



Research Article / Araştırma Makalesi

**EXAMINATION OF ACCIDENTS AND CRITICAL LOCATIONS,
INVOLVING CITYLINE FERRIES IN THE STRAIT OF ISTANBUL**

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ABSTRACT

Istanbul, which is the largest city in Turkey and acting as a bridge between two continents, plays a vital role in internal and external trade. Istanbul is also a cultural and educational centre of the country. The ferry transportation between continents has a great importance in the city transportation. Approximately 20 million people live in this region and suffer from traffic jam. In Istanbul, people use alternative ways to save their time. The best alternative is marine transportation. As a transportation method, marine transportation is naturally risky. Accidents, that have caused many pecuniary losses and intangible damages have occurred during the history of transportation with ferries. This study aims to find out critical points which show dangerous areas according to data of accidents, in ferry transportation in Istanbul. Specialists may criticize these points and suggest solutions to avoid effects of ferry-line accidents in future. Specialists create certain maps to help public corporations so that they can benefit from these resulted maps when they decide to create new lines. İstanbul has lots of ferry lines and many of people use these lines; so accidents are unavoidable. This paper will be a guidebook for new lines and it also helps reduce any of losses related to ferry transportation. This study deals with issues related to ferry accidents and selection of right line in Istanbul. Creating the right line is always a difficult task for the public corporations. This study is hoped to provide different perspective for corporations so that they can select the most likely effective ways easily.

Keywords: Accidents, critical locations, cityline ferries, the strait of İstanbul..

1. INTRODUCTION

Around 90% of world trading is carried out by the shipping industry. Shipping is considered as a safe, economical, and environmentally benign form of commercial transport. Although increasing mediatisation draws public attention to accidents, the statistics show a slow but steady decline in maritime accidents over the past 10 years [1].

Every year personal injuries, economic losses and environmental damages occurs due to ship collision events [5]. A maritime accident is an incident that occurs in connection with the operation and activities of a sea vessel and resulting in:

- The death or injury of a person,
- The disappearance of a person is on that ship,
- Sinking of the ship, being lost, accepted as lost, or abandoned,

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- Having physical damage to the ship,
- Lost ability to manoeuvre the ship,
- Grounding the ship,
- Ship to shore, ship to offshore structure and ship to another ship collision or clash with another ship,
- The occurrence or probability of a serious environmental pollution. [2]

With the development of technology and increasing safety awareness, despite the high density of strait traffic lines, the number of accidents is decreasing but accidents never disappears exactly. There are 31 collision cases during eight years 2004 to 2012, according to the information gathered from Republic of Turkey Ministry of Transport, Maritime Affairs and Communications Search and Rescue Coordination Centre [2].

2. ISTANBUL FERRY LINES

This study aimed to find out critical points which show dangerous areas according to data of accidents, in ferry transportation in Istanbul. Later, specialists criticize these points and suggest solutions to avoid effects of ferry-line accidents. Specialists create maps to help for public corporations so that corporations benefit from these resulted maps when they decide to create new lines.

Maritime transporting especially ferries have big part in public transportation. Approximately strait of Istanbul region has 47 ports [4]. It means that there are lots of lines for ferries in Istanbul. Some routes in the strait are as follows:

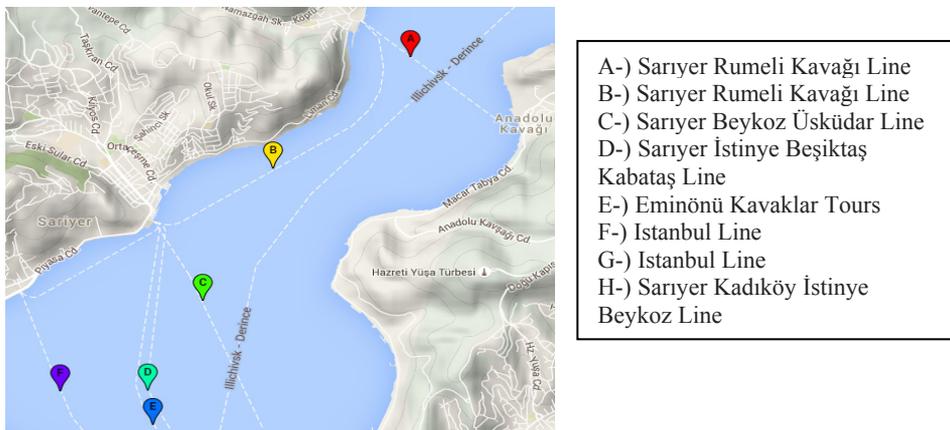


Figure 1. Istanbul Ferry Lines 1
Source: Istanbul Ferries Lines report 2015

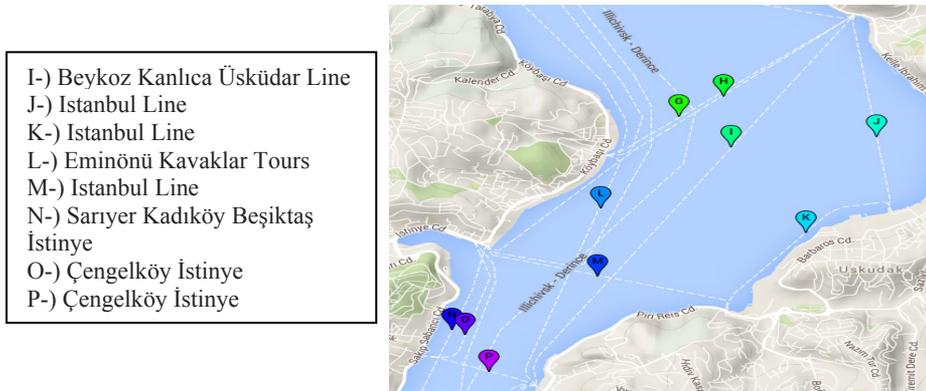


Figure 2. İstanbul Ferry Lines 2
Source: İstanbul Ferries Lines report 2015

Especially, there are lots of ferries lines at Sirkeci, Beşiktaş and Kadıköy regions. Due to traffic density, the probability of collision increases at İstanbul Ferry Lines, using the required data in this study, the relationship between accidents and density will be revealed. Images show ferries lines among these regions.

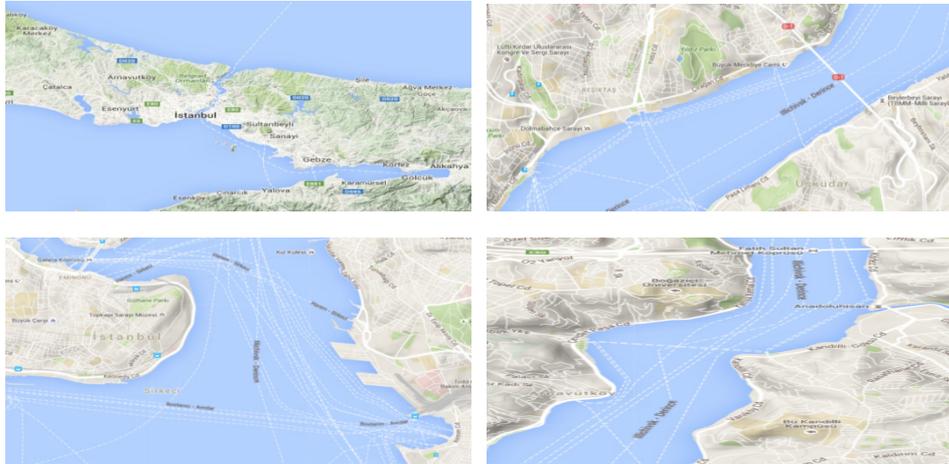


Figure 3. İstanbul Ferry Lines 3
Source: İstanbul Ferries Lines report 2015

3. ANALYZING THE SHIP ACCIDENTS IN THE ISTANBUL STRAIT

This study defines locations and reasons of accidents, 2005 to 2015, regarding with ferries operated in the Strait of İstanbul. In the first phase, all ferry lines have been identified in this region. Later, “ferries accidents” were separated in all of the accidents and locations specified in the Strait of İstanbul. The compared study examines accidents depending on intensity in the region. In the last stage, accidents were separated according to reasons, so that experts can be intense on the specific ones.

