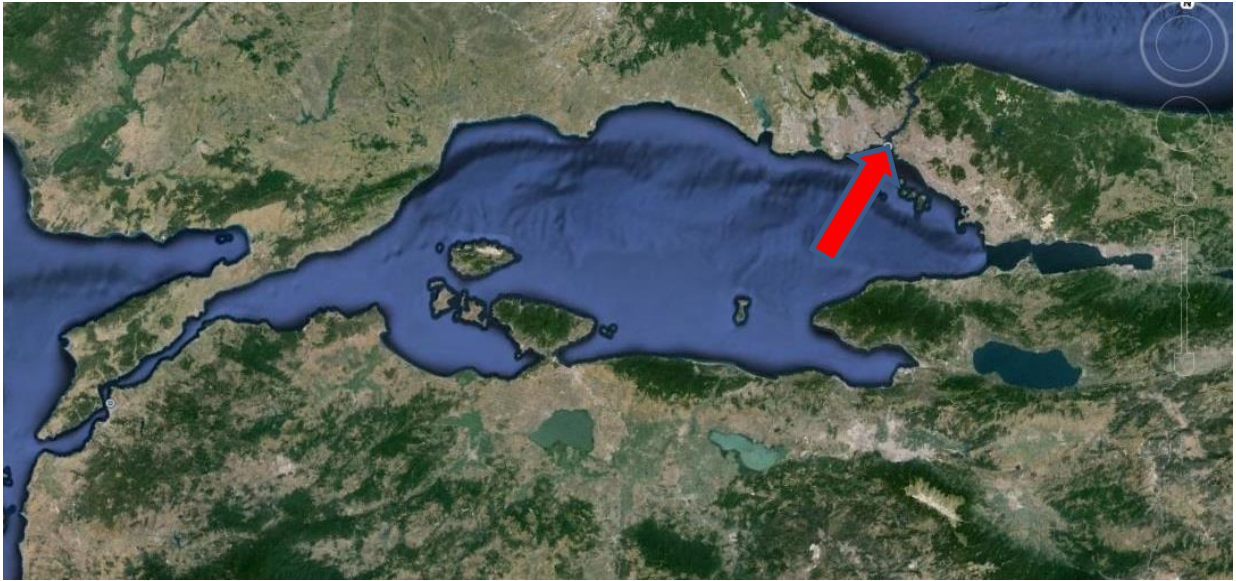


Figure 1: Location of the Accident

Note: All times used in this report are local times (GMT +2)

A Belizean flagged bulk carrier TANAIS DREAM collided with a Turkish flagged car ferry SULTANAHMET in front of Sarayburnu, Istanbul Strait on 18th of December 2014 at 19:39:50. As a result of the accident, both vessels were damaged and there was no loss of life, a serious injury or an environmental pollution. The TANAIS DREAM entered into the Istanbul Strait on 18th of December 2014 at 18:15 to carry its' 27.400 M/T clay, which was loaded in Illichivsk/Ukraine, to the Spanish port of Castellon. TANAIS DREAM, which preferred to cross the Istanbul Strait without taking a marine pilot, proceeded without any problems to off of the Maiden's Tower. The SULTANAHMET car ferry departed from Harem Pier at 19:32 to carry out its' voyage on the Harem - Sirkeci line. At 19:39:50, TANAIS DREAM hit with its' stem SULTANAHMET from its' port side by contact in front of Sarayburnu in the traffic lane in south direction (west) of traffic separation scheme inside the Istanbul Strait. After the collision, especially SULTANAHMET was damaged at a level that may be regarded as serious from its portside and luckily, there was no death or serious injury. After the accident, SULTANAHMET continued to carry out its voyage and delivered the passengers and vehicles safely to the Port of Sirkeci, and TANAIS DREAM dropped anchor in front of Istanbul Ahırkapı in line with the instructions of the Vessel Traffic Services (VTS) Center.

SECTION 1 – FACTUAL INFORMATION

1.1 Information With Regard to Vessels and the Accident

Information With Regard to TANAI DREAM

Name of the Ship	: TANAI DREAM
Flag	: Belize
Port of Registry	: Belize City
Type of Ship	: Bulk Carrier
Owner	: Tanais Shipping Ltd.
Place and Year of Build	: Japan – 2003
Gross and Net Tonnage	: 16.980 / 10.098
DWT	: 28.611
IMO Number	: 9283899
Call Sign	: V3RX4
Classification Society	: NIPPON KAIJI KYOKAI
Length over all and Breadth	: 169,26 / 27,2 meters
Depth	: 13,6 m.
Main Engine Power	: 5850 Kw (Maker: Makita-Matsui)
Navigation Speed	: 13,5 Knots (Loaded)
Number of Persons Onboard	: 24
Previous Port of Call	: Novorossiysk / Russia
Next Port of Call	: Castellon / Spain

Information With Regard to SULTANAHMET

Name of the Ship	: SULTANAHMET
Flag	: Turkey
Port of Registry	: Istanbul
Type of Ship	: Car Ferry
Owner	: IDO Istanbul Sea Buses Industry and Trade Inc.
Place and Year of Build	: Istanbul – 2008
Gross and Net Tonnage	: 1.065 / 608
DWT	: 656
IMO Number	: 9415519
Call Sign	: TCA2893
Length over all and Breadth	: 73,2 / 18 m.
Depth	: 3,3 m.
Main Engine Power	: 4x761 BHP (Maker: Mitsubishi)
Navigation Speed	: 11 Knots
Number of Persons Onboard	: 6
Previous Port of Call	: Harem / Istanbul
Next Port of Call	: Sirkeci / Istanbul

Information With Regard to the Accident

Date and Time of Accident	: 18 th of December 2014 / 19:39
Location of the Accident	: Sarayburnu / Istanbul Strait
Position of the Accident	: 41°01'12 N / 028°59',4 E

Type of Accident	: Serious marine casualty
Injured/Dead/Missing	: 1 passenger was slightly injured.
Damage	: Serious damage to the SULTANAHMET's port side shell plating and frames. Slight damage to the TANAIS DREAM's fore stem's bulwark and its' structural members.
Pollution	: None

1.2 Environmental Conditions

According to the data obtained from the General Directorate of Meteorology, it was determined that on the day when the accident occurred, the weather in the Istanbul Strait was partly cloudy and overcast, with scattered showers, and the wind blew from the north-northeast at a force 3 to 5, the vision was clear and there was no meteorological negative situation.

1.3 Course of Events Leading to the Accident

1.3.1 Before the Accident and the Collision

TANAIS DREAM entered into the Istanbul Strait on 18th of December 2014 at 18:15 to carry its' 27.400 M/T clay, which was loaded in Illichivsk/Ukraine, to the Spanish port of Castellon. The master, chief officer and a seaman working as a helmsman were on the bridge of TANAIS DREAM, which preferred to cross the Istanbul Strait without taking a marine pilot, during its passage through the Istanbul Strait. During the passage through the Istanbul Strait, two active radars were being used on the bridge, one of which was arpa radar, and the arpa radar was set to 1,5-mile distance and the other one was set to 3-mile distance. TANAIS DREAM proceeded without any problems to off of the Maiden's Tower under the control of the ship's master.

SULTANAHMET car ferry departed at 19:32 to carry out its' voyage on Harem - Sirkeci line with 74 vehicles and 168 passengers which it took from Harem Pier. The master and the chief engineer were on the bridge during the departure from the pier and navigation, and the seaman working as the look-out during navigation was not on the bridge since he was in the

saloon for dinner. In the command console, the arpa radar connected with the AIS¹ was working as set to 1-mile distance. The master completed his shift and left the vessel at 09:00 in the morning of 18.12.2014, the day when the accident occurred, and came back to the vessel at 18:00 in the evening and started to work again, and completed 5 voyages until the voyage in which the collision occurred.

During this time, the wind in the Istanbul Strait was blowing from the north-northeast at a beaufort scale of 3 to 5, the visibility was clear and the weather was partly cloudy and overcast, with scattered showers.

As TANAIS DREAM was proceeding in its traffic lane at 11.1 knots on route 234, heading to Beyazit Tower, when the Maiden's Tower was at abeam at 19:37, the master ordered "port 10" to the helmsman for turning to port side. In the meantime, SULTANAHMET was proceeding at 8.2 knots to the route 329. At 19:37:19, as TANAIS DREAM was continuing to turning to the port side, its' bow headed to 224. At 19:38:10, TANAIS DREAM headed to 211 and in the meantime, SULTANAHMET was heading to 315.

