

# The Analysis of Maritime Traffic Environments in Saigon Fairway

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**요약** : Saigon Port within the port system of the Vietnam Maritime sector is one of the port having highest throughput and productivity in the country. The marine traffic of Saigon water ways is the heaviest in Vietnam and the number of marine accidents in this area are much higher than the others area in Vietnam. In order to reduce the risk of the accident in Saigon fairway, this paper concentrates on marine accident frequency in this area. The marine traffic and the marine accident were analyzed to find out the probability of vessel collision and the marine traffic risk. It follows that the main shipping route through Saigon fairway has the high risk of ship-ship collision

**핵심용어** : Saigon port, Saigon fairway, marine traffic environment, marine accident, ship collision

### Contents


1. **Introduction**  
Saigon Fairway  
Saigon Port
2. **Maritime Transportation Environment**  
Weather condition  
Maritime Accidents
3. **Maritime Traffic Survey**  
Ships' Calls  
Vessels' Tracks and Analysis
4. **Navigation aids and hazard**
5. **Conclusion**

### Introduction

Saigon Port is the main seaport in Vietnam with highest throughput and productivity in the Vietnam

The marine traffic of Saigon fairway is the heaviest and the number of marine accidents in this area are the most in Vietnam


Marine traffic survey was done to evaluate the marine traffic environment in Saigon Fairway



### Saigon fairway

•Saigon fairway begin from Vungtau anchorage point (Buoy 0) to Saigon Port  
 Channel length is 46 Nm,  
 The average of depth is 8.5m.  
 •The design width of the fairway is 150m  
 •Max size acceptable of ship is 32000 DWT which draft is less than 11 meter

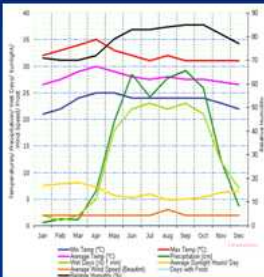
Part	Location	Distance (Nm)	Speed of current (knot)
1	Quang Phu Bay	11	1.85
2	Nga Bay river	5	1.8
3	Long Tau river	17	3.03
4	Nha Be river	5	2.02
5	Saigon river	8	3.6




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## The weather condition



Saigon climate graph



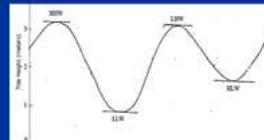
Average number of rainy day per month and hours of sunset per day

## Trend of tide in Saigon

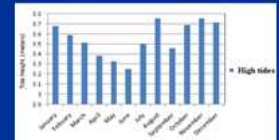
- Tide is irregular semidiurnal
- The average range of tide in this area is 3m
- The HHW (higher high water) and LHW (lower high water) in one day are not quite different
- The HLW (higher low water) was slightly higher than the LLW (lower low water)



The mean low water

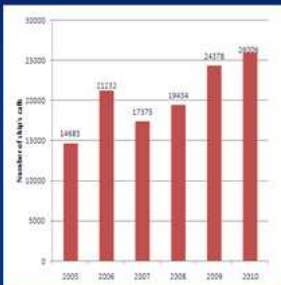


Irregular semidiurnal tide

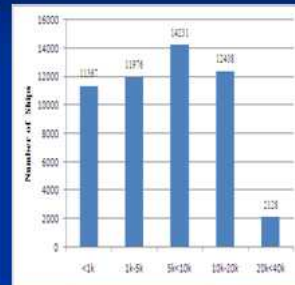


The mean high water

## Maritime Traffic

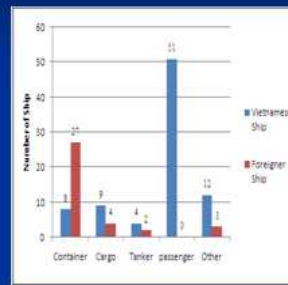


Total number of ship's calls from 2005-2010  
123110 Ships (Berths and Anchorages)

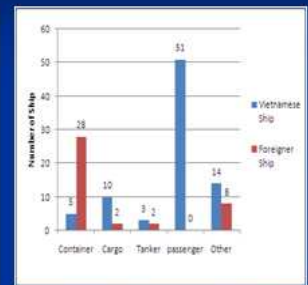


Total number of ship's calls from 2005-2010  
per gross tonnage

## Vessels' Tracks and Analysis

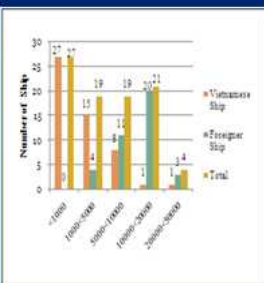


Type of vessel entered Saigon port during 72 -hour

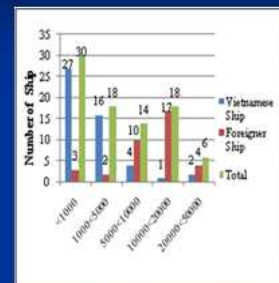


Type of vessel left Saigon port during 72 -hour

## Vessels' Tracks and Analysis



Number of Ships entered Port per GT during 72-hour

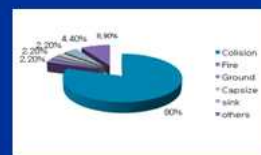


Number of Ships left Port per GT during 72-hour

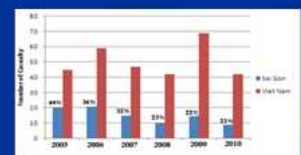
## Marine casualty

Time	Total	Kind of casualty						death	injured
		Collision	Fire	Ground	capsize	sink	others		
2005	20	17						0	0
2006	21	18	2					1	2
2007	15	11		1	1	1	1	8	2
2008	10	8					1	1	0
2009	15	11						4	10
2010	09	7						2	1

