

SUMMARY OF A DOCTORAL DISSERTATION

Model of assessing safety maneuvers of a maximum vessel on the approach to the North Port in Gdańsk

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The purpose of this dissertation was to develop a model of assessing safety maneuvers of a maximum vessel on the approach to the North Port in Gdańsk. The dissertation presents the actual research of the maximum vessel's passage to the Northern Port with the use of RTK (Real Time Kinematic) technology, research on a maneuvering simulator, comparative analysis of the obtained results, as well as results obtained from various subsystems of the VTS system (Vessel Traffic Services), safety assessment, analysis and implementation of expert experience in research, which allowed the development of a model for assessing safety maneuvers of a maximum vessel on the approach to the Northern Port in Gdańsk.

In order to prove the scientific thesis and to implement the aim of the work and its scope, the work is contained in 123 pages and divided into nine parts, presenting the stages of the work being carried out, along with eight attachments on the next 60 pages.

The first and the second part presents an analysis of the state of knowledge, the motivation to write the thesis, and the tasks to be performed to implement the thesis.

The subsequent chapters contain the characteristics of the infrastructure and the description of the reservoir on which the actual and simulation studies were conducted, along with the presentation of the tools that were used to carry out the research tasks. Furthermore, a safety model of maneuvers of the maximum vessel on the approach to the Northern Port in Gdansk was presented. Calculations of parameters influencing the possibility of carrying out safe maneuvers on the approach track were performed. The process of real and simulation tests as well as the analysis of the compliance level of empirical data for the actual passage along the water track to the data obtained from the maneuver simulator for the simulation passage along the water track are presented. The use of the logit model to study the possible threat on the approach track or the port channel is discussed.

The last part of the work is a summary, in which, on the basis of the research presented earlier, it was concluded that the thesis of this dissertation has been proven, as follows:

The current development of knowledge and technology makes it possible to assess the safety of calling a maximum ship at the port, with the existing hydro-technical infrastructure built for a ship of smaller dimensions.

Additionally, a number of conclusions from the considerations, the effect of model development and the scope of further research work are presented.

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