GENERAL AVIATION ACCIDENTS

Petronela Mariňaková – Ján Ferenc

My thesis, named "General aviation accidents" focuses primarily on sporting accidents and recreational aircraft. The first chapter describes the regulation of the European Parliamentand of investigating the causes and prevention of accidents and incidents in civil aviation 996/2010. The next chapter describes the causes of and cutting accidents and procedure for their investigation and then the authorities in the SLovak Republic, which are linked to aviation. Furthermore, the thesis focuses the list of accidents in recent years (2003 - 2010) and the system records incidents ECCAIRS. The next chapter focuses on accidents acrobatic competitions. The penultimate chapter focuses on prevention, accident analysis, safety campaign, 'Think... Flying!" . The last chapter is an interview with semidarkness, a firsthand experienced two accidents.

Keywords: air traffic, accidents, general aviation accidents, aviation causes accidents, air safety

1 INTRODUCTION

In my diploma thesis, the first chapter will describe the new Regulation of the European Parliament and European Council on investigation and prevention of accidents and incidents in civil aviation, which was adopted recently. Next, I will describe the definitions that are most commonly used in aviation.

The second chapter briefly describe the causes of accidents, indicate when it is most likely that the accident happens and I will bring some breakdown of air accidents. Next, I will focus on progress in the investigation of an accident, which preceded the investigation and consequently as being in general.

The next chapter will describe the authorities in the Slovak Republic, which have ties to aviation in our country and in particular will focus on the activities of the Aviation Authority and its history.

In the fourth chapter, I compared the results of air accidents in our area and our neighbors the Czech Republic. As in the tables, as well as in the picture we can see an overview of an accident. Part of this chapter is a system for recording Accident ECCAIRS, its mission is to assist carriers in collecting, sharing and analyzing the impact of information on road safety. In the next chapter

I will focus on three accidents caused during aerobatics in international competitions. Accidents of this field will analyze because I like acrobatic flying and I like it. In the sixth chapter will describe the two very interesting accident of course and investigations. Next, I will focus on the safety campaign, which takes place in the Czech Republic "Think-range ...!"

In the last chapter I would like to "confess" a man who on his skin has experienced an accident.

2 BASIC CONCEPTS AND DEFINITIONS

Incident

An occurrence, other than an accident, associated the operation of an aircraft which affects or could affect the safety of operation.

Aviation incident, event

A general term to describe an accident or serious incident or incident.

Accident

An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have left the aircraft, and in which

a) a person is fatally or seriously injured as a result of being in the aircraft, or direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or direct exposure to jet blast, except when zranenie occurs from natural causes, when the person causing the injury inflicted or inflicted by other persons, or when the injury spôsobili traveling without a valid travel document hiding outside the areas which are normally accessible to passengers and crew;
b) sustains damage or structural failure of the aircraft, which adversely affects the structural strength, performance or flight characteristics of the aircraft and generally require major repair or replacement of damaged parts, except engine failure or damage, when the damage is limited to the engine, its cowlings or accessories , or for damage limited to propellers (rotor blades), the edge of the wings, antennas, tires, brakes, fairings, small dents or penetrations in the aircraft skin or
c) the aircraft is missing or is completely inaccessible [1].

3 CHARACTERISTICS AND INSPECTION OF AIRCRAFT ACCIDENT

The second chapter will describe the factors that most influence the rate of accidents at airports or elsewhere. I analyzed these factors, and later chapters describe a real situation.

3.1 Causes Accident

Air transport is characterized by being carried out in phases, which are important in terms of accidents. These phases are:

- Take-off
- Flight
- Approach,
- Landing

Are the most critical take-off, approach and landing. Half of all aviation accidents occurring in the phase of flight during the approach to the airport and during landing (ie 4% of the total flight time) and fifth aircraft accident spilled during takeoff and initial climb (ie 1.6% of the total flight time)[6].

The most common causes are:

- Human error (in more than 80% of aircraft accidents),
- Technical reasons (mechanical failure or other),
- Adverse weather during the different phases of flight [8].

3.2 Cutting Accident

Accident can be divided according to different perspectives. Next, I will describe some of them.

