

IMPACT OF SLOT COORDINATION ON THE SAFETY OF AIRCRAFT OPERATIONS AT WARSAW CHOPIN AIRPORT

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K e y w o r d s: aircraft safety, Warsaw airport, slot coordination

1 INTRODUCTION

The constantly increasing disproportion between the development of air transport in Europe on the one hand and the availability of the airport infrastructure necessary to accommodate that growth has caused an increase in the number of “overtaxed airports”. In that situation, it becomes necessary to manage the capacity of airport infrastructure by allocating slots for landings and take-offs. A particular and specific factor limiting an airport's capacity are environmental restrictions.

In accordance with the definition provided in Council Regulation (EEC) No 95/93 of 18th January 1993 on common rules for the allocation of slots at Community airports, a coordinated airport means any airport where, in order to land or take off, it is necessary for an air carrier or any other aircraft operator to have been allocated a slot by a coordinator. The main objective of coordination, understood as a tool to manage airport capacity, is to ensure a balance between the demand for air travel and the available capacity. That is the basic task. Practice has shown that coordination also fulfils other functions. It contributes to improved punctuality as well as the safety of aircraft operations.

Warsaw Chopin Airport can be a case in point.

The authors are expected to submit the The dynamic development of air travel in Europe after 1992, resulting from air traffic liberalisation and the introduction of “open skies”, has led to the pheromone of “overtaxed airports”. That means that the demand for air travel operations permanently or at specific times in relation to current or planned air travel operations exceeds the capacity of those airports.

At what are referred to as “overtaxed airports”, where the demand for air travel operations permanently or at specific times in relation to current or planned air travel operations exceeds the capacity of those airports, it becomes necessary to manage the capacity of individual elements of an airport's infrastructure by allocating landing and take-off slots as well as slot coordination.

In 1993, the European Community adopted Council (EEC) regulation No. 95/93 of 18th January 1993 on common rules for the allocation of landing and take-off slots at Community airports. That purpose of that regulation was to ensure the fullest and most flexible utilisation of limited capacity at the community's “overtaxed airports” as well as facilitating the market

entry of new entities and maintaining competitiveness amongst carriers.

At most airports in Europe and on other continents, coordination is introduced owing to the inadequate capacity of airport infrastructure, particularly as regards runways and terminals.

Warsaw Chopin Airport is one of the few examples (and the second in Poland besides Poznań's Ławica Airport) where slot coordination was introduced solely due to environmental restrictions, connected with night-time operations between 10 PM and 6 AM local time, rather than limited infrastructure.

Environmental restrictions are an extremely specific factor limiting an airport's capacity. It differs from other bottle-necks in that there is basically no way of improving the situation let alone eliminating it entirely.

Owing to the constant overstepping of permissible environmental limits, upon the motion of Przedsiębiorstwo Państwowe „Porty Lotnicze” (PPL) (Polish Airports State Enterprise), the President of the Civil Aviation Office introduced slot coordination at Warsaw Chopin Airport beginning on 25th March 2012.

That decision has made it possible to cut back the increase of night-time operations and maintain them at a regulated level, thereby conforming to a legally acceptable airport-noise emission standards.

As experience to date has shown, dealing with noise issues were not to only positive aspect produced by the introduction of slot coordination at Warsaw airport.

2 SLOT COORDINATION AT WARSAW CHOPIN AIRPORT

The period during which slot coordination has functioned at Warsaw Chopin Airport has confirmed the correctness of the decision to introduce it.

Despite an overall increase in air travel operations, the number of operations carried out at night has decreased since slot coordination was introduced and remains at the identical level. That has guaranteed the required acoustical standards and the maintenance of noise within the bounds of a Limited Use Area.

The following table illustrates the number of night-time operations compared to overall operations before and after the introduction of slot coordination at Warsaw airport.

Summer season*	2011 (27.03÷27.08.2011)	2012 (25.03÷25.08.2012)	2013 (31.03÷31.08.2013)
Total operations	63.112	64.455	64.784
Nocturnal operations	6.908	6.443	6.447

* The first 154 days of each summer schedule season

Source: PPL

3 THE IMPACT OF SLOT COORDINATION ON THE SAFETY LEVEL OF AIR TRAVEL OPERATIONS USING THE EXAMPLE OF WARSAW CHOPIN AIRPORT

The maintenance of acoustical emissions at environmentally permissible levels and constant monitoring to ensure that they are not exceeded, as presented above, has been the basic task of slot coordination at Warsaw Chopin Airport.

An additional effect and tangible benefit for the Chopin Airport Management as well as above all for all air carriers, and ground attendants and airspace managing services has been the improved punctuality of air travel operations.

According to PPL statistics, after the obligation of obtaining landing and take-off slot allocation was

introduced at Warsaw airport, there has been a constant improvement of the punctuality index, i.e. the percentage of operations punctually carried out, i.e. with a delay not exceeding 15 minutes compared to overall operations.

The table presented below shows the growing punctuality index following the introduction of slot coordination at Warsaw Chopin Airport.

The analysis was carried out on the basis of the June – August period of 2011 and 2013 – the period of heaviest air traffic and declining punctuality on an international scale.