According to the information gathered from Republic of Turkey Ministry of Transport, Maritime Affairs and Communications Search and Rescue Coordination Centre, the number of the collisions recorded in 2005 through 2015 is 31 (see Tables I-V);

Table 1. Accidents' Data I

Case No	Accident Type	Accident Cause	Accident Date	First Ship Name	Second Ship Name	Accident Region	Injured	Patients	Missing	Dead	Rescue
1	Collision		10.09.2005	Nurettin Alptdogan	Sertaç Furkan	Üsküdar	0	0	0	0	1
2	Collision		29.10.2005	Karamürsel		Haydarpaşa	0	0	0	0	1
3	Contact	Fast Cruising	03.06.2006	Hasret-2	Yaren-2	Kartal Among Islands	0	0	0	0	0
4	Collision	Manoeuvring Failure	23.11.2006	Yazıcı IV	Mefkure	Kadıköy Ferry Port	0	0	0	0	0
5	Collision	Cruising Failure	05.05.2007	Cadde Bostan	Kalamış	Salı Pazarı Offshore W.	0	0	0	0	0
6	Collision	Machine Malfunction	28.01.2008	Paşabahçe		Kadıköy Port Offshore W.	0	0	0	0	0
7	Collision		13.08.2007	Salih Reis 4	Semyon Rudhnev	Ahırkapı Mooring Area	1+48	0	0	0	

Source: Republic of Turkey Ministry of Transport, Maritime Affairs and Communications Search and Rescue Coordination Center, 2015

Case 1: Fishing boat named *Sertaç-Furkan* sank. Nobody get hurt in the accident.

Case 2: A fishing boat whose name could not be learned sank after colliding a ferry named *Karamürsel*.

Case 3: There wasn't any loss of life thanks to light contacts between two ships.

Case 4: There wasn't any loss of life.

Case 5: After the accident, both ships wharfing to Sirkeci Port. Then passengers were evicted safely.

Case 6: A ferry named *Paşabahçe*, cruising between Kadıköy and Eminönü, hit Kadıköy pier because of machine malfunction at 17:30. Then passengers were evicted to the other ferry named *Anadolu F.*

Case 7: A ferry named *Salih Reis 4* [Figure 4], when cruising between Bostancı and Yeni Kapı, collided with *Semyon Rudhnev* cargo ship. After the accident ferry was wharfing to Yenikapı Port.



Figure 4. Results of Collision, *Salih Reis 4*

Table 2. Accidents' Data II

Case No	Accident Type	Accident Cause	Accident Date	First Ship Name	Second Ship Name	Accident Region	Injured	Patients	Missing	Dead	Rescue
8	Collision		25.01.2008	Şehit Metin Sülüş		Kabataş Salı Pazarı R.	0	0	1	0	0
9	Collision	Manoeuvring Failure	17.05.2004	Ayvan Saray		Balat Port	0	0	0	0	0
10	Collision	Fast Cruising	03.06.2004	Mehmet A. Ersoy	Diamond Beach	Beşiktaş Coast	0	0	0	0	0
11	Collision Grounding	Heavy Fog	13.01.2005	Şehit Karaoğlan Oğlu		Strait Umur Banklar M.	0	0	0	0	0
12	Collision Grounding	Manoeuvring Failure	27.02.2005	Nurettin Alptogan		Kadıköy Mole	0	0	0	0	0
13	Collision	Friction	12.08.2005	Paşabahçe	Nurettin Alptogan	Strait	0	0	0	0	0
14	Collision		09.02.2012	Şehit Mustafa Aydoğdu	Aydın Güler	Sarayburnu Side	0	0	0	0	0
15	Collision Grounding	Cruising Failure	05.09.2012	Karamürsel Bey		Bostancı Offshore W.	0	0	0	0	0

Source: Republic of Turkey Ministry of Transport, Maritime Affairs and Communications Search and Rescue Coordination Center, 2015

Case 8: A ship named *Şehit Metin Sülüş*, when cruising between Beşiktaş and Kadıköy, collided with a boat. After the collision one person missed from boat. The ferry passengers were evicted to Kadıköy port.

Case 9/10/11/12/13: Property damage occurred on ships. Ship was saved.

Case 14: A ferry named *Şehit Mustafa Aydoğdu*, when cruising between Kadıköy and Karaköy, collided with *Aydın Güler Ferry* which was sailing between Üsküdar and Eminönü at Sarayburnu. The ferry got damaged from front side half meter above waterline and the other, *Aydın Güler Ferry*, got little damage. There wasn't any loss of life or sea pollution

Case 15: *Karamürsel Bey Ship*, when cruising Burgaz to Bostancı, grounded at the shallow sea. The Ship was saved and then cruised to Maltepe IDO Port.