- Technical factors
- The human factor
- Organizational / environmental / atmospheric factor

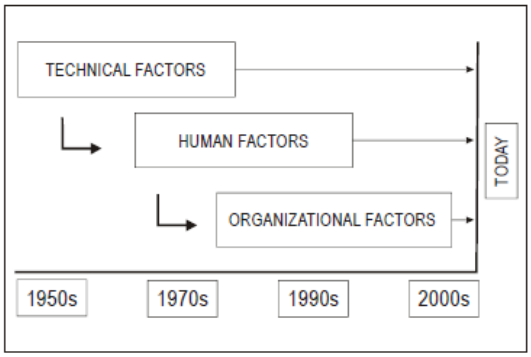

Fig. 1 The evolution o safety thinking[4]

The area of aviation safety is constantly evolving, as all around us. As seen in the figure since 1950, statisticians and people dedicated aircraft accidents or incidents. At the very beginning superior to factor other factors, but due to the rapid development in almost all areas of aviation there is a lower number of aircraft accidents involving aircraft technology, time machine honed over time and, of course, still improving. Around 1970 technical replace the human factor, and this factor will also devote an entire chapter, because it is a very important factor, but also very difficult to control, or improvement, because it is not a machine but a human being. Just human error currently represents 80% of the causes of air accidents. Apparently this is why almost proportionally increase the number of accidents caused by human factors. Another serious accident category is loss of control of the aircraft, which is again caused by the human factor. Such cases are the result of errors crew. It follows that an accident is always the result of a sequence of several unfortunate events, there is an accumulation of errors, the individual errors are themselves almost irrelevant. However, if the crew fails this chain of events eliminate the very beginning, or the correct procedure to stop further negative developments, there is just a loss of control of the aircraft, which can generally lead to disaster [9].

TECHNICAL FACTOR

Technical factor is one of the oldest causes of air accidents. These factors include deficiencies related to:

- aircraft design,
- a variety of technical and material solutions,
- various organizational and technical shortcomings airports.

HUMAN FACTOR

Most airline accidents are caused by human factors. Each person makes a mistake, it is a proof statement of St. Jerome, who already in the fourth century said "To err is human". Airlines ICAO regulations to deal with the human factor in two events:

a) SPRM - Business Optimization Pilot (Single Pilot Resource Management)
b) TEM - Threat and Error Management (Threats and error management) [4].

ATMOSPHERIC AND NATURAL FACTORS

Less frequent causes of adverse events are air atmospheric phenomena. Deepness given their size is comparable to the impact of other factors. The most typical meteorological factors include:

- Rapid changes in weather conditions,
- visibility during snowstorms,
- Thunderstorms with hail and electrical discharges,
- air temperature,
- volcanic ash from a volcanic eruption,
- birds near the airport and landing areas [9].

3.3 Procedure for investigating aviation accidents

The purpose of training is finding investigation or disclosure purposes LN and incidents as soon as possible and on the basis that it is able to establish some effective action to prevent their future occurrence. Causes Accident I discussed in the previous chapter. In the case of LN, the incident, the expert commission of inquiry to ensure related documents, papers, materials, showing in what consisted of an accident, as well as the protection of victims of aircraft wreckage, the time required for the investigation. Later, the Commission will make an overall Detailed pictures and detailed sketches of the accident,

the damaged aircraft or debris. After a special inspection of damaged aircraft accident site, submit the President of the Commission of Inquiry aircraft, or just the parts that are no longer for the purpose of further investigation required, the owner or the person who operates an aircraft [10].

4 NATIONAL AUTHORITIES AND THEIR SOLUTION OF ACCIDENTS OF SLOVAK REPUBLIC

The core of the other chapters of the analysis and the analysis of Slovak authorities involved in air accidents in our country, namely the territory of Slovakia.

4.1 The Authority SR

Civil Aviation Authority of the Slovak Republic was established by Act no. 143/1998 Z. z. Civil Aviation and on amendments to certain laws as amended to state budgetary organization based in Bratislava. Ministry of Transport, Posts and Telecommunications of the Slovak Republic decided on 26 Júna 1998. Director of the Authority is Ing. Peter Pätoprstý [5].

MISSION AND ROLE OF AVIATION AUTHORITY

Aviation Authority provides state administration and state supervision of civil aviation, as well as performing other related tasks resulting from air Act, generally binding legal regulations, legally binding acts of the European Union and international agreements by which the Slovak Republic is bound. Aviation Authority acts as the national supervisory authority general terms in the following areas - the area of airworthiness, including its conservation and environmental certification of aircraft, certification of design and production organizations, aircraft operations, competence of personnel, certification of training facilities, the provision of air navigation services, airport operations and aviation ground equipment and aviation security.

Civil aviation is strictly regulated. As a result, and based on the constant changes in the regulatory environment in civil aviation is changing the scope of the Authority in order to ensure a high level of safety and environmental protection in civil aviation. The scope of activities of the Authority considerably extended to the Slovak Republic to the European Union, while Slovakia's membership in the European Aviation Safety Agency (hereinafter "EASA"). EASA issued its own regulations in the field of civil aviation, which significantly increases the demands on the scope of activity of national aviation authorities [5].

4.3 The Ministry of Transport, Construction and Regional Development SR

Aviation department deals with intergovernmental negotiating bilateral aviation agreements (services) and ensure the implementation and control of the commitments and actions. It also provides bilateral aviation relations and licenses in regular and non-scheduled air transport. Furthermore approved schedules and fares, simplifying formalities in aviation, is engaged in transporting people and so on. European Parliament issued a decree in accidents that each Member State of ICAO and the Slovak Republic shall ensure that safety investigations led or supervised by a permanent national authority of civil aviation safety investigation, and without external interference, which is capable of independently conducting a full safety investigation [11].