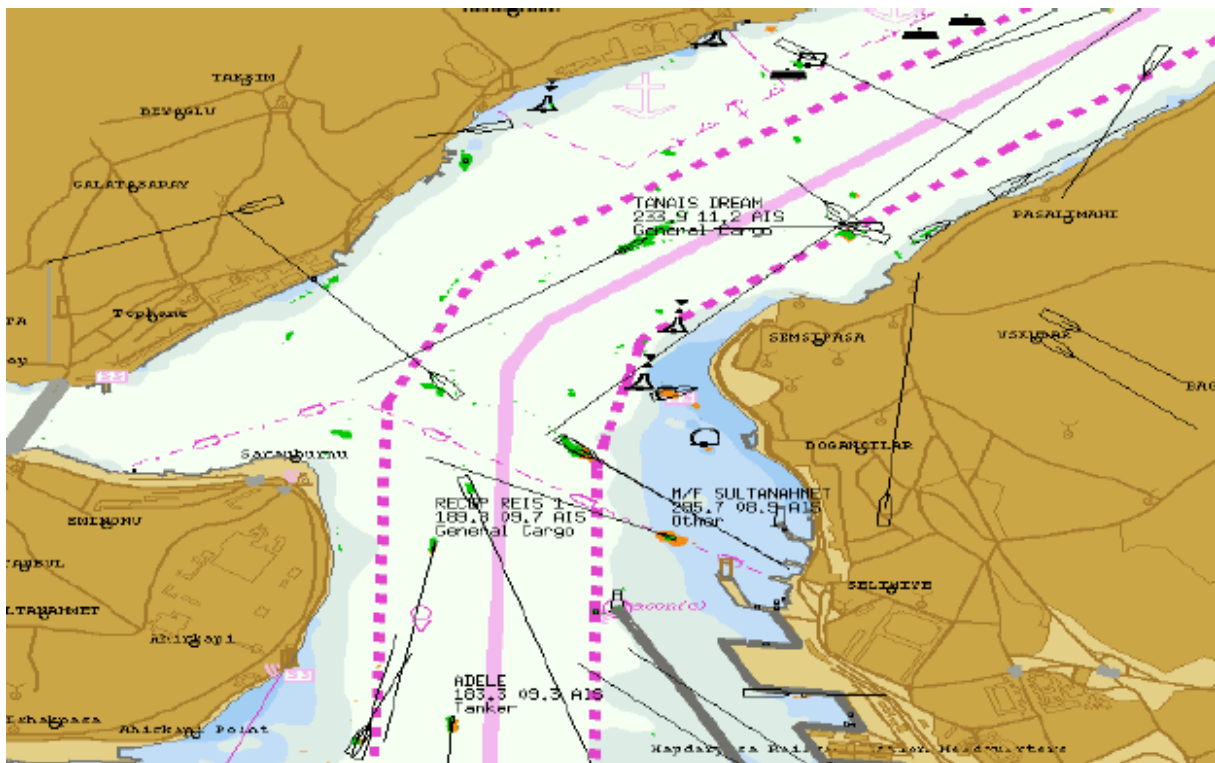


Figure 2: AIS snapshot at 19:35:41

¹ AIS: Automatic Identification System

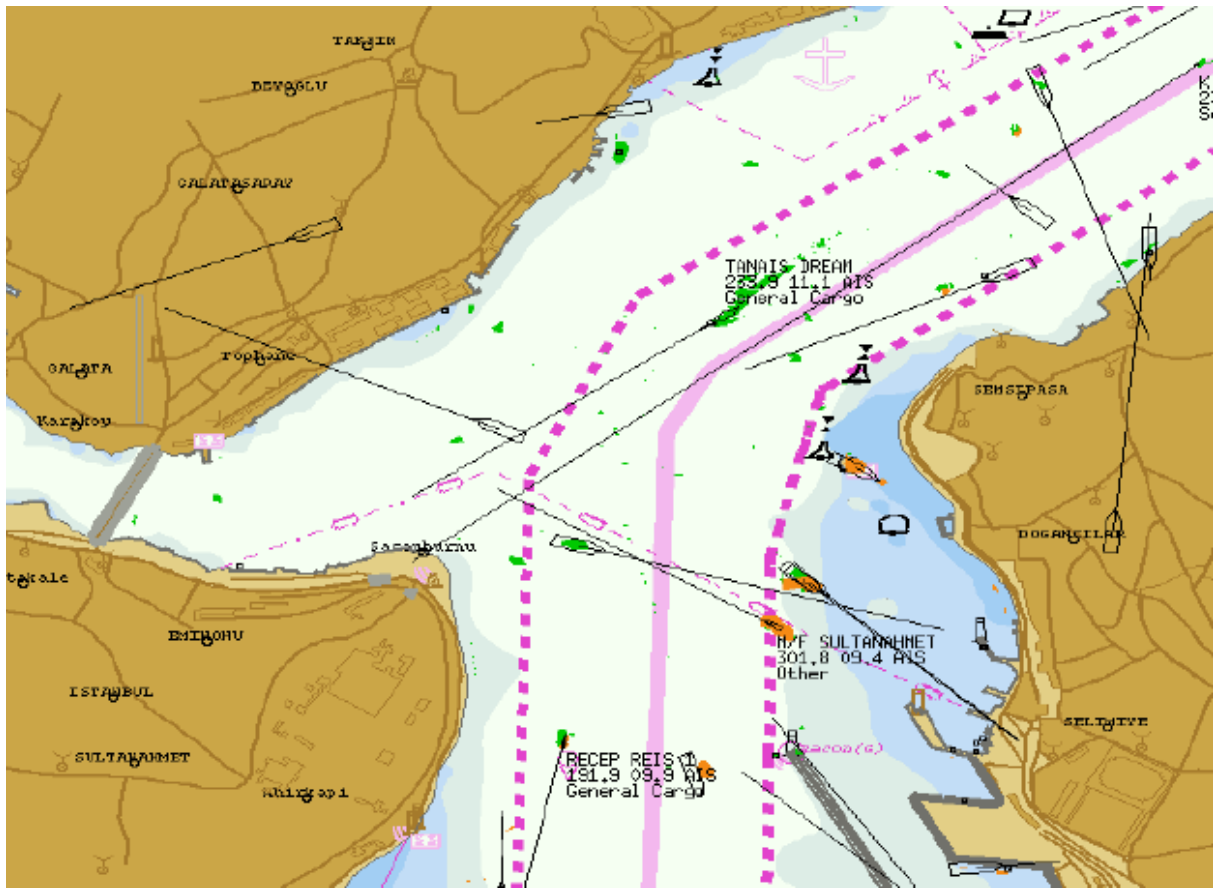


Figure 3: AIS snapshot at 19:36:47

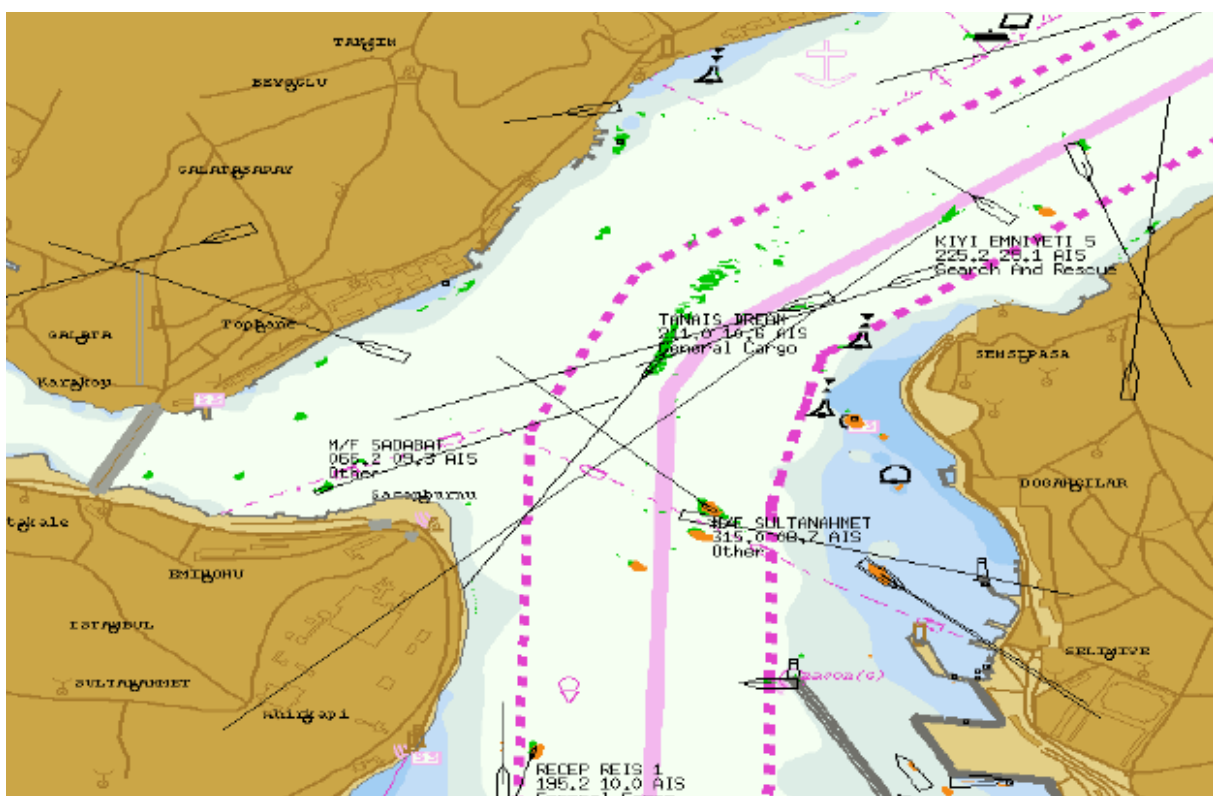


Figure 4: AIS snapshot at 19:38:10

At 19:38:38, as TANAIS DREAM was continuing to turning to the port side at 10.6 knots, SULTANAHMET was navigating to Sirkeci Port on the route 305 at 9.2 knots.