Table 3. Accidents' Data III

Case No	Accident Type	Accident Cause	Accident Date	First Ship Name	Second Ship Name	Accident Region	Injured	Patients	Missing	Dead	Rescue
16	Collision		17.07.2011	Marmaris	Hacı Reisoğlu 5	Bebek Side	0	0	0	0	0
17	Collision	Cruising Failure	23.08.2011	Bolaman	Aynacıoğlu		6	0	0	0	0
18	Collision		18.07.2009	Şehit Adem Yavuz	Omega-G	Beşiktaş Coast	0	0	0	0	0
19	Collision	Manoeuvring Failure	25.10.2009	Prof. Dr. Aykut Batka	Mert	Kadıköy Mole	0	0	0	0	2
20	Collision	Machine Malfunction	26.12.2009	Şehit Karaoğlan Oğlu		Haydarpaşa	0	0	0	0	0
21	Collision		29.01.2010	New Breeze	Mehmet Reis-II	Küçükçekmece Offshore W.	2	0	0	0	0

Source: Republic of Turkey Ministry of Transport, Maritime Affairs and Communications Search and Rescue Coordination Center, 2015

Case 16: A ship named *Marmaris*, while passing from strait, collides with *Hacı Reisoğlu Ferry*. Passengers were evicted and *Marmaris* moored to Ahırkapı mooring area.

Case 17: A ship named *Bolaman*, when cruising north side of strait to south side, collides with *Aynacıoğlu Ferry*. Six of passengers got injured. Immediately, they were achieved to hospital with coast guard. *Bolaman* was moored to Ahırkapı Mooring Area. *Aynacıoğlu* continued to its cruise and it came to Kadıköy port and passengers were evicted. After the collision reports showed that *Aynacıoğlu ferry* got damaged front side above waterline.

Case 18: A ferry named *Omega-G*, when manoeuvring, collided board to board with *Şehit Adem Yavuz Ferry* at Salı Pazarı coast. Both ferries damaged. *Şehit Adem Yavuz* moored at Sirkeci port, *Omega –G* moored at Ahırkapı.

Case 19: A ferry named *Prof. Dr. Aykut BARKA*, when cruising Kadıköy to Karaköy, collided with a fishing boat, named *Mert*, at Kadıköy mole area. Two people of fishing boat fell to sea, one of them rescued by *Şehit Temel Şimşir Ship* the other one rescued by *Prof. Dr. Aykut Barka ferry*. They were evicted to port safely.

Case 20: A ferry named *Şehit Karaoğlanoğlu*, when cruising Eminönü to Haydarpaşa, had technical problems so that the ferry collided to Haydarpaşa Port. The passengers were evicted another ferry which name is *Gündüz Abay*.

Case 21: A ferry named *Mehmet Reis-II*, when cruising Bandırma to Yenikapı, collided with *New Breeze cargo ship* which was cruising to Ahırkapı Mooring Area. Both vessels got damaged. *Mehmet Reis –II* was wharfed to Yenikapı port. Passengers were evicted safely. Two passengers got injured and were achieved to Hospital immediately.

Table 4. Accidents' Data IV

Case No	Accident Type	Accident Cause	Accident Date	First Ship Name	Second Ship Name	Accident Region	Injured	Patients	Missing	Dead	Rescue
22	Collision		02.02.2010	Go Friendship	Galatasaray	Strait Harem Port Side	0	0	0	0	0
23	Collision	Manoeuvring Failure	14.09.2010	Karamürsel Bey		Yalova Port	19	0	0	0	0
24	Collision	Manoeuvring Failure	30.09.2010	Fatih Sultan Mehmet-1		Yalova Port	7	0	0	0	0
25	Collision		26.04.2011	Altunkaya-1		Haliç Entrance	14	0	0	0	0

Source: Republic of Turkey Ministry of Transport, Maritime Affairs and Communications Search and Rescue Coordination Centre, 2015

Case 22: A cargo vessel named *Go Friendship*, flagged Marshall Islands, when cruising south of strait to north of strait, collided with *Galatasaray Ferry*. Both vessels had light damage. After the collision *Galatasaray Ferry* was wharfed to Harem port. The passengers and cars were evicted safely. *Go Friendship Cargo Vessel* moored at Büyükdere Mooring Area. Furthermore, there wasn't any sea pollution.