5 OWERVIEW OF AVIATION ACCIDENTS IN THE SELECTED REGION

This chapter looks at the statistics, where we can see where the accident occurred, how many accidents have been recorded, what type of accident it was, who respectively. What factor caused the accident. For comparison, the Czech Republic and the Slovak Republic, the countries which are still close.

5.1 Accident and incident since 2005-2010

SLOVAK REPUBLIC

Number of incidents each year is different. In 2011, the largest increase was recorded incidents involving loss of connection, even if there has been a decline in flights without connections. The good thing is that in our country is a decrease of aircraft technical errors [9].

CZECH REPUBLIC

In 2005, the Institute has registered total of 639 events, which is less than the last two years. This suggests that AAII role in ensuring prevention has a positive impact on the public air as the Czech Republic and abroad. Although the number of fatalities rose to 15 victims, but it's still fewer than the number in 2003 [13].

The fatal injuries occurred 9x Flying in the category of sports equipment, 5x in the category of general aviation aircraft and parachute operations at once [13].

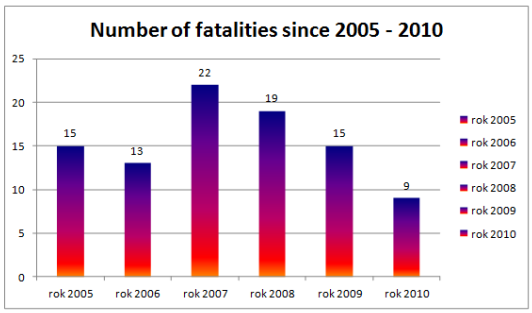

Fig. 2 Number of fatalities since 2005-2010[3]

In the following table you can see the number of aviation accidents for the obdobiena the Czech Republic.

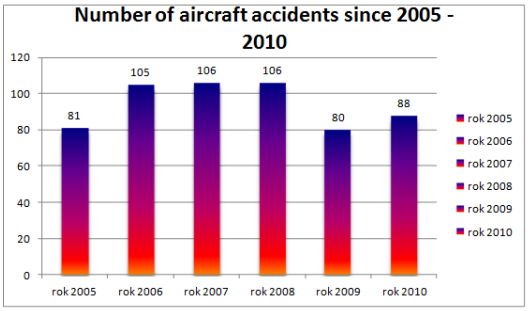

Fig. 3 Numbr of aircraft accidents since 2005-2010[3]

5.2 The registration of aircraft accidents

ECCAIRS

European aviation accident database system ECCAIRS (European Co-ordination Centre Aviation Incident Reporting System) is supported by the European Union and the single Member States. This system is the use of AAII in accordance with the requirements of Regulation L13 and other international organizations. Its mission is to assist carriers in the collection, sharing and analysis of information for safer transport [12].

6 TYPICAL AIRCRAFT ACCIDENT

Airplane Z 142

The accident happened in May 2010 at the airport within 17 Toužim year of international competition aerobatics "Carlsbad Cup". When you take off the tender years there has been a plane crash, which governed the young pilot. When you hit the ground, the aircraft was completely destroyed and the pilot fatally injured. Toužim Airport is a public domestic airport for flight to VFR operations - day. The pilot had a valid private pilot license with a valid qualified certificate valid medical certificate. Their acrobatic skills demonstrated several times as she won in aerobatic competition "The Most cup" in the category "sportsman" held just a few days before that accident. The course of the competition was interrupted several times due to low cloud base base, which did not correspond to the limit in the category of "sportsman". There have also been frequent rain showers. Witnesses reported that the initial phase of the takeoff was normal. Soon, however, an abnormal situation. The aircraft did not continue the continuous rising and so are pilot decided to return to land. Suddenly the plane started to tilt dangerously to the left and then passed to fall and hit the ground, which then caught fire. [13].

CAP 231 Aircraft

On 5 May in 2010, received the Institute for Vocational investigation of aviation accidents notification of an accident on public national airport Toužim - crawled. It was held on 17 Year FAI - International Acrobatic Competition.

Pilot after his acrobatic sets of ports on unpaved track. Erred in determining the touchdown zone and lock it before the threshold. With the arrival of crashed right main landing gear wheel with concurrent edge of the right wing into the middle of the metallic structure of the threshold marks (flags). Subsequently, the right landing gear wheel broke off and flew another 34 meters, while simultaneously hit the left edge of the wing half a propeller into the ground. That way inclined plane on the right side and was damaged. Pilot injured after plane left alone [13].

