MOTION CONTROL FLOW OF PASSENGERS DUE TO THE OPERATION OF AIRCRAFT TYPE B 747 AT THE AIRPORT KOŠICE

Ján Ferenc - Ivana Tkáčová

The work points to the airport Košice as a gateway to world for passengers. There is characterized the main activity at the airport, air traffic passengers. Furthermore, work deals with aircraft B 747, its technical parameters and possibilities of aviation at the airport Košice. Due to fact, there are various defined spaces at the airport, dimensions and equipment associated to handling of aircraft and passengers. The work includes specific and individual procedures and acutual handling process at the airport. The pillar of this work is the capacitively solutions, or the possibility of extending the airport, which would enable operation B 747 at the airport Košice.

Key words: Airport, Air traffic, Capacity of airport, Terminal

1 INTRODUCTION

Air transport is currently very preferred type of transport. It allows the expression of transporting passengers, cargo and mail between any cities in the world. Increasingly come to the fore and is currently experiencing its strongest growth compared other modes of transport. There are new airlines, expanding the network of airlines in connection there is also an increase in passenger numbers. If the airport wants to benefit and address the core mission of air transport, passenger transport and therefore must seek to work with several air carriers and operated flights to several international cities. Continuing growth in passenger numbers is a matter primarily for those airports whose capacity is insufficient momentary operation. Airports as important elements in air transport has great potential for continuous development. It is presently at the airport Kosice expanding operation, and so me in my thesis devoted mainly to this airport. Since last year, when it was running low again starting to increase the number of passengers carried. for the airport is a good signal that it still has the potential to be a successful international airport that leads our steps into the world. Therefore, the main aim of my thesis is to propose a solution for the capacity expansion of the airport. I focused specifically on the Boeing 747 and the extension of the terminal. With the expansion of the various areas related to the expansion of facilities necessary to handling of aircraft and passengers. The work includes the description of the terminal and its parts, as well as triggering process at the airport. The analysis of the terminal expansion is not only described the airport as a whole, as well as a proposal for extending the capacity of individual parts and equipment.

2 OPERATION AT THE AIRPORT

Kosice International Airport is the second largest airport in Slovakia. Provides flights in Bratislava and international flights to three other airports - Prague, Vienna and London. During the summer months are operated charter connections to many destinations. Currently, at the airport operate their regular flights three carriers. Czech Airlines flights to Prague and Bratislava 16x weekly, Austrian Airlines flights to Vienna 8x week and Wizzair flights to London 5 times a week. The air carrier Wizzair started to operate its line from Kosice to London only September 17, 2013. Started with a frequency of 2 times a week (Tuesday, Saturday) and gradually increase it to 4 frequencies (Monday, Wednesday, Friday, Sunday), up to the current 5 weekly frequencies (Monday, Wednesday, Thursday, Friday, Sunday). Because of the great interest in this company Wizzair flight connection in the summer increases the frequency up to 10 times a week. In summer season there are charter connections to many destinations with Travel service company, Onur Air, Bulgarian charter and this summer will be added, the new carrier Aegean Airlines.

2.1 Preparing of the flight

Handling of aircraft and passengers at the airport is performed by airport staff. Every process of handling flight passes through its preparation. Employee shall have the means of which prepared flight and thus ensure its running.
If the flight is dealt with using DCS systems, all the documents are there.

2.2 Security control

Passengers going through the check-in counter to security check. There occurs to his personal checking and checking baggage. Security check is equipped with three X-ray machines for cabin baggage and three-RAM devices for checking passengers
Prohibited items in hand luggage:

- Guns, firearms and other devices that discharge,
- Subjects with a sharp point or edge,
- Stun guns means or device,
- Work and blunt instruments,
- Explosives and incendiary substances and devices.

2.3 Boarding

Boarding process is managed by department staff people. To determine the onset of the two employees. The first one stays in GATE and check boarding passes and travel documents and the other one goes with passengers to the aircraft. There oversees the passengers boarding to the aircraft.
Arrangement stands at the airport Kosice allows boarded walk. In case of bad weather, however, uses the bus.
Boarding makes mainly the following factors:

- Must be labeled determined east,
- The aircraft is tidy and cabin crew is ready to take passengers
- Completed the process of filling the aircraft,
- Completed the loading checked baggage,
- Boarding call is announced to passengers
- Employee has prepared PIL(Name List) to cast steward

During the boarding is the particular process. Priority Boarding shall in any case immobile passengers. For such special categories of passengers, the notion of aid assistance boarding, while other passengers waiting in GATE. Only when it is immobile passenger seated on the seat, then they may begin boarding the other passengers.

