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OPERATIONAL SOLUTIONS AIMED AT SAFEGUARDING CIVIL AVIATION AGAINST ACTS OF UNLAWFUL INTERFERENCE

Summary. Improvement and increase of safeguarding civil aviation against acts of unlawful interference can be achieved at airports and on board aircraft, through the implementation of appropriate systems and devices. In addition to improving safeguarding civil aviation against such acts, solutions described as operational may be used; these usually are directly aimed at ensuring the safety and security of civil aviation. This research focuses on operational solutions that are used for safeguarding civil aviation against acts of unlawful interference. As a clue, safeguarding civil aviation is understood to be the whole organisational and legal, as well as operational and technical framework, undertaken to prevent acts of unlawful interference endangering the safety and security of civil aviation. The purpose of this study was to characterise operational solutions affecting the provision of civil aviation safeguarding against acts of unlawful interference. The research question was defined thus: What are the existing and potential operational solutions implemented at airports, and on board aircraft; do they improve and increase safeguarding civil aviation against acts of unlawful interference? As a hypothesis, it was assumed that there are many solutions, devices, activities, etc. used to safeguard civil aviation against acts of unlawful interference. All of them may be implemented within airports, on board aircraft, as well as can be taken in the forms of the operational solutions. Operational

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solutions are implemented through the provision and use of personal, organisational and procedural forces and resources and through the establishment of appropriate services. The existence and mutual correlations of these elements have an impact on improving the safeguarding of civil aviation against acts of unlawful interference.

Keywords: safeguarding, civil aviation, acts of unlawful interference, security

1. INTRODUCTION

Nowadays, safeguarding civil aviation², is increasingly undertaken mainly due to three factors that generate risk and contribute to lowering or losing safety and security of aviation. To these threats may be included the dynamic growth of air traffic in the airspace, the need to ensure the highest level of technical reliability, need to minimise the risk of an incident, for example, a plane crash, and to counteract and combat the most serious crimes against air transport, defined as unlawful interference (which may also lead to incidents) [2, 3, 6].

Regarding the Convention on International Civil Aviation³, the protection of civil aviation against acts of unlawful interference is achieved using a combination of human and material resources [1]. As assumed by B. Grenda and J. Nowak, safeguarding of civil aviation can also be understood as a combination of all actions, methods and measures taken in accordance with the regulations by the security service⁴ in order to ensure the security of air transport [4].

Prohibited acts committed against, and directed against aircraft and air infrastructure are defined in documents issued at the international level as “acts of unlawful interference”. The definition of acts of unlawful interference helps in the identification of all possible actions, related situations and acts that may threaten the safety and security of civil aviation [5]. To these deeds, among the others, may include [1]:

- unlawful seizure of aircraft,
- destruction of an aircraft in service,
- hostage-taking on board aircraft or aerodromes,
- forcible intrusion on board aircraft, at the airport or on the premises of an aeronautical facility,
- introduction on board aircraft or at the airport of a weapon or hazardous device or material intended for criminal purposes,
- use of an aircraft in service for the purpose of causing death, serious bodily injury or damage to property or the environment,
- provision of any false information which may jeopardise the safety of an aircraft (in flight or on the ground), of passengers, crew, ground personnel or the general public, who are at the airport or on the premises of a civil aviation facility.

² What means of *all types of aviation, except state aviation, that considers to state aircraft, crews of these aircrafts and state airports used exclusively for takeoff and landing of state aircrafts* [14].

³ Signed on the 17th of December 1944 in Chicago, called also as Chicago Convention.

⁴ According to art. 1 point 2.2) of *Rozporządzenie Ministra Infrastruktury i Budownictwa z dnia 22 czerwca 2016 r. zmieniającego rozporządzenie w sprawie Krajowego Programu Ochrony Lotnictwa Cywilnego*, security services are formations that perform tasks to ensure security at the airport, such as the Border Guard, Police, the Internal Security Agency and the Airport Security Service.