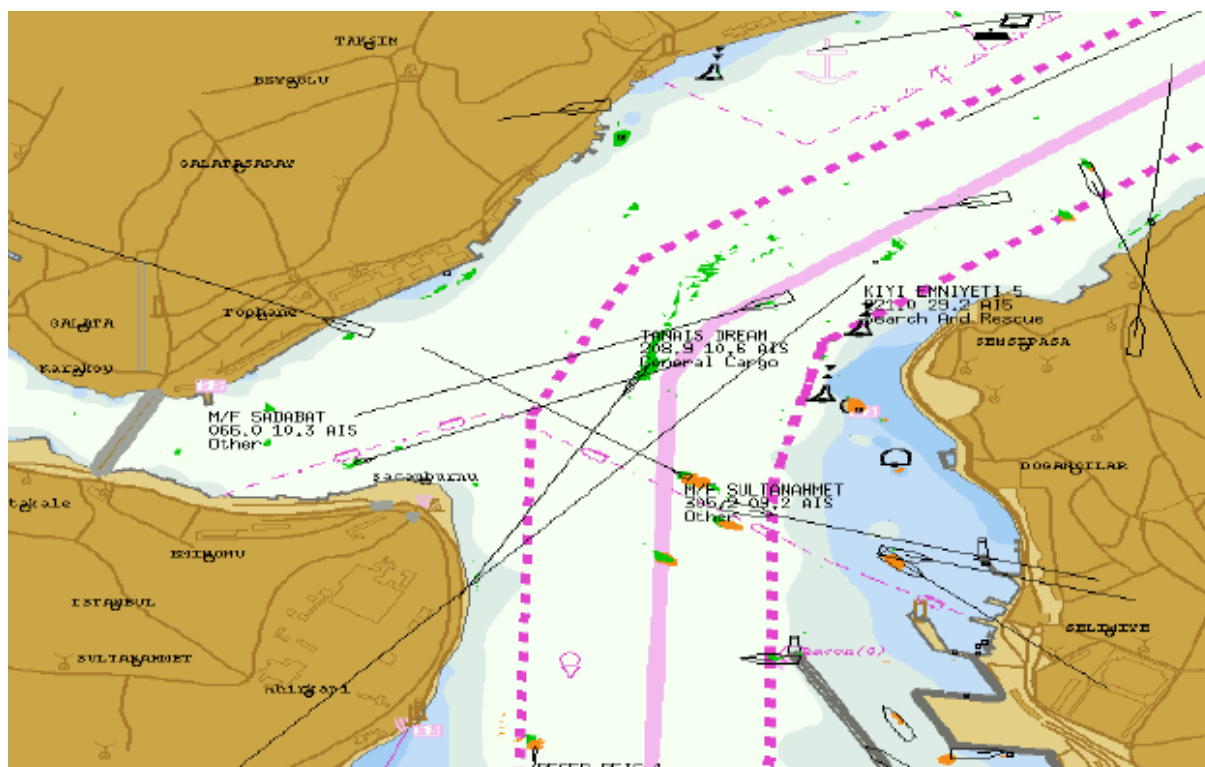


Figure 5: AIS snapshot at 19:38:38

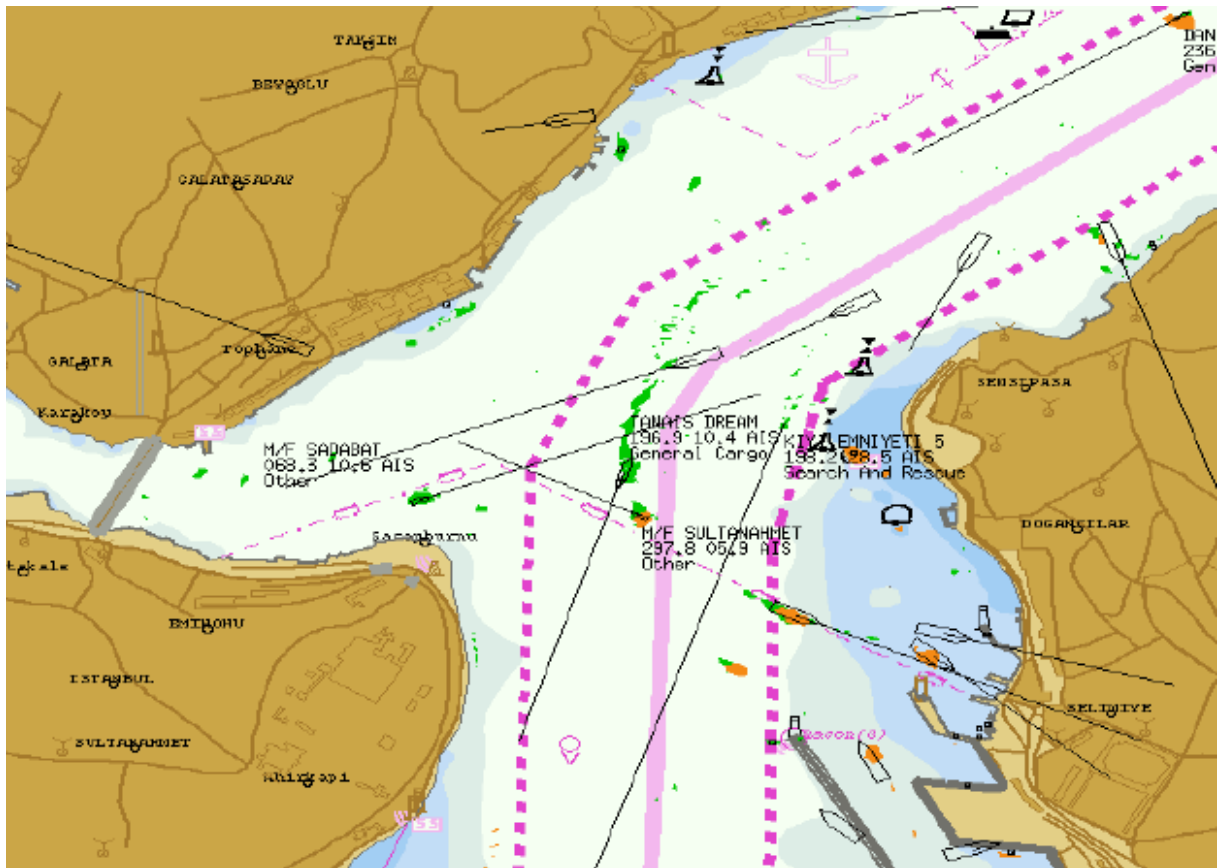


Figure 6: AIS snapshot at 19:39:20

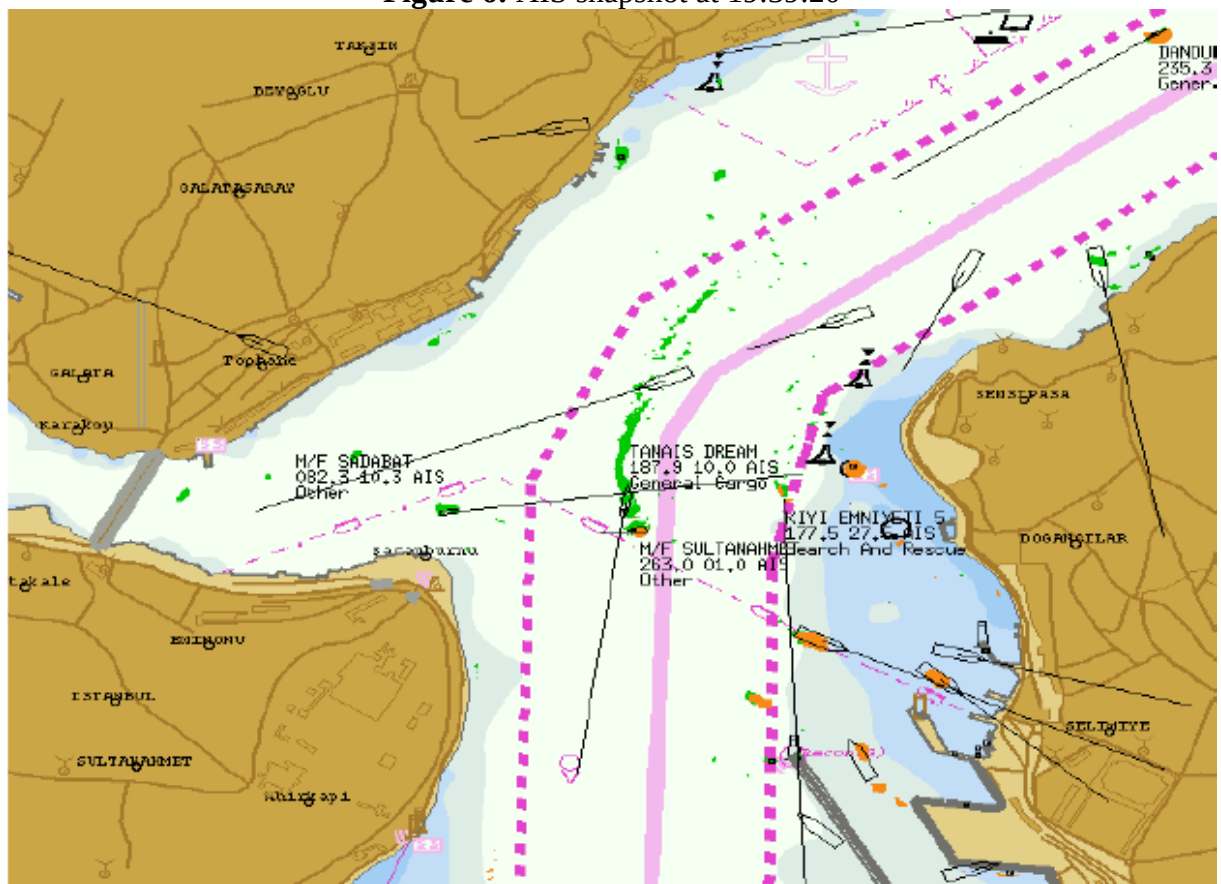


Figure 7: AIS snapshot at 19:39:39

At 19:39:20, as TANAIS DREAM was continuing turning to the port, it headed to 197 and its' speed was 10.4 knots. The master of SULTANAHMET realized the vessel in about 40 seconds from 19:38:38 to 19:39:20, but as the distance between TANAIS DREAM and his own vessel was considerably short, he decided to alter its' course to starboard to keep clear from the head of TANAIS DREAM as soon as possible. In the meantime, the master of TANAIS DREAM, who realized that the collision with SULTANAHMET was unavoidable, gave the instruction "engine astern at full speed, helm midships" and tried to warn SULTANAHMET with 5 short whistles/horns.

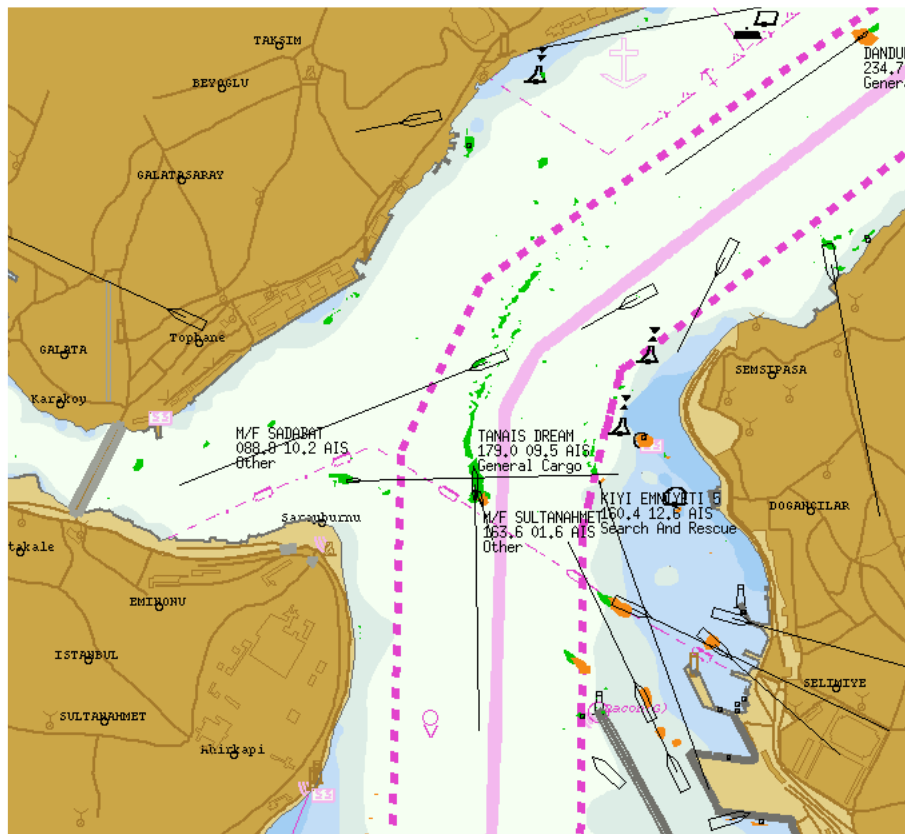


Figure 8: AIS snapshot at 19:39:50

The master of SULTANAHMET operated the engines in the direction to starboard and started to turn towards the Maiden's Tower to starboard to keep clear from the bow of TANAIS DREAM, however, this maneuver was not sufficient, the stem of TANAIS DREAM touched the port board side of SULTANAHMET and they collided at 19:39:50. Just before the contact, the master of SULTANAHMET set the engine control arms towards the port in order to reduce the severity of the crash.

1.3.2 Post Accident Events

As a result of the collision, SULTANAHMET heeled 15-20 degrees towards the portside, had a damage from port board side and a passenger was slightly injured. There was no damage to the vehicles. After the accident, the master made an announcement via the public announcement system and gave the necessary information to the passengers and requested them to be calm. In the meantime, the chief engineer and oilers carried out the necessary checks in the engine room and tanks, and the seamen carried out the passenger controls according to the master's instructions. After the controls carried out, the master determined that there was no risky situation for the navigation of the vessel and continued the voyage and berthed to Sirkeci Port.

After the collision, the master of the TANAIS DREAM stopped the engines, which were running astern at full speed before the collision. In the meantime, with the inertia of the vessel during the accident, the vessel headed up to 169 from 179 and its speed decreased to 7 knots. The master gave the instruction "hard to starboard" to the helmsman and make the engine run at dead slow ahead. Meanwhile, he instructed the chief officer to inform Sector Marmara from VHF and he asked the boatswain, who was at the forecastle deck at the time, to check the fore peak and other tanks. He dropped anchor in front of Yenikapı according to the instruction from Sector Marmara.

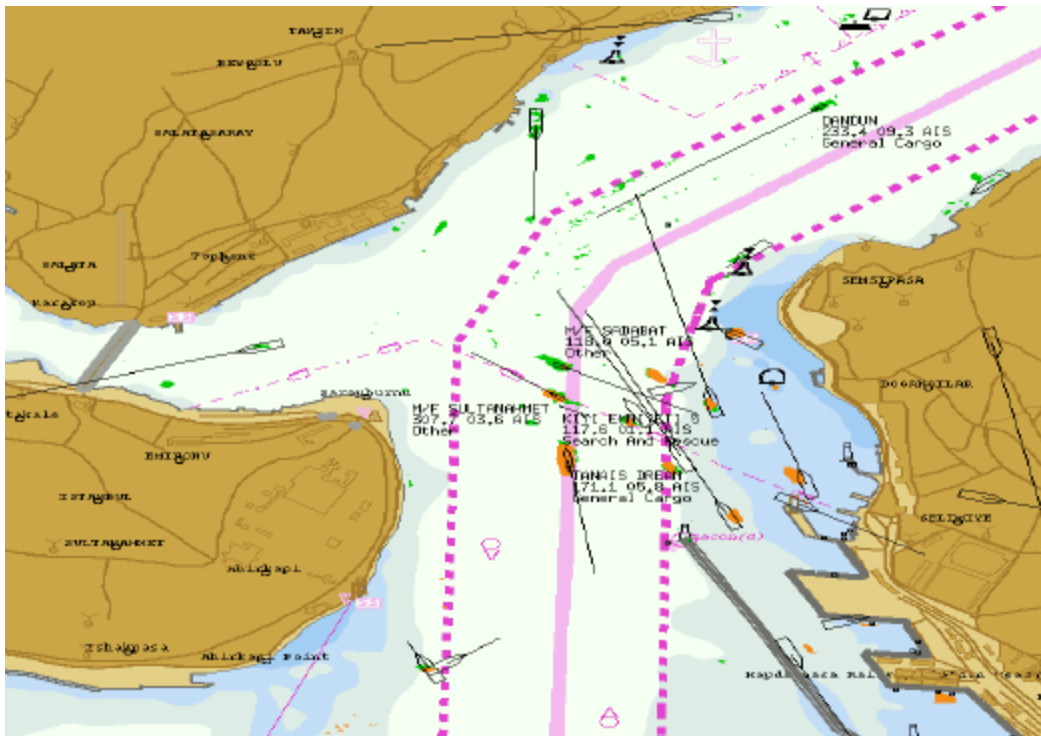


Figure 9: AIS snapshot at 19:42:50

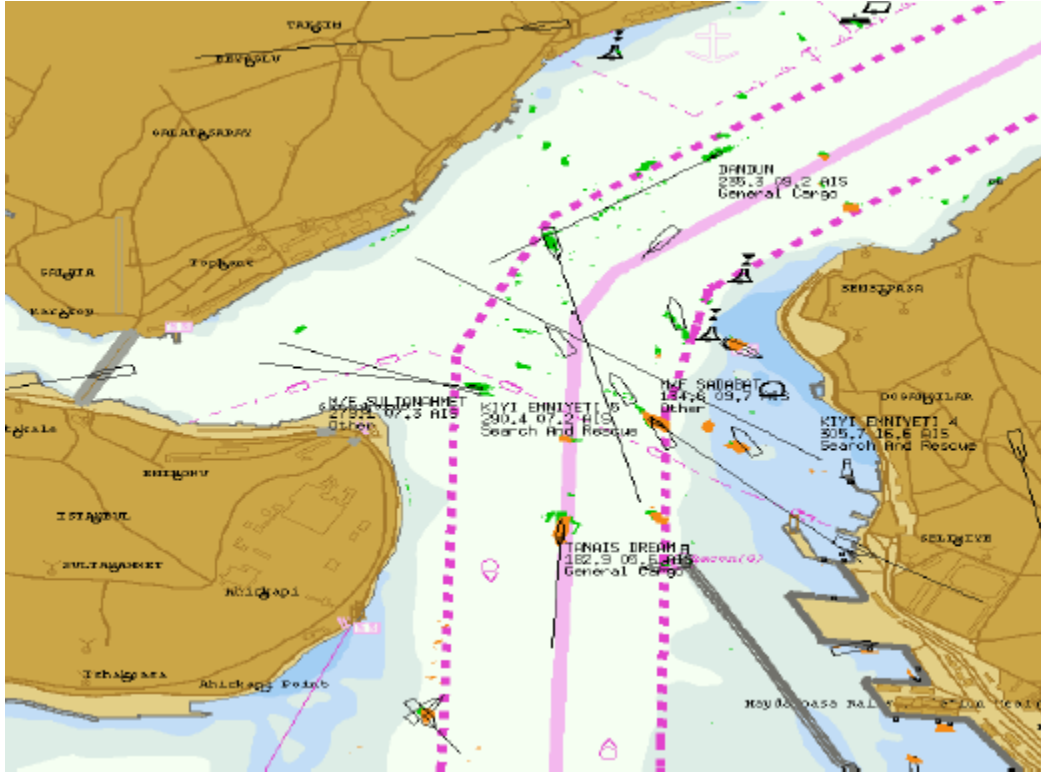


Figure 10: AIS snapshot at 19:44:42

1.4 The Car Ferry SULTANAHMET

1.4.1 Other Information Regarding the Vessel

SULTANAHMET was built in 2008 in Istanbul as one of the four sister ships. The vessel has a capacity of carrying 80 cars together with 598 passengers in summer time and 396 passengers in winter time. The navigation zone that is allowed in the vessel's Certificate of Seaworthiness is Istanbul port navigation zone and the vessel is manned with a total of 6 personnel consisting of 1 Master (II/2), 1 Chief Engineer (III/3), 2 seaman and 2 oiler according to Minimum Safe Manning Certificate. The vessel has been operating on the Sirkeci-Harem line since it was first built, and it can also provide service on Eskihişar - Topçular line especially in the summer months when the vehicle density in traffic increases. On the same line, 5 vessels are actively operating.