3 TERMINAL

Handling of departing and arriving passengers at the airport carried out at the ground floor of the first above ground space. In the second floor of the departure terminal has a business lounge, which is designed for business travelers. There they spend time before departure.
The public part is not in Terminal 1.
In Terminal 2 is formed:

- areas located in front of T2,
- Place the bar, area departments before reaching the check-in to the booth rental car, including them,
- Social room.

The airport terminal is set 7 security restricted areas, there are:

- VBP 1 - Luggage sorting,
- VBP 2 - Arriving passengers (schengen area)
- VBP 3 - Departing passengers (non-schengen area)
- VBP 4 - Screening of accompanied hold baggage,
- VBP 5 - Screened departing passengers,
- VBP 6 - Room for passengers departing tonon-schengen destinations, situated habitat for passport control (GATE E or F),
- VBP 7 - space for passengers departing to non-schnegen destinations, situated habitat for passport control (GATE G or H).

Landside and security restricted areas separated in Terminal 1 glass impassable wall.

Terminal 2 has two floors. On the second floor are room service for airport operator, airport users and tenants. There is Access also for outsiders (visitors and tenants, business partners, etc..) But only with full responsibility visited persons. Access into rooms 2nd and 3rd floor only to authorized persons of the airport. These rooms look the status of a restricted area. Status of enclosure in this case means that the responsibility for access to people's rooms have a technical staff member on duty dispatching airport.

Handling process starts at the passenger check-in, where the airport staff handling the flight. Here passengers can check their accompanied baggage. Then they continue to security control. Here's ongoing screening passenger and his baggage. Handling process passengers at the airport ends when all passengers are on board and flight attendant closes the door.

4 BOEING 747

Currently, the Boeing 747 one of the most recognized commercial aircraft in the world. Its special feature is pronounced,, hunchbacked "front part pf carcase. Provided there is a second floor for the carriage of passengers. The aircraft itself can have 3 classes - first class, business class and economy class. Transporting large numbers of passengers greatly reduced cost per passenger-kilometer. Therefore, the transport over long distances very convenient for the operator.

5 SOLVING OF CAPACITY

International passenger airports are considered to be the gateway to the country. It should therefore be adequately designed by leading architects who have a vision of how the airport should look like. However, the concept of an airport as a national monument is often at odds with economic performance. For example, monumental buildings often have heavy construction, are difficult to maintain, and in the case of future expansion and restructuring space, it is almost impossible and unnecessarily costly.

Terminal is used by various participants in aviation - passengers, airlines, airport staff. Everyone involved in the handling process, and therefore the design of the terminal is necessary to know the requirements of each of the parties.

Interface with landside access includes:

- Loading and unloading vehicle locations for access to and from the terminal building
- Parking facilities for short / long-term car parking, and facilities for taxis, hire cars and public transport services
- Roads linking the terminal building, car parks and the public highway system; rail and metro networks
- Pedestrian access between the car parks and the terminal building
- Service roads and emergency access to all airport facilities

Within the passenger terminal:

- Airline ticket counters and offices, check-in (traditional, self-service, fast-bag), and flight information
- Terminal floor space includes public and non-public areas including concessions, amenities for passengers and visitors, vehicle deliveries, food preparation areas and storage
- Circulation areas for passengers and visitors including waiting areas, stairways, escalators, lifts and corridors
- Administration and service areas used by airport management, operations and maintenance facilities

There must be disregarded to the passengers and their needs. It is important to provide them a certain standard of services such as, passenger facilities beginning two hours before flight departure, waiting rooms – GATE with a sufficient number of seats, on boarding aid and assistance to passengers and immobile below. All these services are provided by employees of the airport or airline.

The terminal must be functional, practical and economically efficient. In its construction it is necessary to maximize the use of resources, in the case of replacement of some equipment in the long terms, avoid unnecessary investments. In the drafting is necessary to involve all stakeholders, otherwise it could lead to errors and ineffective procedures in operation.

- Dynamical capacity

It is the maximum number of passengers, or the flow of people through the subsystem. May be various depends on time.

- Statical capacity

It is a potential space expressed m2/pax.

- Declared capacity

It is a particularly restrictive capacity. It is used for planning purposes, for example, permitted number of passengers in the terminal. Usually is calculated separately for arrivals and departures.
Declared capacity is used for coordination of schedules and the allocation of time - slots at airports. Is lower than the maximum throughput capacity is often limited by fire regulations or regulations.

6 DESIGN OF TERMINAL

In the case of consistent format for terminal capacity, planners and airport operator must analyze the various processes that take place within the airport terminal. Terminal building and an assessment of the capacity of the individual subsystems is a highly complex process involving, for example, queuing theory or statistical analysis.

