APPLICATION STUDY of SHIP COLLISION RISK ANALYSIS METHOD AT THE WEST SURABAYA SHIPPING CHANNEL USING AIS DATA

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ABSTRACT

The Northern Coast of East Java is a region with vast coastal areas, thus becomes one of maritime industrial center in a row with the developing infrastructures and economics in East Java. The government planned to build several new docks or ports around Paciran integrated maritime complex and around water ways area of Western Surabaya Shipping Channel (WSSC). Whereas according to National Transportation Safety Comittee (NTSC), which mentioned that at the year of 2006-2011, the intensity of accidents at the center of maritime activity is still high, and in the end of the year 2012 the intensity is continously increased. In this research WSSC is selected as shipping area which have highest activity, thus the density and spreading of maritime object will be analyzed toward its impact to the risk value that involving vessels in the area, the probability of accident at certain area calculated utilizing the data from Automatic Identification System (AIS). The process of analysis is done by using methods, such as, Collision Probability formula to calculate probability of collision, Damage Estimation formula to define the damage received by vessels, and simulation model of collision using IWRAP. Risk assesment is conducted using Individual Risk, and Risk Matrices after the result of collision probability is known. From the comparison of those various methods, the risk criterion of water ways is known as “Medium”, and resulting value of probability causation factors “Pc” as follows, 2.41E-03 (HeadOn), 5.31E-03 (Overtaking), and 5.93E-03 (crossing).

Key Words : Risk Matrice, AIS, Collision Probability, Consequence, Risk Assesment, Water ways, Individual Risk, Damage Estimation