ABSTRACT

The subject of the dissertation is to develop a logistical planning algorithm, containing a planning formula related to unplanned failures. The logistic planning formula is based on the reliability index (mean time to failure) and the replacement unit index. Defects and failures occurring on a military helicopter were selected for the tests for aviation training.

The dissertation thesis consists of an introduction, six chapters, a summary, a list of figures, tables, attachments and a list of references.

The introduction describes the issues of aircraft operation and indicates the basic difficulties related to the logistic process of keeping the equipment effective.

In the first chapter, the genesis of the topic of the dissertation is presented, the professional literature is reviewed and analyzed in terms of the studied issues.

The second chapter contains the thesis, the scope of the dissertation, the essential and utilitarian aims of the dissertation, which set the directions for further research.

The third chapter discusses the characteristics of reliability indicators, dividing it into three areas. The first area describes the reliability indicators used in the Polish Air Force, which are available in the IT Support System *SAMANTA*. The next area includes the characteristics of reliability indicators that can be used for reliability analysis by research and development units and central institutions for the development of reliability analyses of the military aviation of the Polish Armed Forces. The last area presents the description of the reliability indicators that were used to conduct the research.

The fourth chapter presents the characteristics of the research object model, the SW-4 "Puszczyk" training helicopter, used for aviation training. This chapter presents a general analysis of the operational data of the research object, with their graphical presentation and the results of this analysis. The next part of the chapter contains a detailed analysis of selected groups of damage to the test object, with their graphical presentation and conclusions. The last part of the considerations presents the logistic planning algorithm to provide the assumed flight time, broken down into individual stages. The formula of technical and material planning is discussed here taking into account the reliability indicators. The formula is an innovative approach to needs planning and complements existing practices. The final part of this chapter contains the results of the verification of the developed logistics planning formula.

Chapter five contains the results of the prediction of the number of failures based on theoretical calculations, using the distributions described in chapter six. It also houses the comparison of the results from theoretical calculations and analyses performed on the basis of operational data and the conclusions of this comparison.

The sixth chapter contains the results of the number-based failures prediction on theoretical calculations using the distributions described in chapter six. It also houses a comparison of the results from theoretical calculations and based analyzes on the basis of operational data and the conclusions of this comparison.

The last part includes a summary containing the justification of the topic and the adopted thesis, as well as the final conclusions.