Case 23: A ferry named *Karamursel Bey*, when cruising Kartal to Yalova, hit Yalova port because of manoeuvring failure. According to first findings, eight of passengers injured in accident and they were achieved to a hospital. The other passengers were evicted safely. After new findings, number of injured people raised nineteen. After the necessary checks the *Karamursel Bey Ferry* cruised to İstanbul.

Case 24: A ferry named *Fatih Sultan Mehmet*, when manoeuvring to Yalova port, hit the port. A few passengers, who were standing, got injured and then they were achieved to hospital immediately. The ferry got no damage.

Case 25: A ferry named *Ship Altunkaya-1*, when cruising to Haliç, collided with concrete construction. 14 passengers got injured and 11 passengers were outpatients. They were achieved to hospitals. Vessel got damaged front side and moored Perşembe Pazarı Port.

Table 5. Accidents' Data V

Case No	Accident Type	Accident Cause	Accident Date	First Ship Name	Second Ship Name	Accident Region	Injured	Patients	Missing	Dead	Rescue
26	Collision		08.02.2013	Yeditepe-1	Amur-2521	Sarayburnu Side	7	0	0	0	0
27	Collision		26.02.2013	Ada	Gönül	Salı Pazarı Side	0	0	0	0	0
28	Collision		25.04.2013	Şehit Mustafa Aydoğdu		Kadıköy	3	0	0	0	0
29	Collision	Fog	04.05.2013	Kalamış	Erdem Karadeniz	Haydarpaşa	3	0	0	0	0
30	Collision	Personel Failure	18.12.2014	Tanais Dream	Sultanahmet	Kızkulesi Side	0	0	0	0	0
31	Collision	Equipment Failure	19.01.2015	Grande Portogallo		Gemport	0	0	0	0	0

Source: Republic of Turkey Ministry of Transport, Maritime Affairs and Communications Search and Rescue Coordination Centre, 2015

Case 26: A ship named *Yeditepe-1*, when cruising between Bostancı and Kabataş, collided with *Amur-2521* which is a Belize-flagged coaster. In accident 7 passengers injured and both vessels had damage.

Case 27: A Moldova-flagged vessel, named *ADA*, crashed into a passenger boat which named *Gönül*. Both vessels had several damages.

Case 28: A ferry named *ŞEHİT MUSTAFA AYDOĞDU*, while berthing manoeuvres, hit to "Ecem Café", which located in Eminönü Pier. 3 people in the cafe were injured slightly and they were taken to hospital.

Case 29: A ferry named *KALAMIŞ (Deniz hatları A.Ş.)* collided with *ERDEM KARADENİZ (Dentur) Passenger Boat*. After the incident, slightly injured three passengers was delivered to an ambulance. The other passengers were evacuated safely. *ERDEM KARADENİZ* was damaged upper deck and *KALAMIŞ Ferry*, was damaged bow side. Both have docked at Eminönü.

Case 30: According to information from the Port Authority of Istanbul, Belize-flagged vessel *BLUE DREAM* collided with *Sultan Ahmet Ferry*, around Maiden Tower. Both vessels had minor damage. There are no reports of injuries or pollution.

Case 31: According to information received from Gemlik Port Authority, Italian-flagged vessel named *Grande Portogallo*, hit the pier while docking manoeuvres. Ferry got little damage.

Once, all things considered, the main factors, caused the accidents, are showed in “Figure 5”;

