

ABSTRACT

The subject of the research of this dissertation was the functional and organizational system in the training process of firefighters from the Airport Rescue and Firefighting Service (ARFFS) at the Katowice International Airport in the aspect of training needs taken as a paradigm of safety of functioning of critical infrastructure.

In turn, the object of research was the ARFFS at the Katowice International Airport in the aspect of training needs - remaining outside the structure of the National Rescue and Firefighting System, imposed organizationally and economically on the entity managing the airport, i.e. the Upper Silesian Group Inc.

The main research problem boiled down to the question: *What model of a training center for Airport Rescue and Firefighting Service firefighters at the Katowice International Airport with regard to qualification and operational requirements should be developed and implemented in order to determine the state of operational safety of the functioning of critical infrastructure, as defined by law?*

The dissertation consists of the following parts: introduction, five chapters and conclusion.

Chapter one of the dissertation refers to the research methodology and identifies the subject, purpose, research problems, defines the state of the research, includes the research hypotheses and descriptive of the research procedure.

The second chapter presents a characterisation of the relationship between airport operational safety as an element of the state's critical infrastructure and the airport rescue service that shapes this safety. The qualification of an airport as a critical infrastructure element was explored. It also characterises the issue of safety in air transport, specifying its components such as civil aviation safety and security. Due to the topic of the thesis being directed at operational safety of an airport, the author of the dissertation focused more extensively on this issue, exposing its essence through the prism of challenges and threats. The role of airport rescue in ensuring airport safety was also outlined. The analysis of scenarios in the international environment that may cause incidents at the airport, considered in the context of the implementation of airport rescue, was also given. Consideration is also given to the aspect of the normative dimension of airport rescue and airport certification in this area in the perspective of the legal basis of airport functioning.

The third chapter is devoted to outlining, taking into account the normative provisions, an effective model for the training of ARFFS firefighters. These considerations were based on the example of the ARFFS Unit at Katowice International Airport¹. The chapter presented the legal basis for the functioning of the unit, highlighted the principles of organising the unit and characterised the personal structure of the unit. On the example of real incidents, the issue of standards of response to an incident was interpreted, presenting it as a determinant of the continuity of airport operations. The training needs of the ARFFS Unit at Katowice International Airport were also identified, taking into account the perspective of the firefighters and the operator of Katowice International Airport due to his responsibility for the ARFFS Unit in economic and organisational aspects.

The content of the fourth chapter is a review of technical and functional as well as organisational solutions used in domestic training centres located within the structures of the State Fire Service and the Military Fire Protection. There is also a review of the same parameters in foreign training centres located within and outside the European Union member states. The chapter also includes material developed on the basis of study visits: to the Airport Fire Brigade of Ostrava International Airport and to the Rescue and Firefighting Unit No. 1 of the State Fire Service in Katowice during exercises with the use of the Fire Dragon 7000 fire chamber trainer. On the basis of the knowledge gained during the study visits, identification and characterisation of solutions adopted in domestic and foreign training centres was carried out, and then optimal solutions were selected for use in the implementation project. It is worth noting that the foreign training centres visited boast a worldwide reputation.

In chapter five, the author presented the design aspects of the training centre. The legal regulations under which the training centre should operate have been specified. The technical, functional and organisational conditions of the training centre have also been defined on the basis of a synthesis of optimal solutions for the project identified in chapter four. The author has also developed assumptions for the functional-utility programme of the training centre, which is a definition of the investor's requirements and constitutes a preliminary to the implementation of the publicly funded project. Directly related to the material in this chapter is “The training program for ARFFS Firefighters at Katowice

¹ The limitation of the research only to a particular unit of the Airport Rescue and Firefighting Service is due to the implementation character of the dissertation.

Airport". The chapter also contains a description of the project validation procedure and its results.

The conclusion of the dissertation addresses the confirmation of hypotheses, highlights the added value of the work, and suggests directions for further research.