7 PREVENTION

Final reports, findings and conclusions therein are for informational purposes only and can not be used otherwise than as recommendations for the implementation of measures that could prevent further occurrence of air accidents and incidents with similar causes. The final report does not in any way blame or responsibility in respect of persons with air accident and can not be used to bring a claim in the event of an insurance claim. Guidelines on the various sections of the final report, the use of terminology, style, format and copy-editing of the draft final report are included in the guidance material, ICAO - DOC 9756 ("Manual of Aircraft Accident and Incident Investigation - Part IV Reporting) [3].

8 INTERWIEW WITH PILOT

The first accident occurred in May 1998, the Championship of the Czech Republic Gliding in Jaroměři. When the race flew with three other aircraft, and when he tried to get the airplane (glider VSO 10) to the correct height badly dotočil sweep wing and is caught by forest cover. Ancestor of the aircraft plunged into a tree about fifteen meters above the ground. After a brief Shock informed the radio the other pilots of their position and awarded them the coordinates. Subsequently, wondering

how to get off the plane safely. He threw the front canopy and move on.

He threw the parachute and he wanted after the climb down. At this moment, however, he heard underneath the branches begin to crack and thus captured the belt and slid a few meters down. After about fifteen minutes, came units of the integrated rescue system and helped him from the aircraft safely get out. When the accident suffered only a few superficial wounds and abrasions. After this incident a few days back mounted on an aircraft, but only as a passenger because he was banned airline practical work for six months [16].

The second incident was a little more serious. It has become the region of Bohemia Championship and Moravia in Šumperka in June, a year later (ie in 1999). In that day were rather bad weather conditions - storms and wind [16].

9 CONCLUSION

As the objective of my thesis I tried to find out what most affects flight safety, an analysis of some accidents, description of the European Parliament and of the Council of EC 996/2010 and prevent such accidents prevented.

The first chapter briefly discusses the Regulation of the European Parliament and the Council of EC on vocational identifying the causes and prevention of accidents and incidents in civil aviation 996/2010 on definitions, in aviation for aviation accidents used.

The second chapter focuses on what are the most common causes of accidents, further breakdown of air accidents and what is the procedure for investigating the site of an accident .. Next, I describe briefly the Slovak authorities to have ties to aviation with us. Most I focused on the Authority and its activities in the field of aviation. In the next chapter

I described in tables and graphs znázornila, report the number of aircraft accidents, serious incidents, incidents, accidents and ground fatalities. In this chapter I have also included a system for recording Accident ECCAIRS, which is already an essential part of aviation. The following chapter discusses the aviation accident in aerobatics.

he next chapter focuses on the prevention of accidents and their analysis. In the last chapter I described the accident, the pilot experienced firsthand.

BIBLIOGRAPHY

[1] Letcký predpis L13

[2] Nariadenie Európskeho parlamentu a Rady ES o vyšetrovaní a prevencii nehôd a incidentov v civilnom letectve

[3] www.ucl.cz

[4] ICAO Doc 9859, Safety management manual 2009, ISBN 978-92-9231-295-4

[5] Letecký úrad Slovenkej republiky – Výročná správa 2011

[6] CHMELÍK, J. a kolektiv. *Letecké nehody*, Praha: Themis, 2007, ISBN 80-7312-033-4

[7] ŠULC, J., NĚMEC, V. *Lidský činitel v údržbě letadel*, Brno: Akademické nakladatelství CERM, 2006, ISBN 80-7204-482-6

[8] WOOD, R. H. Aviation Safety Program – A Management Handbook, Englewood: Jeppesen Sanderson, Inc., 1997, ISBN 0-88487-236-X

[9] http://www.securityrevue.com/article/2012/06/priciny-vzniku-neziaducich-udalosti-v-leteckej-doprave/

[10] http://www.laa.sk/ht/smernice/setrenie_ln.pdf

[11] http://www.telecom.gov.sk/index/index.php

[12] http://www.easa.europa.eu/safety-and-research/ECCAIRS.php WOOD, R. H., SWEGINNIS, R. W. *Aircraft Accident Investigation*, Casper: Endeavor Books, ISBN 0-9653706-0-7

[13] http://www.uzpln.cz/cs/aktuality

[14] http://www.skolenipilotu.cz/

[15] Sprostredkované fotografie od p. Bobka

[16] Sprostredkované informácie od pani Ing. Rohaľovej

AUTHOR(S):ADDRESS(ES)

Petronela Mariňaková, Ing., Katedra manažmentu leteckej prevádzky, Letecká fakulta, Technická univerzita Košice, Rampová 7, 041 21 Košice,
E-mail: marinakova.petronela@gmail.com

Ján Ferenc, Ing, PhD.
Katedra leteckého inžinierstva, Letecká fakulta, Technická univerzita Košice, Rampová 7, 041 21 Košice,
E-mail: jan.ferenc@tuke.sk