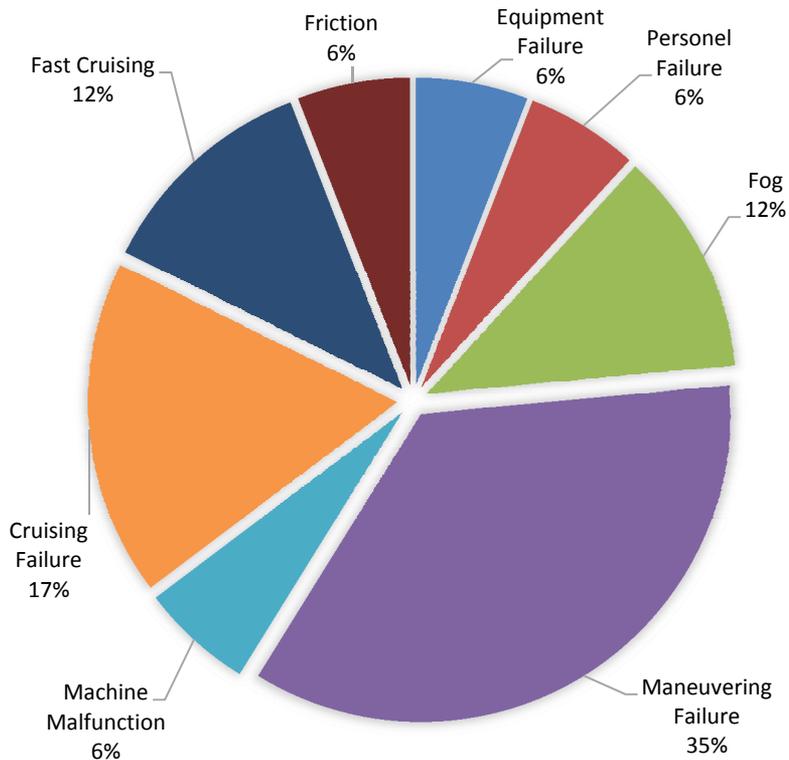


Figure 5. Percentage of Accidents' Causes

According to “Figure 5” Manoeuvring Failure has the largest share which is approximately 35%. After the factors having the greatest share is Cruising Failure its part roughly 17%. Other factors are listed as follows Fog, Fast Cruising (12%), Equipment Failure, Personal Failure, Machine Malfunction, Friction (6%). The mentioned incidents are being a form of the “accident’s definition”, human errors inhere within the maritime sector.

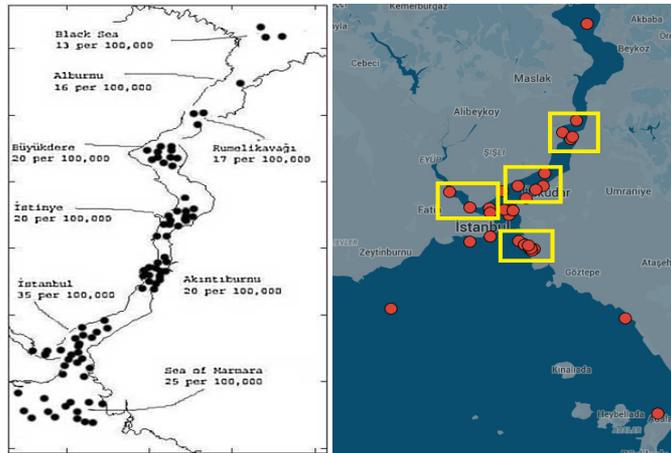


Figure 6. The Collision Density Belong to Strait of Istanbul (in 1995(left, [3]) vs in 2015(right))

4. CONCLUSION AND RECOMMENDATION

Istanbul has lots of ferry lines and many people use these lines so accidents are unavoidable. This paper will be guidebook for new lines and it also will reduce any of losses related to ferry transportation. This study deals with issues related to ferry accident and selection of right line in the Strait of Istanbul. Creating the right line is always a difficult task for the public corporations. Such these studies provide different perspectives for corporations and they can select right way easily.

It is compared with the other study established in 1995 from Kornhauser, A. L. and W. A. Clark. The Comparison shows reasonable similar results as shown in Figure 5. When accidents investigated, Kadıköy-Sirkeci-Üsküdar Lines have the highest potential risk so that voyages should be done controlled crossing in this area. Upon analysing the causes of accidents, “Manoeuvring Failure” has the largest effect on ferries collision so that personals must receive training from specialised trainer. Considering occurred accidents, the mentioned incidents are being a form of the “accident’s definition”, human errors inhere within the maritime sector. When it’s checked the results on these regions, more training to crews should be given about related accident causes. Considering the results, although some of injuries occurred in few incidents, the wounded were transported to the hospital immediately to take medical treatments. Furthermore, there wasn’t loss of life and also there wasn’t any sea pollution in these accidents. Both studies show that strait line has great potential risky for any of vessel because of occurred collision between ferry and other type of vessel. For further studies we suggest that they should focus on risky zone to avoid accidents and officers must take precautions about these situations.

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