Abstract of the Ph.D. Thesis

"Contributions to the calculation of mechanical stress of equipment subject to tactical military transport"

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The first chapter of the PhD thesis, namely *"Present stage of the problem addressed and the objectives of the PhD thesis"* starts with a brief introduction regarding the containerized transport. The chapter continues with the presentation of the main ISO standard freight containers, their coding and identification, and their main uses in the military field. A brief presentation of a several vehicles used for containerized transport, and of the main transport boxes used for the transport of military equipment in the tactical field, is made. The chapter ends with highlighting the mechanical stresses that occur during road transport and finally is presented the main objective of the doctoral thesis and the steps that will be taken to solve it.

Chapter 2 "*Modeling and simulation the suspension of the logistic transport vehicles*" presents the way to calculate and construct the elastic elements of the suspensions. The chapter goes on with the modeling, in a specialized software, of a freight truck and of two categories of road specific to tactical field. In the chapter is also presented the simulation of the truck running on these two categories of road, in order to highlight time variation of accelerations recorded at the level of the transported goods for different constant speeds. Also are put it in evidence the pitch angle and the roll angle of the suspended mass, the way that the suspension works in the damping of vibrations and shocks and the maximum speed of the vehicle so that it moves safely on each road category.

Chapter 3 "*Modeling and simulation of vibration isolators systems for sensible equipment*" begins with the theoretical research on the calculation and construction of rubber shock absorbers. Follow up it is presented the experimental research targeting the behavior of the rubber shock absorbers under the action of static forces or slow variable forces; analysis in frequencyof the whole assembly (the rack and the rubber shock absorbers), and the analysis of behavior under shocks. In order to validate the results of the experimental research, the chapter presents the experimental researches aimed on studying the behavior of the ensemble in the static, frequency and the shock regime.

Chapter 4 "*Experimental research methods used*" presents the way of carrying out the experimental researches presented in the literature. The study focuse the way of performing the durability tests under mechanical stress according to military standards, when the vehicles are driving on a paved road and outside the paved road (tactical transport).

Chapter 5 "*Experimental researches performed*" begins with the presentation of the equipment and software used to process the data of the experimental research. The experimental researches have been consisting in the running of truck, on different road categories, in order to measure vibration characteristics and the way they affect the transport equipment, in five points located on the container. The chapter ends with the presentation of conclusions regarding the accelerations recorded on the goods transported on different road categories (motorway, paved road, compacted road, degraded road, single obstacle road, and multiple obstacle road).

Chapter 6 contains the general conclusions of the thesis and the main contributions of the study are presented too. Finally, the chapter concludes with the presentation of the openings offered by the PhD thesis in order to continue the experimental and simulation researches.