Summary of casualty from 2005-2010

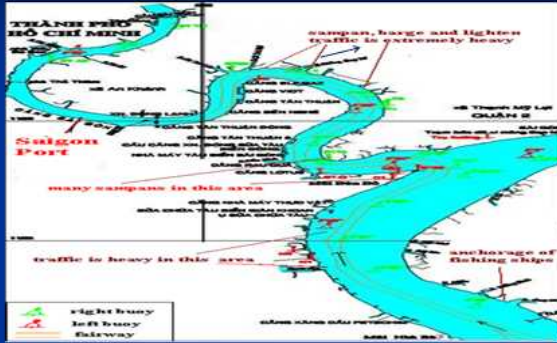


Type of casualty

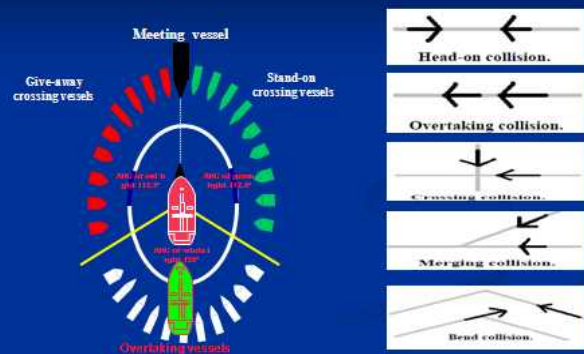


Comparison between Saigon and Vietnam

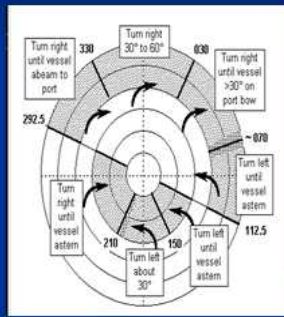
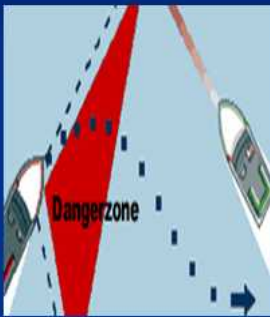
## Location of ship collision



## Ship collision in Saigon fairway



## Navigation Aids



## Position of wharf and buoy berth in Saigon Port



Terminal	Quay	Length	Depth	M.O.	Length	Depth
XHA BONH KHAIH HOI	M01	139 m	-9.1 m	B.1	160 m	-6.0 m
	B.7			B.7	175 m	-9.0 m
	B.8			B.8	190 m	-7.9 m
	B.9			B.9	210 m	-9.2 m
	B.10			B.10	190 m	-9.5 m
	B.11			B.11	160 m	-5.3 m
	B.14			B.14	120 m	-5.8 m
	B.16			B.16	200 m	-5.5 m
	B.18			B.18	175 m	-3.3 m
	B.19			B.19	210 m	-9.2 m
TAN THUAN	B.20			B.20	175 m	-6.4 m
	B.21			B.21	215 m	-10.7 m
	B.22			B.22	215 m	-9.5 m
	B.31			B.31	220 m	-4.0 m
	B.32			B.32	220 m	-4.0 m
	B.33			B.33	220 m	-4.0 m
	B.37			B.37	275 m	-11.5 m
	B.39			B.39	275 m	-11.3 m
	B.44			B.44	275 m	-9.0 m
	B.43			B.43	26.5 m	-9.0 m
TAN THUAN 2	K10	140 m	-10.0 m	B.45	26.5 m	-9.0 m
	K12	188 m	-11.0 m	B.22	20.5 m	-9.5 m
	K12A	132 m	-11.0 m	BP6	26.5 m	-10.5 m
	K12B	204 m	-12.1 m	BP7	26.5 m	-10.5 m
	K12C	189 m	-11.0 m	TL 1-3	170 m	-11.0 m
TAN THUAN 3	TY2	222 m	-10.2 m	TL 3-5	170 m	-11.0 m
				TL 1-7	170 m	-11.0 m
				TL 2-4	240 m	-11.0 m
			TL 4-6	235 m	-11.0 m	
			TL 6-8	268 m	-13.3 m	

## The restriction of marine traffic system

- Max size acceptable of ship is 32000 DWT which draft is less than 11 meter
- Many small ships navigate and anchor along the fairway
- The traffic density is the heaviest in Vietnam, marine accident and traffic jam happen frequently
- The terrain of Saigon fairway is very complex and tortuous
- The VTS (vessel traffic service) and TSS (Traffic Separation Scheme) haven't been applied in Saigon port

## Conclusion

- Port Management of Saigon should take strong comprehensive measures to restrict and exclude small ships for reduction the risk of accident in this area
- The marine traffic system should be upgraded and improved. The width of the fairway should be widen and the channel should be dredged to improve the depth of the fairway
- VTS (vessel traffic service) and TSS (Traffic Separation Scheme) should be applied in this area as soon as possible