The vessel has a voith-schneider propeller system at the bow and at the stern, and the vessel's control is provided via these systems. These systems, in which propulsion of the vessels is provided by vertically moving blades placed on a horizontal disc and the lift force occurring on the blades, are preferred in narrow waters with heavy traffic because they provide very high maneuverability, they don't need a steering system, they enable maneuvering easily

without changing the direction of rotation of the main engine. Ships are propelled and navigated by the control levers of both propellers shown in Figure 11.



Figure 11: Engine Control Levers

1.4.2 IDO Istanbul Deniz Otobüsleri San. Tic. A.Ş. (Istanbul Sea Busses Industry and Trade Inc.)

Sea transportation of Istanbul was mostly provided by Turkey Maritime Organization City Lines Administration until 1987. In 1987, IDO Istanbul Deniz Otobüsleri Sanayi ve Ticaret A.Ş. (Istanbul Sea Busses Industry and Trade Inc.) was founded by Istanbul Metropolitan Municipality in order to contribute the sea transportation of Istanbul and to solve the traffic problem. In 2005, the management, ferries and ports of City Lines Administration of Turkey Maritime Organization was transferred to IDO. With the transfer process, Istanbul

Metropolitan Municipality became the most important authority responsible for sea transport in Istanbul. In June 2011, IDO A.Ş. was privatized; and the management of IDO was taken over by the Joint Venture, TASS (Tepe-Akfen-Souter-Sera). IDO is currently operating on 16 lines with 52 vessels in total, consisting of 24 Sea Busses, 9 Fast Ferries, 19 Car Ferries, and carries more than 50 million passengers and more than 7 million vehicles per year in average.

1.4.3 Key Personnel

The master of the vessel is 41 years old and has Unlimited Master competency (STCW II/2) and has about 15 years of experience at sea. Since 2005, he has been working as a master. He has been working for IDO for 7 years and has been working on the vessels on Sirkeci-Harem line for 2,5 months. He stated that he had suffered from a stomach problem at home before the accident, and he had vomited 3 - 4 times just before his shift, which is why he asked the company officials for permission for his shift 2 days later. It is considered that the master was not fatigued during the accident.

Chief Engineer of the vessel is 50 years old and has Unlimited Chief Engineer competency (STCW III/2) and has been working onboard ships since 1986. He has been working for IDO since 1997 and he has been working on the Sirkeci-Harem line since 2008 and has been working onboard SULTANAHMET for 4 years.

The deck-hand, who is assigned as the look-out, has the able seaman competency and has 12 years of experience at sea. He has been working for IDO since 2007, working on this line for 5,5 years and working onboard SULTANAHMET for 3 years.

1.4.4 Navigation Shift and Working Order on the Bridge

In accordance with the Minimum Safe Manning Certificate, the vessel must be manned with 6 personnel in total including 1 master, 2 deck-hands, 1 radio officer (in case that within the coverage area of VHF, when at least two deck seamen has short range radio operator competency, there is no need for an additional 1 radio officer), 1 chief engineer, 2 engine crew, and there were 6 personnel during the accident onboard, who have the competencies in compliance with the Minimum Safe Manning Certificate.

The masters of the vessel work in a shift structure that they work in the day shift (09:00-18:00) for two consecutive days and work in night shift (18:00-09:00) for two consecutive days and have two days off for the next two days.

Other crew members working onboard work in an order that they come to work around 11:00-11:30 in the morning and they go back home at the same time in the next day and have rest (work for 1 day and rest for 1 day, 1 day-off in a week at the weekend), that is also described as 24-in 24-out.

Pursuant to the safe management system; a master, a chief engineer and a seaman, assigned as a look-out, shall be present on the bridge onboard during the navigation between Sirkeci-Harem. In addition to their professional duties which is in the job definition and notified to them by the company, the chief engineers were also assigned as look-out in accordance with the instruction of "He/she carries out an effective look-out on the bridge during the navigation". The other ordinary seaman onboard is assigned to carry out checks on the car deck and the passenger lounge during the navigation and to coordinate the car traffic on the car deck in the loading-unloading operations.

However, it was determined that there was no deck personnel assigned as the look-out on the bridge during the accident because the ordinary seaman assigned as the look-out was sent to lounge for meal by the master.

1.4.5 Bridge Navigation Equipment and Navigation

The bridge of SULTANAHMET was built as completely closed and can be controlled from two separate console in head-stern direction, thus is a section where all kinds of navigational equipment are in pairs. Voith-schneider propeller system is present onboard and the vessel's both propulsion and starboard-port movement are provided with this system, and thus there is no standard steering system, steering engine etc. There is a self-steering (autopilot) system onboard. When the vessel is on autopilot, the autopilot is designed to be deactivated immediately as soon as any intervention is made to the control levers of the vessel. On the bridge, there is one X-band arpa radar and a repeater on both two consoles. The use of AIS combined with arpa radar is possible. When the desired vessel is selected in the radar display, the information from the AIS can be displayed.

In addition, both two consoles have an AIS monitor with a screen width of 30 cm. The monitor has a touch screen and the location, speed and course of the selected vessel can be seen on the screen.



Figure 12: The Radar Display onboard SULTANAHMET

During the interview with the master, he stated that both before departure from Sirkeci and Harem and while the vessel was at the pier, they received information from the radar working combined with AIS and from the AIS monitor whether there was a vessel at offshore of Beşiktaş going down and a vessel in front of Haydarpasha going up, and also regarding their movements and names. In addition, he also stated that they started navigating after being informed about the approaching vessels by listening to the call channel of VTS. He stated that during the navigation, if there were any vessel in the mentioned location, he went to the north if possible after the departure from Harem and passed through traffic separation scheme at a suitable time and after the departure from Sirkeci he reduced speed to give way to the transit ship passing through. He stated that they were trying not to pass through the transit ship's bow passing the Istanbul Strait and they passed through their sterns, if possible.

The master stated that during the navigation, the masters working on the Sirkeci-Harem line have to use control levers with one hand, and have not too much opportunity to check radars since they have to keep watch looking at the head direction because of local and international heavy vessel traffic, navigation hardships such as current, sharp turns etc. at Istanbul Strait

and navigation shortness, and they decide on the course to follow and the changes on the course generally after the visual evaluations, and that they could not make much use of radar checks.

He stated that especially after the departure from Harem, the intense lights on the shore at the Beşiktaş-Karaköy coast negatively affects their vision, and thus they benefit from the ship's shadows, which blocks the lights on the shore in order to determine the movements of the vessels going down to south.

1.4.6 Safety Management System (SMS) and Its' Applications

The SMC (safety management certificate) for the vessel was issued by Türk Loydu on 21st of February 2011. The intermediate survey was conducted on 20th of January 2014.

DOC (document of compliance) certificate was issued by again Türk Loydu on 12th of April 2012. The last annual survey of the DOC certificate was carried out on 14th of May 2014.

In paragraph 4.2.4 of the section on navigation procedures of the safety management system manual, it is stipulated that there shall be a lookout on the bridge and in the passenger lounge on the ferryboats while navigating. In paragraph 4.3.4 on the navigation in traffic separation schemes, the following phrase is included; "In the case of crossing the traffic separation lanes, the angle closest to the perpendicular to the direction of general traffic separation shall be preferred as much as possible".

1.4.7 Blind Spot on the Bridge

The vessel has 2 control consoles on the bridge in head-stern direction. During navigation, the master controls the engines and use navigation devices such as radar etc. by sitting on the seat mounted just in front of these consoles. It is not possible for him to handle and manage the vessel without sitting on the aforementioned seat. The bridge was built to be completely surrounded by rectangular portholes to provide 360-degree vision. There are perpendiculars to separate the portholes and carry the flying bridge. One of these perpendiculars is in front of the master's seat approximately 1-1.5 meters away, on the slightly right side, and have about 30 cm width. It is stated by the master that this perpendicular creates a blind spot for ships and vessels, especially small sized ones on the starboard bow.



Figure 13: The Perpendicular Causing Blind Spot on the Bridge of SULTANAHMET

1.5 TANAIS DREAM

1.5.1 Key Personnel

The master is a 55-year-old Russian citizen. He has 24 years of experience at sea and he has a certificate of competency as oceangoing master (STCW II/2). He has been working as a master since 2001 and has been working onboard TANAIS DREAM for a total of 3 years with intervals.

The chief officer of the vessel (STCW II/2)) is a 26-year-old Russian citizen. He has 10 years of experience at sea. He has been working for the same company since 2006. This was his first duty as a chief officer and he has been working as the chief officer onboard this vessel for a month.

The seaman who was working as the helmsman at the time of the accident is an able seaman. He is a 34-year-old Ukrainian citizen. He has 10 years of experience at sea and has been working for the same company for 2 years, 2 months of which is onboard this vessel.

1.5.2 Safety Management System (SMS)

SMC certificate for the vessel was issued by Russian Maritime Register of Shipping Classification Society on 18th of November 2013.

The DOC certificate was issued by again Russian Maritime Register of Shipping Classification Society on 5th of May 2012. The last annual survey of the DOC certificate was carried out on 25th of April 2014.

1.5.3 Shift Order During Navigation in Narrow Waters

It was observed that the chart was hanged on the bridge, which was signed by the master and issued to show that during the navigation in narrow waters, there should be the master, the deck watch keeping officer keeping watch, and a deck personnel working as a helmsman on the bridge, and in the engine room; a chief engineer, an officer in charge of an engineering watch, an electrician and an engine personnel, and on the fore castle deck; a boatswain and a deck personnel for the look-out.

It was stated that there were the master, the chief officer and a seaman working as a helmsman on the bridge at the time of the accident. It was stated that the aforementioned personnel were all well rested and that they did not have any fatigue.

1.5.4 Navigation Plan

In the navigation plan which was prepared by the second officer of TANAI DREAM and signed by all the deck officers including the master, 51 turning points in total were determined, Novorossiysk (Russia) as departure point and Castellón (Spain) as destination point. A separate navigation plan was prepared for Istanbul Strait, consisting of 16 turning points. When VTS records were examined, it was evaluated that the vessel navigated in accordance with the course and turning points specified in the navigation plan.

However, in the section titled general information and danger points in the annex to the navigation plan, it is stated that "there is a current with southern direction at Istanbul Strait and that its speed reaches to 7 knots at the south of the Fatih Sultan Mehmet Bridge from time to time" but the heavy local vessel traffic at the locations especially close to the exit of the Strait is not mentioned. On the other hand, it is stated that there should be caution by referring to the heavy vessel traffic in the Çanakkale Strait.

