REQUIREMENTS FOR AIRPORTS OBSTACLE LIMITATION

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Summary: The thesis deals with the issue of obstacle surfaces and the necessary requirements for their establishing. It also describes the importance of safety in airport operations. It consecutively deals with the buffer zones and with the possibilities of implementation of construction operations outside the buffer zones. Further in the work the particular obstacle surfaces and areas are characterized, as well as the specification of the obstacle - free zone according to international organizations ICAO and FAA. The aim of the work is to present the issue of obstacle surfaces including their application at the selected sport airport - Bidovce.

Keywords: Obstacle surfaces and areas, buffer zones, safety, barrier,

1. INTRODUCTION

The aim of my thesis is to provide insight into the issue of addressing requirements for obstacle limitation surfaces airports. The work contains a general description of compliance with the safety of airport operations, description of buffer zones, and obstacle limitation surfaces, control, identification of barriers and not least practical example of the determination of the mentioned planes land at the airport in sports Bidovce.

The priority of each airport is to maintain the safety of airport operations, including ensuring reliable operation of aeronautical ground facilities, and their further development, which are realized using protective zones. The actual determination of the protection zones is a very difficult issue for the airport operator for the definition of the possible objects that might interfere with the obstacle limitation surfaces, as the authorities concerned that the decision of the Transport Authority, together with the Building Authority permit granted planning permission. The basic condition for the approval of the operating license of a public airport or aeronautical ground facility is to establish buffer zones.

2. SAFETY OF AIRPORT OPERATIONS - OBSTACLE LIMITATION SURFACES

The first step to ensuring the safety of the airport operations leads to the definition of the airspace around airports to be kept clear of obstructions. The aim is to ensure the safe operation of aircraft at the airports without creating any barriers that might restrict air traffic. Determination of obstacle limitation surfaces and planes are one of the most important tasks of each airport. With the introduction of these systems define the limits of maximum heights that objects can reach. Objects beyond obstacle limitation surfaces and surfaces result in increased obstacle clearance during the execution process instrumentation circling; optionally have other operational impact on the design of flight procedures. Objects that are located at the airport and its vicinity must be fixed amount and fragility, given to ensure maximum safety during take - off and landing.

The airspace around the airport system is defined with an obstacle limitation surfaces. They don´t interfere with any obstacles that might jeopardize the safety air traffic control (artificial or natural), exceptions are objects which according to aero - operational assessment are not a dangerous obstacle. The largest and the most stringent emphasis it is on space, which is limited with approach path and take off the plane on space, which is limited by transition area. Typically, the importance of an object in the vicinity of the airport is evaluated in two separate basic groups. The first relates to the obstacle limitation surface for a specific pathway and its planned activity. The second relates to procedures for air navigation services - air operations. The intention is to provide barrier airspace by instruments, setting minimum safe heights, heights for each segment of the

procedure. Some states have also used other criteria and procedures in accordance with their national standards and recommended practices.

Inner horizontal surface - from the base altitude specified datum height is measured height inside a horizontal plane. Internal horizontal plane ensures aircraft movements while waiting in the airport area.
Outer horizontal surface - the slope of the conical surface shall be measured in a vertical plane perpendicular to the edge of the inner horizontal plane. Conical surface provides side protection for airplanes before potential obstacles.
Approach surface - is designed to protect airplanes at downhill landing, whether the use of visual aids, or with the help of precise instrumentation entrapment.
Inner approach surface - is characterized by allowing the airplanes at the final stage of landing safe entrapment and fall on the runway.
Transitional surface - the slope of the transition surface is measured in a vertical plane, perpendicular to the axis of the runway.
Transition area follows the take - off and landing strip, also the obstacle to the plane of approach and take - off area. It protects the movements of aeroplanes in the transverse direction at an airport.
Inner transitional surface - The slope of the inner transition surface is measured in a vertical plane, perpendicular the axis of the runway. The inner surface functions as a transition in height limit of navigation aids, which are located near the runway.
Balked landing surface - Altitude inner edge and elevation axis of the runway at the point of the inner edge must match. Inclination missed landing is measured in a vertical plane passing through the axis of the runway.
The plane missed the landing, which is located at the threshold of the runway, aircraft shall ensure that, despite the damage incurred technical implement a safe landing for compliance with the conditions stipulated amount within the plane.
Take – off climb surface - altitude inner edge and elevation of the highest point of the extended centerline of the runway between the end of the runway and the inner edge must match. Inclination climb after take - off, in case of direct trajectory takeoff must be measured in a vertical plane passing through the axis of the runway. Obstacle plane take - off area protects aircraft movements in the first stage of the take - off and climb.

