GRACAT, Software for grounding and collision analysis

From 1998 to 2001 an integrated software package for grounding and collision analysis was developed at the Technical University of Denmark within the ISES project at the cost of six man years (0.75M US$). The software provides a toolbox for a multitude of analyses related to collision and grounding accidents. The software consists of three basic analysis modules and one risk mitigation module: 1) frequency, 2) damage, and 3) consequence. These modules can be used individually or in series and the analyses can be performed in deterministic or probabilistic mode. Finally, in the mitigation module risk profiles for the calculated consequences can be calculated and compared to alternative solutions by assignment of a cost function to the consequences. Thus, the possible analyses range from a deterministic crash analysis to a comparative risk analysis of two vessels operating on a specified route where the result is the probability density functions for the cost of oil outflow in a given area per year for the two vessels. In this paper we describe the basic modelling principles and the capabilities of the software package. The software package can be downloaded for research purposes from www.ish.dtu.dk/GRACAT.