2. OPERATIONAL SOLUTIONS AIMED AT SAFEGUARDING CIVIL AVIATION AGAINST ACTS OF UNLAWFUL INTERFERENCE

The airports' managing authority is obliged to ensure safety at the highest possible level at the airports. In order to prevent the commitment of acts of unlawful interference, various operational methods are applied on the premises of the airport's facilities. Most often, it is achieved by the employment of appropriate services and the implementation of advanced equipment to provide safety and security. In order to ensure effective protection, interoperability and coordination of activities, as well as proper information flow between departments, which are focused on providing and ensuring security at airports should be provided. Although the president of the Polish Civil Aviation Authority supervises the activity of air carriers, airport management authorities and other entities, which are in the civil aviation business, the airports' managing authority is responsible for the proper functioning of the airport, its management, and observance of its security rules. It is their job to undertake all preventive actions, determine the behaviours and activities permitted in the whole managed area of the airport [11]. They are obliged to create a list of prohibitions, orders and duties at the airports, as well as publish the Airports Operation Manual and the Statute of the given facility. Pursuant to *the Rozporządzenie Ministra transportu, budownictwa i gospodarki morskiej z dnia 31 lipca 2012 r. w sprawie Krajowego Programu Ochrony Lotnictwa Cywilnego* [9], to airports' managing authority's duties are included:

- providing and publishing the necessary airport documentation,
- coordination of activities and cooperation with the Border Guard and the Police,
- enabling entities operating in the airport to familiarise themselves with the airport security program,
- ensuring that operations at the territory of the airport entities perform tasks and processes regarding the current and valid program of safeguarding the airport against acts of unlawful interference,
- organising activities aimed at protecting the airport against acts of unlawful interference and conducting supervision over these activities,
- managing the activities of the airport security team,

For the implementation of the tasks mentioned above, the so-called Airport Security Teams are often appointed by the airports' managing authority. Each team includes an airport managing authority who is the chairman of the team, a representative of the airport security service, a representative of the Police, a Border Guard representative (at airports where border crossings are located), a representative of the Internal Security Agency, a representative of the Customs Service, and a representative of the committee of the air carrier's association [9]. This team mainly expresses and broadcast opinions and submits its conclusions in order to prepare appropriate ordinances and orderings in the field of protection, development of the airport security program, application of new technical solutions and procedures for passenger's check-in, baggage check-in and control of cargo [3].

The operational services and emergency services are also established to increase security within the airports. Actions carried out by them and mutual cooperation of all those bodies contribute to counteracting the occurrence of threats, or in the event of their occurrence, contributes to a quick stopping of their escalation, and quick response to counterattack the threats.

Operational services at airports include [3]:

- airport security service,

- airport control service,
- duty airport operator,
- rescue and fire fighting service,
- coordination of ground traffic,
- meteorological service,
- airport maintenance service,
- operational service of the Polish Air Navigation Services Agency (PANSZA),
- Falconer service.

The Airport Security Service is a service whose existence and functioning at the airport's area is crucial for ensuring aviation protection (within the scope of the airports) against acts of unlawful interference. The existence of the Airport Security Service was regulated in the provisions of Ustawa z dnia 22 sierpnia 1997 r. o ochronie osób i mienia. This document specifies the competences of individual units operating at the airport, including the Airport Security Service. The Airport Security Service is an armed formation, carrying out its tasks for the safety and security of civil aviation, by providing direct physical and ad hoc protection within the airport's area [13]. Its existence is based on providing protection for the entire aviation sector, mainly civil aviation. This organisation is directly supervised by the airport's managing authority [14]. The Airport Security Service's tasks are to carry out security checks of passengers, crews and employees employed by and at the airport's surface, in order to exclude the possibility of bringing dangerous equipment and materials, prohibited by law, into restricted areas and operational zones of the airport. The duties of this service include checking of employees' passes, passengers' boarding passes etc., ensuring the safety of passengers, airport employees and other persons staying on its premises, as well as the protection of the aircraft. In addition, Airport Security Service's tasks include control of the technical condition of the fence, protection of restricted zones, recognition and transfer of persons who constitute a threat to safety and security at the airport to the appropriate services [3]. In addition, their tasks include identifying at the airports, unattended luggage, nets and personal items [10]. The Airport Security Service carries out its tasks in close cooperation with the Police officers as well as the Border Guard [10]. Their joint cooperation is particularly important in the case of the recognition of persons or passengers who have violated security or conditions of air carriage. This cooperation may also include joint actions in the event of the capture of persons who have unreservedly obtained or attempted to gain access to airports' security restricted zones.