Year Month	June	June	July	July	August	August
Operations	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
2011 - #	6,355	6,362	6,510	6,504	6,559	6,555
2011 - pi	79.0	70.7	76.9	66.8	84.3	76.4
2012 - #	7,277	7,265	6,637	6,651	5,932	5,936
2012 - pi	83.8	78.8	81.3	71.2	88.1	81.8
2013 - #	6,693	6,710	6,968	6,963	6,738	6,739
2013 - pi	78.2	69.8	82.3	74.4	84.4	75.7

It should be clearly emphasised that the 2013 punctuality index was lower than what slot coordination would have led one to expect and what in fact could have been achieved. That was because of investment projects in the ground traffic area as well as terminal renovation. Without slot coordination the punctuality of air travel operations would have been obviously lower.

The punctuality and safety of air travel are the two main cornerstones of civil aviation. Moreover, they are closely inter-related. Increased punctuality leads to better air travel safety. Their common denominator is slot coordination.

Increased punctuality resulting from coordination has a significant impact on “the human factor” of all airport entities serving air travel operations.

The conduct of air travel operations in accordance with the flight schedule of a given season translates into the functioning of individual services

without stress and time pressure. That in turn guarantees increased work safety as well as optimum utilisation of an airport's human and infrastructural resources. The end results is improved air travel safety. This topic has been repeatedly discussed at meetings of the Warsaw Chopin Airport Coordination Committee. The participating representatives of organisations operating at the airport, in particular air carrier representatives, unanimously emphasised the positive impact of coordination on punctuality and consequently on air travel safety. That has been especially significant when investment projects are under way in the ground traffic area.

An element weakening the above-mentioned effect of introducing slot coordination is the “off slot” operation carried out by air carriers, i.e. foregoing the slot allocated by the coordinator.

Although of late one can note a decline of operations carried out without coordinator-allocated slots,

such practices disorganise the work of airport services, ground attendants and air traffic controllers. They adversely affect an airport's capacity and consequently the safety of airport services and the airport's image. It should be clearly stated that "off slot" operations lead to schedule delays.

This problem has been the subject of ongoing disciplinary talks between the flight schedule coordinator and air carriers.

It has also been frequently discussed at meetings of the Warsaw Chopin Airport Coordination Committee. In the course of those discussions it has been pointed out that lack of Polish legislation lacks mechanisms disciplining carriers into carrying out operations in accordance with allocated slots and disallowing them without a valid slot. The provisions of Council Regulation (EEC) No 95/93 of 18th January 1993 on common rules for the allocation of landing and take-off slots at Community airports, including subsequent amendments, allowing air traffic control to reject planned flights without an allocated slot are extremely general and practically unenforceable without the proper regulations of Polish law.

In September this year the Warsaw Airport Coordination Committee set up a special working group, the Slot Performance Committee, whose task will be to raise the matter with carriers not observing the slot regimen.

The principles pertaining to the historical rights of carriers as stated in Council Regulation (EEC) No 95/93 of 18th January 1993 on common rules for the allocation of landing and take-off slots at Community airports would appear to be insufficient.

With a view to optimum utilisation of slot coordination as a tool for managing airport capacity, improving punctuality and constantly upgrading the level of air travel safety, in July this year the State Airports Enterprise appealed to the President of the Civil Aviation Office to launch on the basis of Article 14 Paragraph 5 of the Council Regulation (EEC) No. 95/93 a legislative initiative to change the regulations pertaining to flight coordination and organisation.

In the realm of airport slot allocation, it is necessary to introduce penalties after the British pattern for non-observance of slot discipline and to create the legal basis for the Polish ANSP to reject in FIR Warsaw any flight plan involving landings or take-offs at a Polish airport (currently Warsaw and Poznań) with the proper slot allocated by the coordinator.

Only the proper legislative changes will make the full benefits of slot coordination available.

References are to be documented in their full and exact wording and in line with the standards applicable to other expert journals. In the text, sources can be quoted in squared brackets such as 1, 2-5, with an ordered list available in the end of the paper, following an alphabetical order of their occurrence. Letters of 9 point size are to be used.

4 CONCLUSION

The more than year-long experience since the Civil Aviation Office upon the motion of the State Airports Enterprise introduced slot allocation at Warsaw Chopin Airport motion permits one to give a positive, preliminary grade to that system.

Above all, slot coordination made possible the efficient and safe handling of the increased air traffic generated by UEFA's Euro 2012 European Football Championship Finals.

At present, it constitutes a superb tool for managing the capacity of Warsaw airport, including environmental restrictions on night-time operations. It is also a factor influencing punctuality and consequently the safety of air travel operations. It has also helped ease travel peaks.

The significance of coordination is especially visible to and appreciated by the Warsaw Chopin Airport Management as well as by carriers and ground attendants. Especially in view of an investment project currently under way in the ground traffic area with one runway out of service.

The fuller benefits of slot allocation will be forthcoming after legislative changes enable slot coordinators to levy penalties for carrying out slot-free operations as well as for unjustified delays.

To conclude, one additional, essential element needs to be taken note of. The introduction of slot allocation at Warsaw Chopin Airport has made it possible to treat all carriers equally in terms of slot allocation and existing environmental restrictions. That matter is dealt with by Article 15 of the 1944 Chicago Convention on International Civil Aviation.

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