AIRPORT MAINTENANCE AND IMPACT TO SAFETY AIRPORT OPERATION

Erika Lelkeš, Peter Koščák
Technical University in Kosice, Faculty of Aeronautics, Rampova 7, 041 21 Kosice, Slovakia
**Corresponding author*: peter.koscak@tuke.sk

Summary: Since the subject is pretty extensive, this work is focusing on the summer maintenance of the airport´s grass plots. It is describing activities that are linked with the maintenance that is being done on the airports. It also considers the question of safety during the work as well as utilization of the safety working equipment while analyzing situations that may occur due to the violation of the operational processes during the summer maintenance. Theses is focusing more on the connection between the human factor and its compliance with the safety rules during the work and how it subsequently interlocks with the airport´s safety as a whole. This article is also describing Safety management System, which is implemented at the airports in order to increase the level of security, in addition to operations which are done in cases of safety being jeopardized. Based on the organizational norms and instructions the responsibility for accrued negative events during airport´s operation is delegated.

Keywords: maintenance, Safety Management System, airport operation, health and safety at work

1. INTRODUCTION

Development of new techniques has had a significant effect on the security of air transportation. In the early days of aviation, the airline pilots had to rely solely on their own judgment and only a few instruments - altimeter, fuel gauge indicator or airspeed. The accuracy of these devices, however, was not at the high level, and form far cannot be compared to currently used avionics. Another major influence on aviation safety should develop radio technology. Improvement in this field allowed only the beginning of the provision of meteorological information to aircraft in the air, and over times the control service and the provision of air navigation. Nowadays, the aircraft can fly in zero visibility with the help of nearly perfect and still improving air devices. The only insufficiently excellent link in this security chain therefore remains the human factor, which cause 80% of air accidents. Despite enormous progress in air transport there can be also found cases of hidden risks in the design, manufacture and maintenance of aircraft, as well as the safety of technical equipment. Therefore, it is necessary to pay attention to all components of the system "man - machine - environment". Failure of any of these elements results in loss of balance resulting in the formation of the undesired negative effect. In accordance with the progress of global forecasts of air traffic it is concerned that the established methods of reducing risk to an acceptable level may not be sufficient.

2. AIRPORT SAFETY MANAGEMENT

Safety characterizes the state without any real threat of danger. Despite enormous efforts, we cannot avoid mistakes and failures, so the total exclusion of accidents cannot be achieved. In the public traveling can air safety be understood as with minimum frequency of accidents and therefore it is the task of eliminating the risks that may threaten humans and also cause damage to property or the environment. Currently it is viewed as the security risk management. Fortunately, catastrophic

accidents are rare, but even small incidents indicate underlying problems related to security. These problems must be addressed and eliminated, given that they can also cause more accidents. Removal incurred accidents are economically difficult, it creates companies significant investments, but in addition, these companies may suffer even greater losses and that is the loss of confidence of passengers. In the future, it is necessary to maintain a high level of aviation safety and also in conjunction with SMS. SMS actively seeks and identifies the hazards and risks that compromise the smoothness of operation. NATO is necessary to determine the degree of importance of the threat and its relation to air operations. This information is necessary to document and keep records in case of future threats. Collecting information about airport operations have a significant impact on its security. The assessment of the information received from various entities will create a list of potential hazards and threats.

After evaluation of the risks assigned to a number of subgroups based on causing thereby namely:

- technical foul (inappropriateness of material, design flaws)
- operating restrictions (performance)
- procedural errors (not following directions and recommendations)
- human error
- education lack of professional staff.

The severity of the consequences in the event of threats is essential for hazard assessment. It is necessary to identify the persons, activities and organizations that will be affected. Such an assessment is carried out through a collective effort of the team members Safety and qualified estimate, experience and solutions already incurred similar situations. It is advisable to use the method of statistics and analysis and also interact in order to clarify the factors leading to risk. Taking appropriate measures to risk eliminate. It is the responsibility of safety management. Safety management is trying to reduce the level of risk for residual or acceptable risk. Once the measures they need to be monitored and to perform systematic control. The indicators of safety - proper selection of safety indicators is essential for the development and introduction also.