	ФОРМЫ СИСТЕМЫ УПРАВЛЕНИЯ БЕЗОПАСНОСТЬЮ SAFETY MANAGEMENT SYSTEM FORMS		Date of issue Версия раздела: 1 Section Version Стр. из № _____
	ПЛАН ПЕРЕХОДА PASSAGE PLAN		
	Ссылка: Накопитель судовых процедур, Процедура 2.6. Reference to source: Procedure 2.6 of File of Shipboard Procedures	Код формы Form code: SM 27	

ISTANBUL STRAIT VOYAGE PLAN

W.P. CROSS OUT WHEN PASSED	Время Time	Ссылка/ название Reference /WP Name	Lat.	Long.	Смена курса/ Alter Course to:	Береговые ориентиры / Coast landmarks			Расст. От КТ до KT / Dist. Wp to Wp	Расст. Distance	Примечания / Remarks
						Name	Distance	Bearing			
1.		2	41° 20.500' N	029° 04.300' E	190,0°	-	-	-	6,85 nm	440,61 nm	TSS N.Bosporus
2.		3	41° 13.700' N	029° 07.700' E	208,0°	-	-	-	1,60 nm	442,21 nm	Entrance Bosporus
3.		4	41° 12.200' N	029° 06.700' E	224,0°	FL.G.3s10m7M	0,62nm	283°	1,90 nm	444,11 nm	
4.		5	41° 10.840' N	029° 04.950' E	219,0°	FL.(3)G.15s33m5M	0,33nm	307°	1,86 nm	445,97 nm	Kavak Br
5.		6	41° 09.400' N	029° 03.400' E	180,0°	FL.(3)R.15s16m8M	0,25nm	121.5°	0,42 nm	446,39 nm	
6.		7	41° 08.870' N	029° 03.400' E	145,0°	FL.G.3s10m9M	0,53nm	313°	1,74 nm	448,13 nm	
7.		8	41° 07.450' N	029° 04.700' E	180,0°	FL.(2).R.10s13m8M	0,77nm	114°	0,25 nm	448,38 nm	Yenikoy
8.		9	41° 07.200' N	029° 04.700' E	222,0°	FL.R.3s16m8M	0,84nm	078°	1,13 nm	449,51 nm	
9.		10	41° 06.350' N	029° 03.700' E	198,0°	FL.(3)R.15s14m9M	0,58nm	119.5°	0,36 nm	450,92 nm	
10.		11	41° 06.000' N	029° 03.550' E	181,0°	FL.(2)R.10s12m8M	0,29nm	135°	1,05 nm	451,97 nm	
11.		12	41° 04.950' N	029° 03.540' E	219,0°	FL.G.3s12m5M	0,24nm	261.5°	0,58 nm	454,06 nm	
12.		13	41° 04.500' N	029° 03.050' E	197,0°	FL.(3)G.15s7m8M	0,11nm	268°	1,51 nm	455,57 nm	
13.		14	41° 03.050' N	029° 02.450' E	234,0°	FL.R.3s27m12M	0,25nm	105°	2,48 nm	458,24 nm	
14.		15	41° 01.600' N	028° 59.800' E	206,0°	FL.(2)G.12s15m7M	0,37nm	264°	0,34 nm	458,05 nm	
15.		16	41° 01.300' N	028° 59.600' E	182,0°	FL.WR.3s11m14-11M	0,47nm	135°	1,90 nm	459,95 nm	
16.		17	40° 59.400' N	028° 59.500' E	226,0°	FL.WR.3s11m14-11M	0,62nm	41°	2,94 nm	462,89 nm	Exit Bosporus

Figure 14: Navigation Plan of TANAIS DREAM

1.5.5 Maneuver Characteristics

The maneuver diagram of TANAIS DREAM is affixed to the wing on the bridge. The time necessary to stop while proceeding at various speeds and when the instruction of full astern is given on loaded or ballast condition and the distance to be covered before stopping are given separately. For example; it should be understood that when proceeding full ahead on fully loaded condition and full astern instruction is given, the vessel will stop in 8 minutes 40 seconds and 1760 meters away.

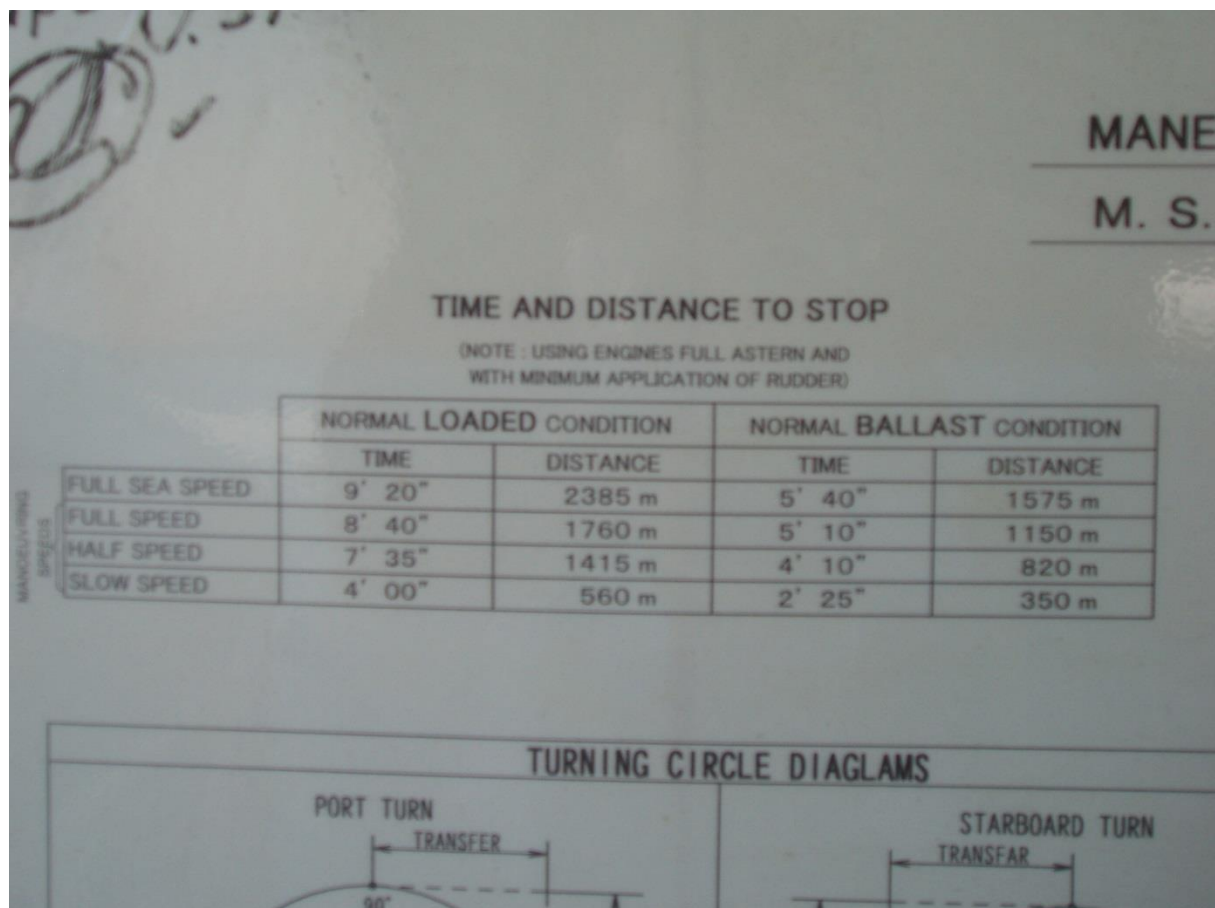


Figure 15: A Part from the Maneuver Diagram of TANAIS DREAM

1.6 Condition of the Damage

1.6.1 Damage Sustained By SULTANAHMET

There are bends and tearing on the portside shell plate and frames of passenger deck and damage to portholes, insulating coating, cables and seats. There is slight bend on shell plate and its' structural members, which is under the passenger deck, and slight damage to the cables and insulation materials. There are also bends on the guardrails on the portside.



Figure 16: The Damage to the Board of SULTANAHMET

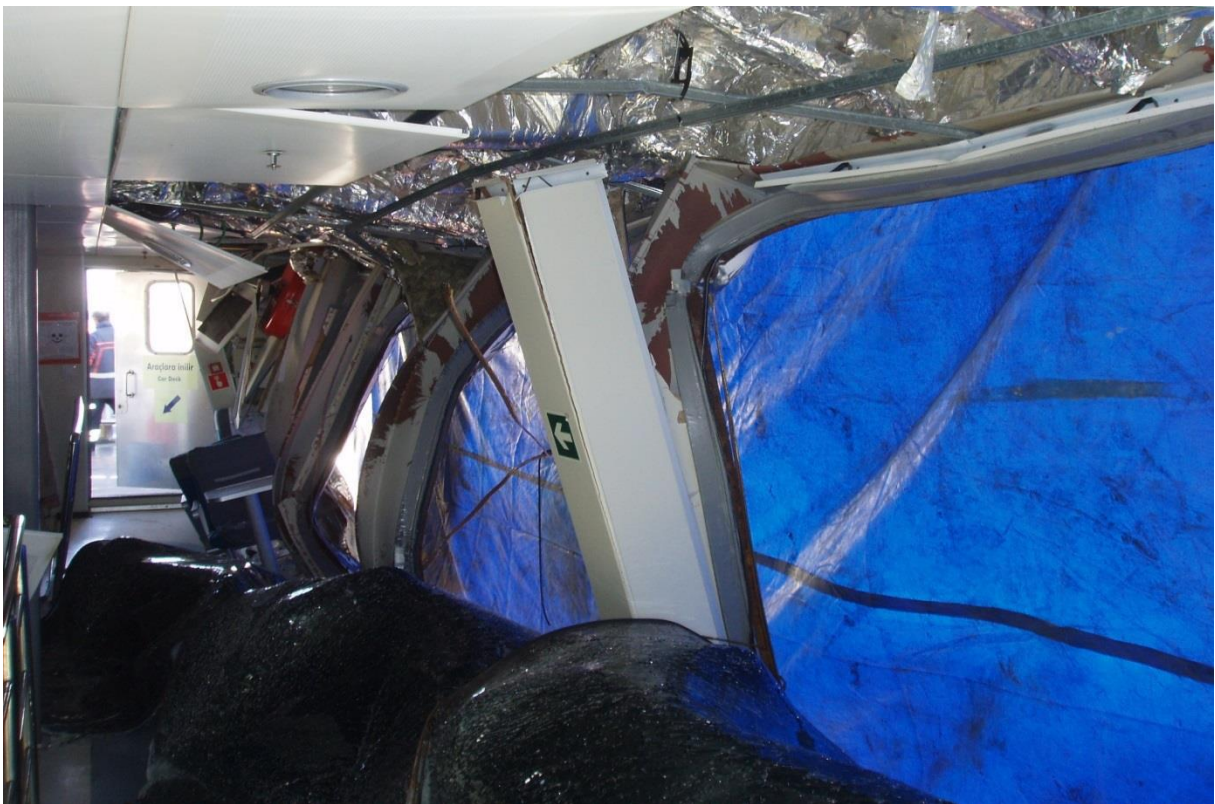


Figure 17: The Damage to the Lower Deck of SULTANAHMET

1.6.2 Damage Sustained By TANAIS DREAM



Figure 18: The Damage to the Forecastle of TANAIS DREAM

At the forecastle of the vessel, there are inward bends of about 4-5 meters on bulwark between starboard hawse and center hawse and on its structural members, and bends on the guardrails and the pillars which are above these, and inward dent of 4 meters on shell plate which is right below this.



Figure 19: The Damage Occurred at the Bow of TANAIS DREAM

1.7 National and International Regulation on Maritime Traffic Through Istanbul Strait

1.7.1 Montreux Convention Regarding the Regime of the Straits

Montreux Convention Regarding the Regime of the Straits is an agreement signed on July 20, 1936 by the countries with a coast on the Black Sea and the UK, France, Japan, Greece, Yugoslavia and Turkey and an agreement regulating the transient regime of the Straits. In the article 2 of the Convention, it is stated that "In peace time, without prejudice to the provisions of Article 3 on health issues, regardless of the day and night, and its' flag and type of cargo, the merchant ships, shall benefit from the freedom of passage from the Straits and carrying out a roundtrip, without being subject to any procedure." It is also ensured in the same article that the process of requesting the assistance of a marine pilot and tugboat is optional.

1.7.2 Code on Marine Traffic Scheme in Turkish Straits and Instruction of Practice

The Code on Marine Traffic Scheme in the Turkish Straits and the Marmara Region entered into force upon the publication on the Official Gazette dated 11th of January 1994 and numbered 21815, and with this Code, for the first time in the Turkish Straits and the Sea of Marmara, the Marine Traffic Separation Schemes (TSS) were established, and the obligation to report was imposed for the vessels with a length of more than 20 meters entering the Turkish Straits. The TSS was approved by the International Maritime Organization (IMO) in 1995.

With the Code on Marine Traffic Scheme in Turkish Straits, which was published in the Official Gazette dated 06th of November 1998 and numbered 23515 and entered into force, the Code on Marine Traffic Scheme in the Turkish Straits and the Marmara Region was abolished. In the Article 27 of the Code on Marine Traffic Scheme in Turkish Straits titled Taking Onboard a Marine Pilot, it is stated that it is strongly suggested by the traffic control center for the vessel, which passes through the Turkish Straits as transit, to take onboard a marine pilot in terms of safety of life, property, navigation and environment. However, the vessels arriving to and depart from a port in the Turkish Straits Area, vessels having an accident and mechanical failure during the passage from the Strait and vessels that will drop anchor at the anchorage areas mentioned in article 23 and vessels departing from anchorage will be obliged to take onboard a marine pilot.

In Article 13 of the Code titled Speed, it is stipulated that "Within the Straits the vessels may not proceed at a speed more than 10 knots over the ground. However if more speed is needed to maintain a good steerage, the nearest Traffic Control Station shall be notified and the

Master shall proceed with care and caution at a speed which will not create any danger of collision or cause damages and make waves to the banks or properties and to other vessels en route or laid up.”

