

**RISK ANALYSIS ON THE SAFETY OF NAVIGATION IN  
TERENGGANU RIVER ESTUARY**

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By

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## **ABSTRACT**

Terengganu River estuaries are located on the east coast of peninsular Malaysia facing the South China Sea. Terengganu River is important for inland water transportation in Kuala Terengganu with has a two river systems, Nerus River and Terengganu River channel their water into this estuary. The major usages of this estuary are mainly for fishing, tourism and cargo transportation. Due to increase the important of the river, the traffic is increase and the risk for accident will increase. The safety of navigation in Terengganu River should be priority because to avoid any losses of the life, vessel, cargo and environment pollution. There is only certain study was conducting the research that related of the safety navigation in Terengganu River estuary but until now, there is no research to find out the probability of risk accident and level of safety navigation in Terengganu River estuary. Although, in Terengganu River has a Malaysian Maritime Enforcement Agency (MMEA) for the Search and Rescue (SAR) operation but there still has a loss when occur in accident. The determination risk of accident is important for the awareness. From last three years data that collected from MMEA and Marine Department the accident in Terengganu River estuary was low in number but there still has occur an accident with the same case of accident. In this data that the main accident to vessel in Terengganu River estuary was grounding, collusion, sinking and heavy weather. The accident might be happening because of the nature of the Terengganu River estuaries with has a small, shallow and has the monsoon season. Total area of the Terengganu River estuaries is approximately  $8\text{km}^2$ ; the depth of water is average only 4m and has the monsoon season on the November until January. Based on the accident cases and traffic number in the Terengganu River estuary, probability risk can calculate and based on this probability the safety of the navigation in Terengganu River estuary is determine.

## ABSTRAK

Muara Sungai Terengganu terletak di pantai timur Semenanjung Malaysia yang menghadap Laut China Selatan adalah penting untuk pengangkutan air pedalaman di Kuala Terengganu dengan mempunyai dua sistem sungai, Sungai Nerus dan Sungai Terengganu saluran air mereka ke dalam muara ini. Kelaziman utama muara ini adalah berfungsi untuk aktiviti menangkap ikan, pelancongan dan pengangkutan kargo. Kerana peningkatan kepentingan sungai ini, jumlah trafik akan meningkat dan risiko kemalangan juga akan meningkat. Keselamatan pelayaran di Sungai Terengganu harus menjadi keutamaan untuk mengelakkan sebarang kerugian pencemaran kehidupan, kapal, kargo dan alam sekitar. Hanya sedikit sahaja kajian yang menjalankan penyelidikan yang berkaitan keselamatan navigasi di muara Sungai Terengganu tetapi sehingga kini tiada penyelidikan untuk mengetahui kebarangkalian risiko kemalangan dan tahap keselamatan pelayaran di muara Sungai Terengganu. Walaupun Sungai di Terengganu mempunyai Agensi Penguatkuasa Maritim Malaysia (APMM) bagi operasi Mencari dan Menyelamat (SAR) tetapi kerugian akan berlaku dalam apabila berlaku kemalangan. Kajian tentang risiko kemalangan adalah penting untuk meningkatkan kesedaran dan mengetahui bagaimana untuk mengatasi kemalangan. Daripada tiga tahun tekini maklumat tentang kemalangan yang diambil dari APMM dan Jabatan Laut, tahap kemalangan di muara Sungai Terengganu adalah rendah dari segi bilangan tetapi masih terdapat kemalangan yang berlaku dengan kes kemalangan yang sama setiap tahun. Dalam maklumat yang diterima menunjukkan kemalangan utama kapal di muara Sungai Terengganu ialah kandas, kemalangan antara kapal, tenggelam dan cuaca buruk. Kemalangan tersebut mungkin berlaku kerana sifat muara Sungai Terengganu dengan mempunyai sempit, cetek dan mempunyai musim tengkujuh. Jumlah kawasan muara Sungai Terengganu adalah lebih kurang 8 km<sup>2</sup>, kedalaman air purata hanya 4m dan mempunyai musim tengkujuh pada bulan November hingga Januari. Berdasarkan kes-kes kemalangan dan bilangan lalu lintas di muara Sungai Terengganu tahap kebarangkalian kemalangan boleh dikira dan berdasarkan kebarangkalian ini keselamatan pelayaran di muara Sungai Terengganu dapat di tentukan.