Rating terminals according to IATA:
A - Excellent level of service, free flow, excellent level of comfort
B - High level of service, stable flow, few delays, high level of comfort
C - Good level of service, stable flow, acceptable delays, good level of comfort
D - Adequate level of service, unstable flow, acceptable delays for short time periods, adequate comfort level
E - Inadequate service level, unstable flow, unacceptable delays, inadequate comfort level
F - Unacceptable service levels, delays, comfort.

When we are planning new flights to the Schedule plan, each airport must take into account existing regular as well as irregular flights. New flights should be introduced in times that are not yet sufficiently operationally harvested.
Facilities are designed for traffic demand during a selected design peak hour.
This is a level of traffic that is only exceeded during a small number of hours in the target year, that is, the facilities have adequate capacity to handle demand at a desired level of service for most of the year while not being over-designed to meet extreme peaks in demand

Follows demand operation may different not only in hour, but also monthly or only seasonally. Of course, some airports may have more of these times a day. For example, at the airport Kosice is the time of the early departure of 4:55 to Prague and Vienna at 5:05. The second peak hour is in Košice Airport afternoon, when both aircraft departing again at the time of succession. To Vienna at 15:15 and to Prague at 15:20. In this time, working simultaneously 4 check-ins and in the case of a large number of passengers at security control are two x-rays. Peak hour for arrivals and departures must be considered separately, because each process requires different equipment, resources and manpower.

Kosice Airport has spaces and facilities for prompt and quality handling of passengers. Process of handling passengers and their baggage takes place in the departure hall with an area of 430.8 sqm. From that, area in front of check-in counters is 202.5 meters. The airport has 8 check-in counters with standard equipment. Additional space for passenger amenities include workplace of security control with area 122 sqm. There are three X-ray equipment. For the screening of passengers it is used an airport detection frames f. Balteau. For a secondary inspection of passengers using an airport handheld detectors by Handwand. Within the Schengen area there are four boarding gates with an area of 550.86 sqm. Gates for non-schengen departures are divided into three sections with a total area of 618.9 sqm.

7 CONCLUSION

The main focus of this work was to point at the Košice airport, handling process at the airport, and the proposal for the extension of the terminal. It has to do with the ever increasing traffic at the airport.

In 2008, the airport achieved the best results in terms of transported passengers. Gradually, with the crash of the airline SkyEurope declined even these numbers. In 2012 was the lowest number of passengers since 2006. Those numbers are growing slowly and in my opinion the aerodrome has good perspective for future development. That's why I work decided to propose the extension of the terminal to the aircraft Boeing 747. If it would be concerned of a scheduled flight, the changes are necessary. First of all, the overall expansion of the terminal. From the above calculations show that some parts of the terminal would need to be extended a little more, others less. If it was just a charter flight that will take place exceptionally, I think the airport terminal and devices are able to serve so many passengers. However, it must be said that handling process had to start well in advance and it would be necessary to adopt operational actions. One of them would be that passengers should not depart the aircraft only from one gate, but at the same time from more.

BIBLIOGRAPHY

[1] MAGAŠITZ, Alexander: Bezpečnostný režim Terminálu 2, ON-26, 2008. Košice.

[2] JEZNY, Martin: Smernica pre činnosť oddelenia výpravne osôb, Letisko Košice, SM-OPU1, Tretie vydanie. 2013. Košice. 13s.

[3] Airport management training programe: Passenger terminal capacity. 2013. Frankfurt.

[4] Airport management training programe: Passenger terminal design. 2013. Frankfurt

[5] Operating manual Boeing 747. [online]. [cit.2014-2-11]. 2s. http://deltava.org/library/B747%20DVA%20Manual.pdf

[6] Letisko Košice. [online]. [cit. 2014-4-28]. http://www.airportkosice.sk/info-menu/zakazane-predmety/

[7] Trainning Passenger handling manual. Vienna. 2013.

[8] Airport handling manual. Košice. 2013.

RESUME

Práca poukazuje na letisko Košice, ako bránu do sveta pre cestujúcich. Charakterizuje hlavnú činnosť na letisku, prevádzku a prepravu cestujúcich. Ďalej sa v práci pojednáva o lietadle typu B 747, jeho technických parametroch a možnostiach leteckého vybavenia na letisku Košice. Vzhľadom k tomu tu sú definované jednotlivé priestory na letisku, ich rozmery a zariadenia súvisiace s odbavením lietadla a cestujúcich. Práca zahŕňa konkrétne aj jednotlivé postupy a samotný vybavovací proces na danom letisku. Samotný pilier tejto práce stojí na kapacitnom riešení, prípadne možnostiach rozšírenia letiska, ktoré by umožnili prevádzkovanie B 747 na letisku Košice.

ADRESS

Tkáčová Ivana, Bc.
Letecká fakulta, Rampová 7, Košice
Ján Ferenc, Ing., Phd.
Letecká fakulta, Rampová 7, Košice
Jan.Ferenc@tuke.sk