In the 34th article titled Local Maritime Traffic, it is stated that “Within the waters, between the line drawn from Turkeli Lighthouse to Anadolu Lighthouse on the North and the line drawn from Ahirkapi Lighthouse to Kadikoy, Inciburnu Breakwater Lighthouse on the South, all local vessels and passenger / ferry boats shall cross the traffic lanes on a heading as nearly as practicable at right angles to the general direction of the traffic flow and not impede the safe passage of the southbound and northbound vessels. However, if risk of collision exists, when taking action to avoid collision, both vessels shall regard to the related rules of COLREGS 72.

In order to carry out the Marmaray Tube Passage Project in a safer way, with an instruction published early in 2005, a one-way traffic application was initiated in the Istanbul Strait, and since August 2005, the vessels are still passing through the Istanbul Strait in an average of 12 hours towards north and 12 hours towards south.

1.7.3 Local Maritime Traffic Guidelines of Harbour Master of Istanbul

This guideline is published and entered into force in order to increase the safety of navigation and maritime security within the administrative boundaries of Harbour Master of Istanbul, to regulate the maritime traffic (ferryboats, city line ships, sea buses carrying out passenger and cargo transportation, passenger boats with regular voyages, tankers supplying fuel, oil and water to the vessels, recreational crafts, fishing boats, waste reception and collection tankers, agency boats, public boats, tugboats, boats belonging to non-governmental organizations, vessels carrying out fiber optic and discharge works and so on. within the administrative boundaries of Harbour Master of Istanbul) in this area, to determine the rules related to the maneuver, navigation, life, property and environment safety to be followed by the vessels within the scope of local maritime traffic within the framework of the national and international regulation, and to ensure that those who use these crafts are informed and trained.

In the paragraph 4 of Article 24 titled Rules to be Complied with by the Vessels Using Local Marine Traffic of the Guideline, it is stated that "while crossing, pursuant to the Rule 10 of the Code for the Prevention of Collision at Sea (COLREG), they shall pass with an angle

closest to the right angle within the Traffic Separation Scheme and using the shortest way, and shall not be an obstacle during the passage to the vessels passing through the strait." and in paragraph 7, it is stated that "As long as they do not have to, they shall not pass in front of the vessels passing the Strait; in case of necessity, they shall inform the Istanbul Vessel Traffic Services Center and pass in front of the transit vessels as being at least 5 cables length away, crossing shall be made from the stern of the vessels passing through as much as possible and they shall not approach more than 0.5 cable length to the sterns and boards of the vessels passing through the Strait".

In the Article 22 titled Regulations for Seafarers of the Guidelines, a reference is made to Article 13 titled Masters of the Passenger Ships Who Regularly Navigate in Local Traffic. In the Article 13 of the Regulations for Seafarers, it is stated that according to their competency certificates, the seamen to work as the master on all kinds of vessels with the capacity of 100 or more passenger and which regularly navigate in local traffic between ports within the Turkish Straits, Izmit and Gulf of Izmir, are obliged to meet the sea service, internship and education requirements stated below,

It is stated that as the sea service and internship requirement, the seamen with master and unlimited master competency certificate have to do internship on the vessels who navigate on the regular lines that they will work onboard, and this period of time is at least thirty days for the ones with unlimited master competency and at least three months for the ones with master competency,

As the education requirement, 1) they shall meet the other conditions specified in subparagraph (a) of this article, and participate in the introductory seminar that is at least five-day-long on the "Local Traffic Guide" for the regions for which they are entered into force as being prepared by the Administration,

2) They are obliged to submit the seminar participation certificate to the harbour master.

1.8 International Regulations for Preventing Collisions at Sea (COLREG)

It is stipulated at Rule 5 Look-out of COLREG 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."

It is stipulated at Rule 7 Risk of Collision of COLREG that “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.”

It is stipulated at Rule 8 Action to avoid Collision of COLREG that;

(a) Any action to avoid collision shall be taken in accordance with the Rules of this Part and shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship. (b) Any alteration of course and/or speed to avoid collision, shall, if the circumstances of the case admit, be large enough to be readily apparent to another vessel observing visually or by radar; a succession of small alterations of course and/or speed should be avoided. (c) If there is sufficient sea room, alteration of course alone may be the most effective action to avoid a close-quarters situation provided that it is made in good time, is substantial and does not result in another close-quarters situation. (d) Action taken to avoid collision with another vessel shall be such as to result in passing at a safe distance. The effectiveness of the action shall be carefully checked until the other vessel is finally past and clear. (e) If necessary to avoid collision or allow more to assess the situation, a vessel shall slacken her speed or take all way off by stopping or reversing her means of propulsion.

It is stipulated at Rule 10 Traffic Separation Schemes paragraph (c) of COLREG that “A vessel shall so far as practicable avoid crossing traffic lanes, but if obliged to do so shall cross on a heading as nearly as practicable at right angles to the general direction of traffic flow.”

It is stipulated at Rule 16 Action by Give-way Vessel of COLREG that “Every vessel which is directed to keep out of the way of another vessel shall, so far as possible, take early and substantial action to keep well clear.” and on the other hand at Rule 17 Action by Stand-on Vessel that; (a) (i) Where 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 maneuver 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) 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. (d) This Rule does not relieve the give-way vessel of her obligation to keep out of the way.

1.9 The Turkish Straits Vessel Traffic Services (TSVTS)

It was opened on July 1, 2003 to provide information, navigation aid and traffic organization services to the vessels navigating in the Turkish Straits Area and other users and became operational on 30th of December 2003. In 2008, the existing coverage area of the system was expanded to include the Sea of Marmara. There are 2 Vessel Traffic Services Centers which are in Istinye/Istanbul, and Akbaş/Çanakkale. VTS generally serves the vessels with a length of more than 20 meters which pass through transit or with stopover. The vessels within the scope of local traffic and vessels with a length of less than 20 meters are defined as passive participants. These vessels do not carry out active reporting. Therefore, VTS do not manage the traffic of these vessels except in very urgent situations.

1.10 Transit, Stopover Voyage and Local Maritime Traffic

In addition to the dangerous structure of the Istanbul Strait due to the geomorphology of the Istanbul Strait, an average of 130 transit voyage per day and a large proportion of the local traffic movements up to about 1700 are concentrated in the region where the vessel SULTANAHMET navigates during the Harem-Sirkeci voyages and in Istanbul where more than 15 million people live, 350.000 people per day in average cross between the two coasts.

The Istanbul Strait, where the vessel traffic is so heavy, is influenced specially by dense fog in spring and autumn months, whereas it is influenced by rain, snow and strong north winds in winter. Especially in the winter months, the current velocity in the Istanbul Strait increase up to 6-8 knots and strong reverse currents are formed from place to place and with the heavy vessel traffic, these adversely affects the navigation of the vessels is in the Istanbul Strait.

SECTION 2 – ANALYSIS

2.1 The Collision

The TANAIS DREAM entered the Istanbul Strait on 18th of December 2014 at 18:15 to proceed to Spanish Port of Castellon and navigated without any problems to offshore of the Maiden's Tower.

The ferryboat SULTANAHMET departed at 19:32 with vehicles and passengers which it took from Harem Pier to carry out its voyage in Harem - Sirkeci line.

As the TANAIS DREAM was sailing in its traffic lane at 11.1 knots on route 234, heading to Beyazıt Tower, when the Maiden's Tower was at abeam at 19:37, the master gave the instruction "port 10" to the helmsman for turning to the port. In the meantime, the SULTANAHMET vessel was navigating at 8.2 knots to the route 329 after departing from Harem Pier. At 19:38:38, as the vessel TANAIS DREAM was turning to the port side with a speed of 10.6 knots on its traffic lane, the vessel SULTANAHMET was heading to 305 towards Sirkeci Pier at 9.2 knots. In the meantime, there was 500 meters between two vessels.

At 19:39:20, TANAIS DREAM was heading to 197 and its speed was 10.4 knots. At the same time, SULTANAHMET was heading to 298 and its speed was 5.9 knots. In the meantime, both vessels approached each other more, and the distance between the two vessels was about 150 meters. Meanwhile, the master of the vessel TANAIS DREAM, who could not understand what maneuver the master of the vessel SULTANAHMET would carry out, gave the instruction "full astern, helm midships" and tried to warn the vessel SULTANAHMET with 5 short blasts.

After the accident, the master of the vessel SULTANAHMET was interviewed twice. The first interview was carried out immediately after the accident and the second after the accident approximately 3 months later. At the first meeting, the master stated that he realized the vessel TANAIS DREAM immediately after the departure from Harem, he carried out a maneuver to pass from its stern, however, the vessel turned to the pier early, so that they were at a head-to-head position. For this reason, he stated that he carried out a maneuver to avoid collision by changing his route towards the starboard, and did not carry out deceleration maneuver since the vessel did not slow down quickly.

In the second interview, the master of the vessel stated that he realized the other vessel about 3-4 minutes before the accident, and thought that it was proceeding to north, however, he

realized that it did not go up when he saw the images after the accident, and in addition, he thought that the vessel was in the north traffic separation lane not in the south traffic separation lane. However, as can be seen from the VTS images, the vessel SULTANAHMET did not go up to the north before the collision, and the vessel TANAIS DREAM continuously navigated in the south traffic separation lane and in fact, the accident occurred on this lane.

As it can be understood from the VTS images, the speed of the vessel SULTANAHMET was 9.2 knots at 19:38:38 and then decreased to 5,9 knots at 19:39:20. This is considered that in this 40 seconds elapsed, the master realized the other vessel and started to change its' route to the starboard. This is because it can be understood from the VTS records that there was not a major change in the route and speed of the vessel within approximately 7 minutes 38 seconds elapsed from the departure from Harem until that time. Therefore, it is considered that there is a time of 1 minute and 12 seconds (19:38:38-19:39:50) at the most between the master's realization of the other vessel and the moment of the collision. In this context, it is considered that the master of the vessel did not lookout efficiently and therefore he realized the other vessel too late.

In the first interview with the master, he stated that he had realized the vessel before the departure from Harem, which means 7-8 minutes before the collision; whereas he stated that he had realized 3-4 minutes before the collision in the second interview. It is observed that there is a clear contradiction between the two statements by the master and it is considered to be actually a maximum of 1 minute 12 seconds, as mentioned above.