Another service, which has an impact for securing the civil aviation against acts of unlawful interference, is the airports' control service. It consists of five operational positions. These are:

- the manager of TWR Supervisor, which oversees the work of the entire team,
- an airport's controller that controls aircraft and other vehicles moving in the take-off/landing area and the airport's manoeuvring zones,
- terrestrial traffic controller who controls the ground movement zone (excluding the take off/landing area),
- a clearance delivery operator whose job is to hand over air traffic control permits to aircraft departing from a given airport,
- assistant of the air traffic controller who is a kind of helper.

Other service responsible for counteracting threats and increasing security at airports is the airport's operating officer, who supervises persons who manage teams, for example, over the commander of the airport security service, commander of the airport rescue and firefighting brigade, manager of passengers' and baggage's handling, etc. The Airport operating officer is the person responsible for the implementation of tasks and operational activities that must be taken in the event of threats to the safety and security of civil aviation, for example, in the event of committed unlawful acts against civil aviation. This unit initiates the proper procedure. It is also responsible for informing relevant services about incidents and has the power to cancel and terminate procedures already started.

Tab. 1

Services responsible for safeguarding civil aviation against acts of unlawful interference at airports

Lp.	Procedure	Operational service responsible for such procedure
1	Passenger check-ins and baggage check-ins	Handling Agent
2	Security checking of hand luggage	Airport Security Service/ Custom office
3	Security checking of checked baggage	Handling Agent
4	Passenger control	Airport Security Service / Custom office
5	Passport and visas' control	Border Guard
6	Passenger boardings	Handling Agent
7	Surface transport of passengers and crew between the terminal and the aircraft	Handling Agent
8	Airport rescue and security tasks	Airport rescue and fire-fighting service
9	Fire protection at the airport	Airport rescue and fire-fighting service
10	Care of luggage and objects left unattended at the airport	Border Guard
11	Handling service of the aircraft at the stand	Handling Agent
12	Safeguarding restricted zones, including technical inspections of terminals, fences	Airport Security Service / Custom office
13	Controlling of the employees' passes	Airport Security Service
14	Safeguarding passengers, restricted and open zones against acts of unlawful interference	Airport Security Service
15	Monitoring the airport and adjacent zones	Airport Security Service

The airport rescue and firefighting service are primarily established to rescue endangered people in the event of an accident or catastrophe, to conduct evacuation, or bring out victims from places where a dangerous incident has occurred. They also are responsible for removing immobilised aircraft, which paralyses or hampers air operations at the airfield. Their main obligation within the airports is to extinguish fires and neutralise spills of flammable substances. They are a service whose readiness must be ensured at the highest possible level (it is often specified in the Operation Manual that Airport rescue and firefighting service

should reach any point located on the runway in less than 3 minutes). Airport rescue and firefighting service is also involved in eliminating local threats, including technical, ecological, chemical or medical rescue services [3]. The airport managing authority is responsible for forming up and ensuring the rescue and firefighting service is equipped with specialised equipment (at any public use airport). Additionally, the authority is responsible for maintaining the necessary funds for the rescue and firefighting operations carried out by the Airport rescue and firefighting service. Moreover, employees of the airports' rescue and firefighting service must be professional firefighters. They are subjected to periodic physical and mental fitness tests, as well as they are involved in specialist training, carried out at the expense of the airport managing authority [14].

Services such as the terrestrial air traffic coordinator also known as Follow me, meteorological service which is responsible for checking and updating of the atmospheric phenomena, as well as the operating service of the Polish Air Navigation Services Agency (PANSNA) which is responsible for devices installed at the airport and falconer do not have direct impact on safeguarding the aviation sector, in general, against acts of unlawful interference at the airport [3].