Their choice should be a model to characterize the various components of the system including:

a) Aircraft accidents - growth rate, the figure
b) Serious incidents - growth rate, the figure
c) Incidents - growth rate, the figure
d) Other events - the tendency of a repetition
e) the level of compliance with generally binding regulations

Representative indicators include:

• Accident resulting in death or serious incident
• The case of intrusion into the LPP or aircraft collision on LPP
• The absence of legislation in the field of civil aviation
• Lack of operational procedures

2.1 Major impact on the safety of the maintenance.

Maintenance of machinery, equipment and facilities is of great importance for the preservation of the primary purposes for which they were intended. Machinery, equipment and facilities over time lose their properties, which for its safe operation must be inspected at regular intervals. The importance of maintenance in these cases is essential in order to machinery and objects maintenance in its original, unaltered state and to fulfil their pre-determined purpose. Definitions of basic terms of maintenance issues, as well as the actual management of maintenance are described in European standard EN13 306th. Maintenance of systems, equipment and objects is a set of activities designed to ensure that it maintain their operation able condition, or in unforeseeable event or a fault it will be speedily restored. It is used to prevent system failures and ideally the complete elimination of such conditions. Careful maintenance ensures safety. Safety individuals or group of people. It is a top priority at places with a higher concentration of people like airports. Here for the safety and fluidity of air traffic management is responsible for maintenance and the actual performance of maintenance of the airport. The main

intention is to maintain the highest level of security. Threats that are created by mistakes made by the airport operator in carrying out maintenance would be fatal. Damage to property and loss of life would be attributed to human error. In the interests of safety, some machines and objects such as airplanes and airports are controlled by public authorities or their authorized organizations. The main role is played by the concept of reliability. Reliability - characteristic of the machine or equipment that is being able to perform a predefined function. Reliability can be understood as a change in quality over time - aging machines and equipment and its impact on safety of operations. The equipment must to have a reliable quality. Just quality expresses the degree of fulfilment of the requirements placed on operational functionality of the Machine. It must be borne in mind that the quality may be affected negatively as early in the development phase of the machine (economic aspect) or at the actual use (Improper use of the machine).

2.2 Airports maintenance

Maintenance airport - in general maintenance of airports is divided by seasons. We know the summer and winter maintenance at airports that are adapted to the machines with which maintenance is carried out.

Under maintenance at airports falls:
- maintenance of paved airfields,
- maintenance of grass airfields,
- maintenance of drainage systems at the airport,
- maintenance of marking of airports,
- repair of airfields.

Maintenance of grass airfields implies:
- nourishing - Mineral spreaders
- Aeration - Comb
- seeding - Planters
- weeding - Sprayers
- compaction - Rollers
- Irrigation - Sprayers
- Adjusting the height of grass - sickle mower
- Collection and transport - forage, self-propelled harvesters, balers

Summer maintenance:
- aerodrome sweeping, cleaning and flushing the airport movement area,
- the repair or replacement of existing signs with new signage, fertilizing, aerating, weeding and also mowing lawns.

Many airports use tractors and attachments when performing maintenance. Self-propelled machines designed for only one advantage is expensive in procurement and lack versatility. Therefore, it is preferable variant of the tractor, and several coupling.

4 CONCLUSION

Safety management systems and occupational health care systems draw most attention in terms of overall security. It should be noted, however, that the introduction of SMS does not appear automatically improve governance. This process is long. Therefore, it should ultimately lead to customer satisfaction, internal and external suppliers, increased efficiency and performance of carrier, carrier to reduce costs, increase employee productivity, damages, increasing the safety, regularity and naturally to improve the quality of services provided by airports themselves. Regulation of air traffic emphasizes to ensure safety. Commission Regulation (EU) requires aircraft operators with the introduction of safety management system and the system of monitoring compliance. By linking

security management system and extending the system of monitoring compliance to the quality management system creates a system that we could name the Integrated Management System. This integrated management system of the air carrier could guarantee a maximum level of security and customer satisfaction at minimum cost.

5. LITERATURE LIST

[1]. Koščák, P.: Airports operation. Vysokoškolská učebnica. Technická univerzita v Košiciach, 2012.
[2]. Koščák, P.: The technical equipment for operation and maintenance of airports. Učebné texty. Technická univerzita v Košiciach, 2011.
[3]. Traktors Massey Ferguson No 8600. Instructions for use. AGCO v Austria, 2009.
[4]. Jankovič, J.: The risk assessment - use machines. Safety standard., 2009.
[5]. National civil aviation security program of the Slovak Republic. Ministry of Transport, Construction and Regional Development of the Slovak Republic, 2011.
[6]. Decree on safety and health in agricultural work. Decree. Ministry of Labour, Social Affairs and Family of the Slovak Republic, 2010.