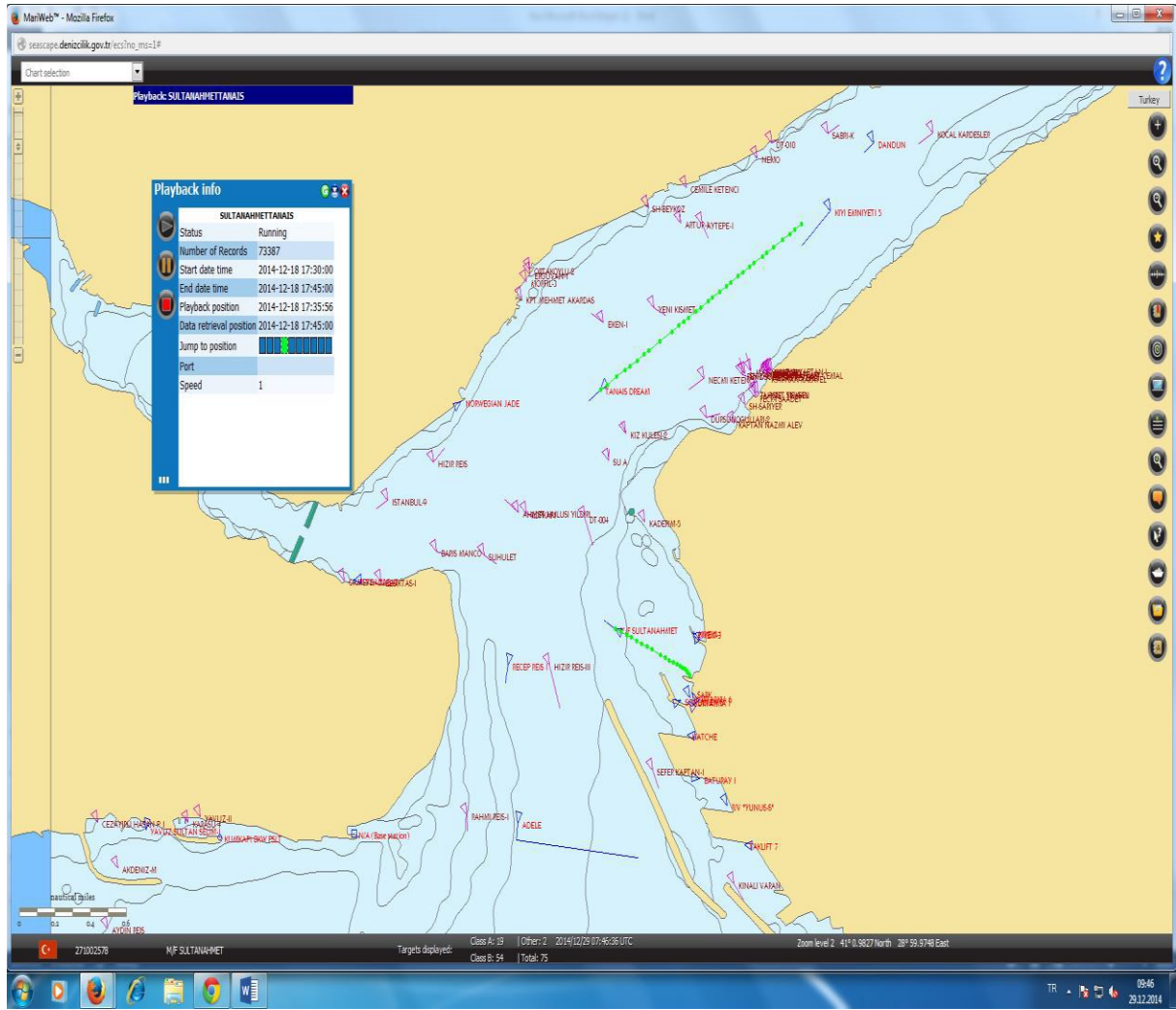


Figure 20: 19:35:56 AIS Image

This is the reason why the master of the vessel SULTANAHMET realized other vessel too late; VTS images mainly display vessels with AIS class A, and the vessels with AIS class B such as city line ferries, small passenger boats etc., which are called local vessel traffic, are not displayed on the VTS screen. In Figure 21 of the AIS system established by our Ministry, it can be seen that a large number of vessels in the local vessel traffic were present in the region. Therefore, considering the fact that there is a very heavy vessel traffic between the two coasts due to the time that the accident occurred corresponds to the rush hour (the time people get off work), it is considered that this may be a big factor for the master in realizing the vessel TANAIS DREAM too late.

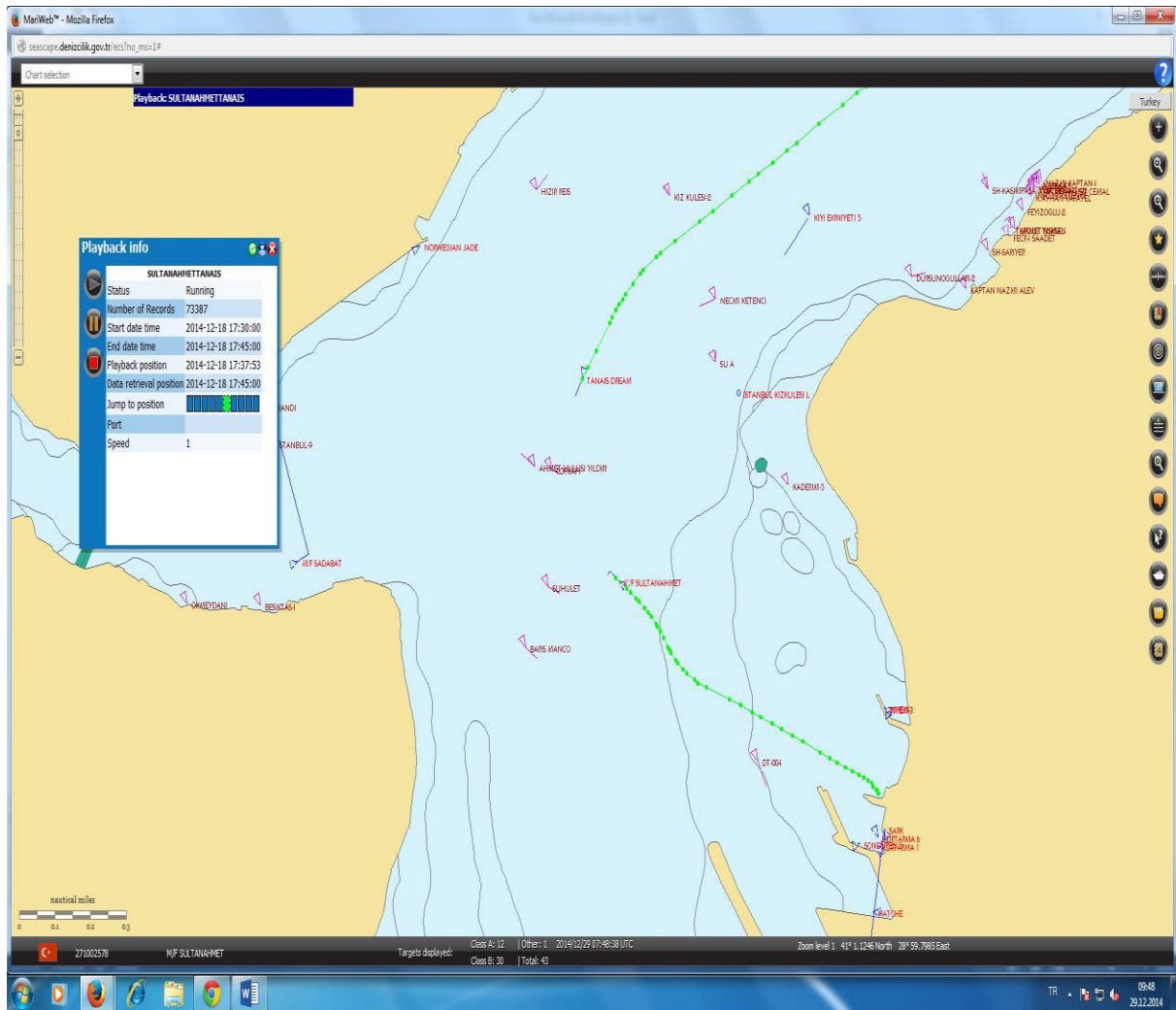


Figure 21: 19:37:53 AIS Image

Furthermore, although there is no proof such as a medical report on the how much the stomach problem the master suffered before the accident at home may have affected him mentally and physically, it is considered that this situation may have caused him a medical and psychological distress.

2.2 Lookout

Considering the fact that the vessel SULTANAHMET navigates in such a place like the Istanbul Strait where there is a lot of navigational dangers and in narrow water and the vessel traffic is very heavy, it is very important to have an effective lookout on the bridge. Moreover, to have an effective lookout is more important as it is obvious that the master has to sit down to navigate the vessel, there is a blind spot in the sight (sea) of the master caused by the perpendicular between portholes in front of the master's seat on the bridge and that the radar and AIS, which may support to have an effective lookout, are not fully benefitted from.

In the paragraph 4.2.4 of the section containing navigation procedures of the safety management system manual of the vessel SULTANAHMET, it is stated that a watchman shall be present on the bridge and in the passenger lounge during the navigation in ferryboats. It was stated that the seaman who was watchman on the bridge was used as a lookout by the master. Moreover, the chief engineers working onboard were assigned by the company to be an effective lookout on the bridge during the navigation. In this context, it is observed that 3 personnel in total were assigned to be lookout during the navigation.

The responsibilities of the chief engineers working onboard as a lookout made an impression that this duty was left to the initiative of the chief engineers. It was learned that only in the event of master's requests the chief engineers was carrying out lookout duty. Before the collision, it was found that the chief engineer working onboard SULTANAHMET did not warn the master about the presence and movements of TANAI DREAM and he realized that something went wrong when the autopilot alarmed. In this context, it was understood that the duty of being an effective lookout of the chief engineers working onboard remained as a written instruction of the company, and that the chief engineers did not consider this duty as the main duty and therefore they carried out this duty for a very limited period of time in line with the request of the master.

For the manning of SULTANAHMET, 2 seamen were found to be sufficient in the Minimum Safe Manning Certificate and only two deck personnel are available to carry out the duty of being lookout onboard. Considering the fact that one of them has to be present in the passenger lounge during the navigation because it is required by the safety management system, it is considered that it is physically difficult for the other seaman to be on the bridge continuously during the navigation. This is because the aforementioned seaman will have vital needs during the day such as toilet, food etc. Forcing a crew member to meet their needs only during loading-unloading operations in order to ensure that a seaman is always on the bridge during the navigation will force them mentally and physically. In this context, it is considered that it is difficult to have an effective lookout by appointing one seaman continuously as a lookout, and that 2 seaman present on board should carry out this duty interchangeably. However, even in this case, the necessity to have a watchman in the passenger lounge during the navigation and the duties to be carried out in the passenger lounge will be interrupted.

In the manning of the vessels according to the Directive on the Manning of the Vessels, a classification is made in line with the vessel's navigation zone, gross tonnage, main engine

power and in other navigation zones except for port navigation zones; whether it is passenger ship or cargo ship and the number and competencies of the seafarers in manning of the vessels is determined. However, the passenger ships carrying out passenger transportation in navigation areas with heavy traffic like the Istanbul Strait, where scheduled trips in short distances are carried out, or such places and the passenger ships navigating in similar navigation zones and with same gross tonnage which carry out one trip or several trips per day at the open sea or in the navigation areas with less vessel traffic are manned with personnel with same competencies and in same numbers. One of the vessels manned in the same way carries out 30-40 trips per day in a navigation zone like the Istanbul Strait which is difficult in every sense whereas the other carries out several voyages per day in a navigation area with light vessel traffic at the open sea. In this context, it is considered that the nature of the work done, the vessel traffic in navigation area, work load, working and rest periods should be taken into account in the determination of the number and competency of the seamen in manning of the vessels, and accordingly, it will be useful to make necessary changes in the Directive on the Manning of the Vessels.

2.3 The Course Followed by the Vessel SULTANAHMET

As it can be understood from the VTS images in this report, it is seen that the vessel SULTANAHMET tried to pass through the traffic separation lanes using the shortest way as indicated in the article 34 of the Regulation on the Turkish Straits Sea Traffic Scheme. However, in paragraph c of the Rule 10 titled Traffic Separation Schemes of the Code on Prevention of Collision at Sea, it is stated that a vessel shall avoid crossing the traffic lanes, but in case of necessity, they shall pass with an angle closest to the right angle according to the general traffic flow direction.

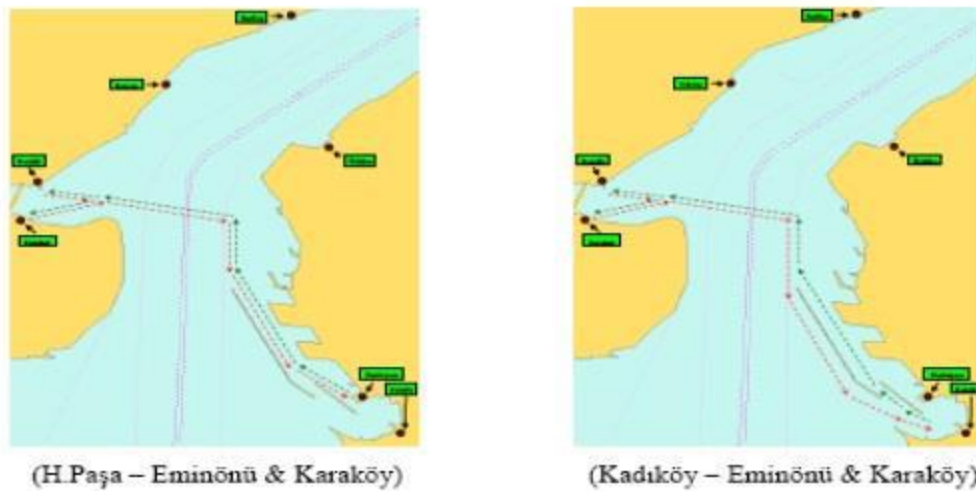


Figure 22: Courses Recommended for Some Lines in Local Traffic Guide

As it can be seen in the courses recommended with departure from Haydarpaşa and Kadıköy and destination as Eminönü-Karaköy in Figure 22 in the Local Traffic Guide, it is recommended that the vessels rise up to offshore of the Maiden's Tower, observe the traffic of the vessels crossing the Istanbul Strait and then turn back the pier/port and cross the traffic separation lanes at a right angle as much as possible according to the traffic flow direction. In fact, the vessel SULTANAHMET tried to cross the traffic separation line using the shortest way.

Considering the fact that Turkish Straits Vessel Traffic Services (VTS) do not or can not usually provide warnings or instructions regarding the navigation of the vessels navigating in the local traffic, it is considered that there is a need for an order or a system to manage the traffic of the vessels up to 1700 per day in number which use the local vessel traffic.

2.4 Not Taking a Marine Pilot Onboard

The Istanbul Strait is a waterway with a length of 17 nautical miles, its narrowest point is 700 meters, its widest point is 1500 meters, and it has 12 sharp turns. A change of course with 45 degrees at the four points of the Istanbul Strait and a change of course with 80 degrees at Yeniköy should be carried out. In addition, the Istanbul Strait is influenced by dense fog especially in spring and autumn months, whereas it is influenced by rain, snow and strong north winds in winter. Especially in the winter months, the current velocity in the Istanbul Strait increase up to 6-8 knots.

