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Trends in Mechanical Engineering Research

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b. ABSTRACT

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Abstract

A GOOD ABSTRACT SHOULD CONSIST OF INTRODUCTION, PROBLEM STATEMENT, QUANTITATIVE RESULTS & DISCUSSION AND QUANTITATIVE CONCLUSION. This is just an example of the abstract just an example of the abstract. This is just an example of the abstract. Ship generated waves can cause banks erosion as well as disturbance on stationary boats. Studies have shown that the boat generated waves are dependent on and affected by environmental factors and vessel parameters. The main environmental factors are tidal and current direction, and for vessel parameters are speeds and hullforms. This paper describes a full-scale experimental work to measure wave heights and wave angle direction on boat generated waves. The measurement method used in this paper is based on the analysis of digital video recordings and image processing techniques. This is just an example of the abstract. This is just an example of the abstract.

Keywords: Boat generated wave; wave height; wave angle
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Abstrak

Ini hanya contoh abstrak saja contoh abstrak. Ini hanya contoh abstrak. Gelombang yang dihasilkan kapal dapat menyebabkan erosi tepian serta gangguan pada kapal yang tidak bergerak. Penelitian telah menunjukkan bahwa gelombang yang dihasilkan kapal tergantung dan dipengaruhi oleh faktor lingkungan dan parameter kapal. Faktor lingkungan utama adalah pasang surut dan arah arus, dan untuk parameter kapal adalah kecepatan dan bentuk lambung kapal. Makalah ini menjelaskan pekerjaan eksperimental skala penuh untuk mengukur tinggi gelombang dan arah sudut gelombang pada gelombang yang dihasilkan perahu. Metode pengukuran yang digunakan dalam makalah ini didasarkan pada analisis rekaman video digital dan teknik pengolahan citra. Ini hanya contoh abstrak. Ini hanya contoh abstrak.

Kata kunci: Gelombang yang terhasil dari kapal; Tinggi gelombang; sudut gelombang

1.0 INTRODUCTION

Ship generated waves (SGW) is increasingly becoming an important field of study. SGW can give an impact in terms of environmental effects such as coastal / bank erosion, destruction of fragile water plant and disturbance of silt, disturbance to parked boat and anchored vessels, and stability of smaller boat [1] Thus, SGW is sometimes included as a design criterion similar to main dimensions, speed, deadweight capacity, number of passenger and manoeuvrability of the ship.

There are three main disturbances that can cause bank erosions namely current, wind-generated waves and SGW [2][3]. The disturbances also give different effect of erosions pattern on the river banks. River current and wind-generated waves will cause erosions mainly at the corners of the river bank while SGW can cause erosions along the whole length of the river banks particularly when the river is narrow.

The study about SGW in a river is important, because the river have several characteristics as shallow water and narrow channels. Stumbo found that the energy of ship wake wash in shallow water is higher than deep water, exposing it to more wave energy [4].

In SGW study, there are two important parts to be considered. The first part is consideration of the environmental factors; such as water depth, current velocity, tidal conditions and initial waves. Macfarlane describes these factors as shown in Table 1 [7]. The other part is related to vessel parameters namely speed, hullform, draft and boat direction

Table 1. Environmental factors, vessel parameters and other factors [7]

2.0 METHODOLOGY

The field measurement area is in Mersing River at Johor, Malaysia (Figure 1). This river is directly connected with South East China Sea. Therefore, the relevant environment effects are tidal rise and fall, sea current and wind generated wave. The traffic in this river is high mostly fishing boats accessing the Mersing fishing port. Other users are patrol boats, fast ferries and sampans.

3.0 RESULTS AND DISCUSSION

Figure 1. Map of Field Measuremen

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In this study digital video cameras were used to record the wave heights video footages and the images were processed to obtain wave heights and directions. In this field measurement five scaled poles were used as targets, while five digital video cameras were used to record the movement of waves on every pole, the recorded video footage was then processed by imaging method to find wave heights time series.

4.0 CONCLUSION

The study shows that visual observation using digital video cameras can be used to obtain wave heights and divergent wave angles.

For next development, this method must be validated properly with other research work such as CFD simulation or laboratories experiment.

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