3. COMPARISON BETWEEN FAA AND ICAO

After examining the design criteria of two imaginary surface systems using analytical methods, imaginary surfaces with similar design criteria can be divided for the possibility of their calculation. The table contains the processes and results of categorization changes and the calculation itself. In the second column of the table are imaginary dimensions according to ICAO regulations in the metric system. Since the imaginary surface are different, it is necessary their calculation. In the third column are dimensions after conversion measurement system. These values without star are specified size, , meanwhile values with star are results of calculation. In the fourth column are the imaginary dimensions of space. Based on the imaginary surfaces is easy to compare the similarities and differences between ICAO and FAR.

4. BIDOVCE AIRPORT

Bidovce the airport is located 17 km from Košice. Behind the village about 0.5 km turn right, leading to the building where is located the airport area. East is making the obstacle called Slanské hills and in the west is located the protected area - Slovenský Kras. Significant obstacles to the airport are gardening area and state road, which is immediately behind the fence of the airport. In addition, the airport is used for sports purposes, can boast a flight school, where is build a comprehensive base for training pilots. Our school is also working closely with the airport, as flight simulators are located on the premises Faculty of Aeronautics and training of future pilots at the base

in Bidovce. Currently, the airport has hangars, provides services to ensure individual lessons. Finally, it is part of the fleet, which is enriched in addition to conventional airplanes - Cessna, and modern technology in the administration of airplane type - Katana. Airport Bidovce is a national, nonpublic airport for the general aviation flights. Runway is located in a grassy take - off and landing strip. On the basis of airport facilities, lightning is not part of it, runway, taxiways, including equipment that require operation in low visibility or at night, the airport is designed to operate only during the day - VFR.

Obstacle limitation surfaces and the airport are as follows:

- transitional surface,
- take - off surface,
- horizontal surface.

Description of each obstacle limitation surfaces and planes:

✈ **Transitional surfaces** - are located on either side of runway strip follows:

- lower sides are identical to the sides of the take - off and approach surfaces and subsequently developed over the length of runway strip is parallel to the runway,
- upper side is set up along the approach path runway strip and having a height outside of the ground plane which is joined to the adjacent end of the take - off plane.

✈ **Take – off surface**

- in the inside is horizontal and 35 m long, which is also perpendicular to the extended center line of the runway and parallel to this axis is halved, located at the end of the runway strip,
- both the inner side of the boil angle 5 ° from the axis of the runway within 500 m, then continue parallel to the axis of the extended runway within 1000 m, by the end of the landing strip.

✈ **Horizontal surface** -

is surrounded by two circles with centers at the intersections of the extended center line of the runway and ends with the runway strip, including common tangent circles mentioned.

5 CONCLUSION

From the executive summary of the final work shows the importance of aviation safety encompassing which includes airport operations. Safety in aviation terms is the most significant factor, which in the failure to observe certain principles in the segment may have a negative impact on the overall air traffic. Protection zones including obstacle limitation surfaces form part of each airport, but their scope is specific to all airports, which range depends on the category of individual airports. It is a space where they cannot find any obstruction which could jeopardize some form, disrupt the smooth running operation. Each obstacle requires labeling for daily operation and also the lighting in some cases, even multi-stage for individual buildings, skyscrapers that interfere into the obstacle limitation surfaces and thus prevent the pilot safely guiding aircraft on the runway.

In the practical part of my thesis I was dedicated on application of obstacle limitation surfaces and planes at the airport in Bidovce. The work consists of complex information to various regulations, laws and regulations. Worked issues can serve as a mini guide for setting airport barriers also for the need of aviation training.

6. LITERATURE LIST

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