In addition to the above-mentioned dangerous structure of the Istanbul Strait, an average of 130 vessels per day transit pass the Istanbul Strait, 24 of which are tankers carrying dangerous cargo. More than 130 million tons of oil is transported annually with these tankers. Hundreds of thousands of people transported by the local traffic movement, which is up to around 1700 per day, can face accidents in which the vessels with a length of more than 300 meters may involve.

Our country is trying to increase the safety of navigation and has taken many measures including the establishment of Turkish Straits Vessel Traffic Services (VTS) in order to ensure that accidents such as Independenta and Nassia will not be experienced again. While this is the case, the impact of the passing through the Turkish Straits and especially Istanbul Strait with a marine pilot, which has a big direct impact on increasing the safety of navigation, remains limited. In 2014, 24.505 of the 45.529 vessels crossing the Istanbul Strait took onboard a marine pilot. In accordance with the provisions of the Montreux Convention

Regarding the Regime of the Straits, taking a marine pilot is optional, and therefore no compulsion can be made and as a result, only one of the two vessels passing through the Istanbul Strait passes through with a marine pilot.

In this context, taking into account that the vessel TANAIS DREAM involved in the accident while passing through the Istanbul Strait without taking a marine pilot, it is considered that the accident would have been avoided by providing early response for the maneuvers by the vessel SULTANAHMET, which may be regarded as faulty, if there was a pilot on board.

2.5 Use of Radar and AIS on the vessel SULTANAHMET

The master of the vessel SULTANAHMET stated that they learned the presence, movements and names of the vessels going up to the north or going down to the south from the display of radar and AIS working combined before the Sirkeci-Harem and Harem-Sirkeci voyages that they carry out routinely; however, since they manually control the vessel, that the local and international vessel traffic is heavy, and that there are navigation hardships such as current, sharp turns etc. at Istanbul Strait and navigation shortness, they continuously have to lookout by looking at the head direction, and therefore, they decide on the course to follow and the changes on the course generally after the visual evaluations, and they don't have too much opportunity to check radars minute-by-minute.

Both the local and international heavy vessel traffic in the area where the vessel SULTANAHMET navigates and the vessels that constitute this traffic must not stay on one course and must change their course and speed continuously because of the geographic (current, narrowness etc.) characteristics of the Istanbul Strait and following these must not stop, not even for a blink of an eye. That is because especially in the region where the vessel SULTANAHMET navigate, generally the cross sailing vessels have to constantly maneuver to avoid each other due to the heavy vessel traffic and the location of piers. Moreover, it is considered that it may be difficult to perform a healthy observation with radar during navigation since the masters control the vessel by sitting, and sometimes using their two hands due to the structure of the vessel SULTANAHMET and that there may be a problem in terms of the navigation safety if the masters do not look ahead and engage with something else in evening when the vision gets limited and in times when the vessel traffic is heavy. However, it is considered that the masters can obtain information about at least non-instantaneous movements of the vessels that will cross sail via the traces of the vessels on the radar after looking at the radar screen for a few seconds.

Another navigational aid to be used by the master to follow the other vessels is the AIS located on both consoles on-board. However, the AIS information is delivered as delayed due to its system and as a result, the aforementioned speed, route, etc. information on the AIS display will be seen as delayed.

Therefore, it is very important for safe navigation via the vessel that there should be another person on the bridge and that person should give reports minute-by-minute to the master about the presence and movements of the vessels that the master cannot see.

Once again, it is considered that the master did not carry out his radar observation, which he stated that he does routinely carry out before each voyage, before the Harem-Sirkeci voyage in which the collision occurred. This is because it was determined that there was no major change made for the course, which the vessel SULTANAHMET was on after departing from Harem, during the navigation until 1 minute before the collision. In this context, it is considered that if the vessel SULTANAHMET's master had realized the vessel TANAIS DREAM before the departure from Harem or from the radar or AIS during navigation, he would have carried out the proper maneuver so early to prevent the collision and the collision would have been avoided.

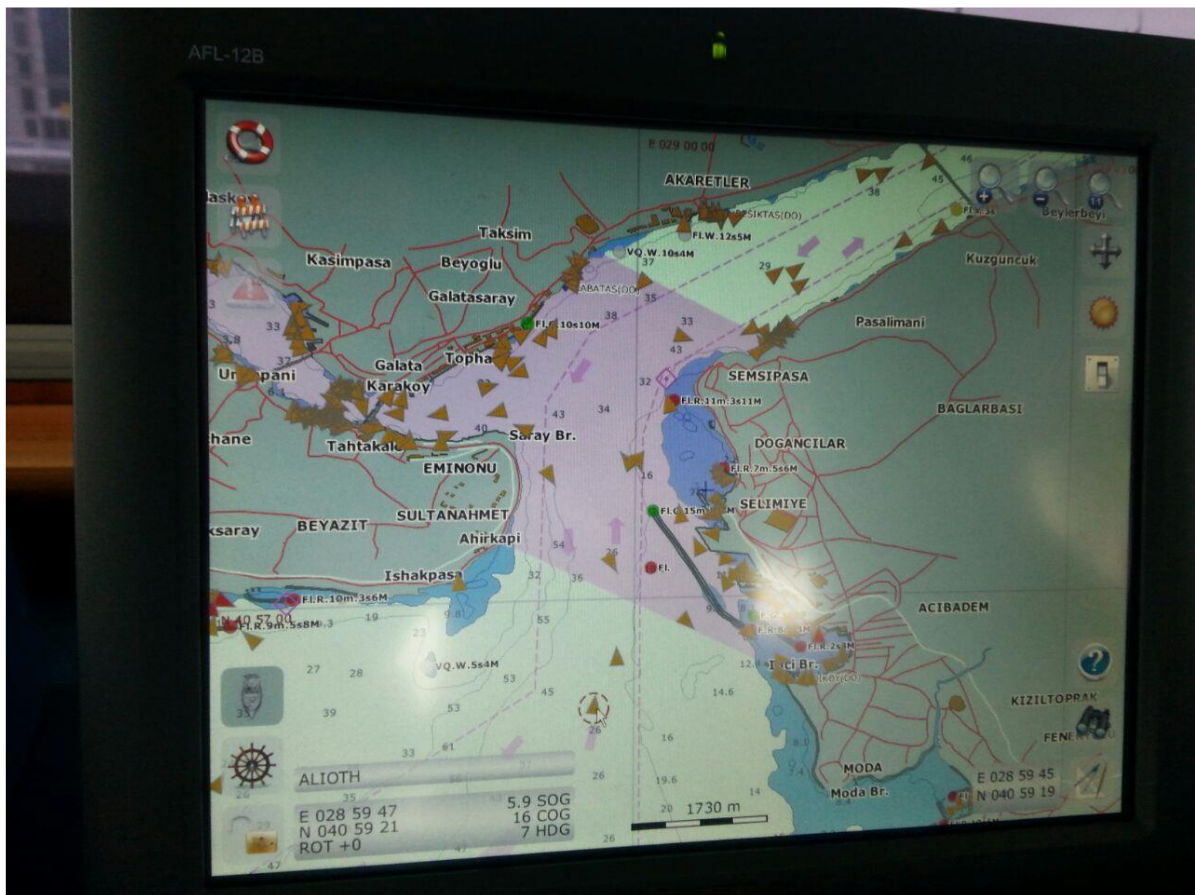


Figure 23: AIS Display of the Vessel SULTANAHMET

2.6 The Blind Spot on the Bridge of the Vessel SULTANAHMET

It was observed also by us that onboard SULTANAHMET, among the perpendicular built to separate the portholes on the bridge and to carry the flying bridges, the perpendicular, which is on the right side of the master's seat, may create a blind spot for ships and vessels, especially small sized ones on the starboard bow. The shipmasters have to turn their heads to both sides in order to see the area at sea which is behind this perpendicular during the navigation. It is considered that this situation constitutes a problem for shipmasters both in terms of ergonomics and lookout. In this context, it is considered that if the classification of the vessel is appropriate and requires this, making a modification on the vessel and making smaller or removing this perpendicular to solve this problem will contribute to the ergonomics and effective lookout by the shipmasters.

2.7 City Lights on the Coast of the Istanbul Strait

As located intensely in the Kadıköy-İnciburnu-Ahırkapı Feneri-Üsküdar-Beşiktaş-Karaköy-Eminönü-Sirkeci region called c.1 region in the vessel traffic crossing the Istanbul Strait and local vessel traffic, the city lights in the other parts of the Istanbul Strait, cause difficulties for the vessels navigation in the Istanbul Strait to see the navigation lights. It is stated by the masters and the marine pilots that to visually determine the vessels, whose navigation light's light intensity is weak, or the small sized vessels can be a serious problem. Although there is no evidence that the city lights affected the occurrence of this accident, the master of the vessel SULTANAHMET stated in the interview that the aforementioned city lights make it difficult for the vessels navigating in the Istanbul Strait to see the navigation lights. The master make a statement that the vessels going down to the south have difficulty to determine the navigation lights, especially in front of Beşiktaş and Karaköy, and that the presence of the areas where the visibility of the coast lights were blocked gives them a preunderstanding that there is a vessel in that area.

SECTION 3 – CONCLUSIONS

3.1 It is considered that the master of the SULTANAHMET vessel did not keep an effective lookout during the navigation, and did not benefit from the AIS and radar in this regard before and during the navigation, and therefore, he realized the vessel TANAIS DREAM very late,

3.2 It was determined that there was no seaman assigned as a lookout on the bridge onboard SULTANAHMET during the collision,

3.3 The vessel SULTANAHMET acted against the regulations on that crossing shall be made from the stern of the vessels passing through as much as possible and that the sterns and boards of the vessels passing through the Strait shall not be approached more than 0,5 cable length,

3.4 TANAIS DREAM preferred to cross the Istanbul Strait without taking a pilot,

3.5 The masters have difficulty to engage with something else by not looking ahead because the masters control the vessel by sitting, and sometimes using their two hands due to the structure of the vessel SULTANAHMET, the period and distance of navigation is short, they continuously cross the traffic separation scheme, and the vessels navigating in the area continuously make a change in their courses and speed and this situation has a negative effect for the masters to make observations from AIS and radar,

3.6 As it can be seen in the courses recommended with departure from Haydarpaşa and Kadıköy and destination as Eminönü-Karaköy in Harbour Master of Istanbul Local Maritime Traffic Guide, although it is recommended that the vessel rise up to offshore of the Maiden's Tower, the vessel SULTANAHMET tried to cross the traffic separation lines using the shortest way,

3.7 It is considered that the blind spot on the bridge of the vessel SULTANAHMET have a negative effect to the ergonomics and the field of vision of the masters,

3.8 It is considered that the chief engineer of the vessel SULTANAHMET did not keep an effective lookout which is in his job definition.

SECTION 4 – RECOMMENDATIONS

IDO ISTANBUL DENİZ OTOBÜSLERİ SAN. TİC. A.Ş. (Istanbul Sea Busses Industry Trade Inc.)

It is considered as appropriate that;

4.1 There should absolutely be a seaman on the bridge to keep a lookout, especially during navigation, on the vessels working on Sirkeci-Harem line,

4.2 Since it is observed that the lookout duty assigned to the chief engineers working onboard is not carried out effectively, measures should be taken to ensure that this task is carried out effectively or removed from the job description,

4.3 Instruction should be issued on how the masters working on Sirkeci-Harem line will benefit from AIS and radar,

4.4 Since it is considered that the blind spot on the bridge of the vessel SULTANAHMET have a negative effect to the ergonomics and the field of vision of the masters, a modification should be made on the vessel to make smaller the perpendiculars causing the blind spot if the classification society of the vessel deems appropriate and requires this,

4.5 It should be inspected whether the vessels managed by it comply with rules specified in the national and international regulations regulating the vessel traffic in the Istanbul Strait,

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4.6 Although 2 seamen is considered enough in Minimum Safe Manning Certificate for the vessels working on Sirkeci-Harem line, for increasing the number of seamen, the nature of the work done, the vessel traffic in navigation area, work load, working and rest periods should also be taken into account in the determination of the seamen and the number and competency of the seamen in manning of the passenger ships and boats carrying out passenger transportation in Istanbul Strait, where scheduled trips in short distances are carried out, and in such navigation areas, and accordingly, necessary changes should be made in the Directive on the Manning of the Vessels,

4.7 A constitution should be founded to govern and to supervise whether the vessels navigating in local traffic comply with the recommended courses and the instructions related to the navigation specified in Harbour Master of Istanbul Local Maritime Traffic Guide,