At the level of the European Union's law, the European Civil Aviation Conference (ECAC) plays a key role in the creation and publication of the law restrictions. This organisation in the Doc. 30 has overviewed basic recommendations relating to the broad subject of safeguarding the civil aviation against acts of unlawful interference. Doc. 30 deals in more details with the issue of civil aviation security compared to Annex 17 of the Convention on International Civil Aviation. There are defined and specified exact required levels of security in the civil aviation sector, and ways on how to those achieve levels [2]. Doc. 30 specify that every country has to create the national civil aviation security program, every airport has to publish the airport security program and each airline has to prepare and publish the transport's security program. Based on Doc. 30, various state services have been set up to be provided at airports to carry out the tasks of the safeguarding these facilities. The public services, which are responsible for maintaining safety and ensuring security at airports, are the Border Guard, the Police and the Customs Service. The airport managing authority in cooperation with these services shall establish a system of monitoring and specify the procedure of access into restricted airports' zones, as well as methods of monitoring security in the open zones of the airport [3].

The Border Guard, next to the Civil Aviation Authority, is the main entity responsible for ensuring safety and security at the airport. The tasks of the Border Guard in Poland primarily include [3]:

- ensuring public security in the area of the border crossing located at the airport,
- taking action in the occurrence of a situation threatening the safety and security of users of equipment and facilities located at the airport,
- cooperation with the Civil Aviation Authority and providing information on the occurrence of threats and any acts of unlawful interference,
- providing, in the event of such a necessity, the Sky Marshalls' officers, on board aircraft,
- reconnaissance activities for hazard and threats identification.

At airports, may also be located airport police stations whose tasks include:

- ensuring safety and maintaining public order in all zones at the airport,
- judging the programs about counteracting various types of crisis situations that may threaten the security of persons and property at the airports, as well as contribute towards increasing the effectiveness of the provided protection,

- taking over people who have violated regulations or attempted to enter restricted zones at the airports without proper authorisation in order to create, for example, a threat to airport users and infrastructure,
- escorting passengers considered as dangerous,
- conducting negotiation activities in the event of crisis situations,
- safeguarding people with VIP status.

The customs office, which may have its own unit at the airport, primarily performs tasks related to the financial security of the state's interests. It controls compliance with customs law and other regulations regarding the transport of goods (in this case by air). They mainly watch over the thwarted transport of endangered animals and plants. The customs office cooperates with the airport security service in the area of joint control and supervision of compliance with safety and security rules and procedures at airports. While performing its tasks, this service must be particularly careful and effective in carrying out tasks for safeguarding due to the possibility of transporting dangerous materials and prohibited articles that may be hidden in baggage or in cargoes, which may have an impact and pose a danger to people staying at the airport [3].

Similarly, Handling agents have an impact on the provided level of security at airports. While performing their duties, such as passenger check-ins and baggage check-ins, printing and checking boarding passes, transferring passengers to aircraft, loading and unloading or cleaning of the aircraft, they may observe unusual behaviour of passengers, which may be classified as deviating from the usual behaviour. Their observations and comments forwarded to the airport security service directly responsible for security at the airport may be useful in detecting and maintaining a high security level at the airport. In protecting civil aviation against acts of unlawful interference, it is important to provide specific training and increase the knowledge of handling agents about threats such as acts of unlawful interference and prepare them to react properly in case of such occurrences [11].

Each airport must have the necessary documentation, created and published by the airport's managing authority, in which all the rules, procedures and regulations applicable on the premises of that airport are described in details. One of the mandatory documents at airports in Poland is the Operational Manual of the Airport (INOP), which has to be approved by the CEO of the Civil Aviation Authority. Its contents must include the Airport emergency plan, which includes [3]:

- airport security program against acts of unlawful interference (with a description of the zones of the airport and its facilities, procedures to ensure the safeguarding of the airport and its facilities, procedures implemented to carry out security checking of passengers, luggage and cargo, as well as the exact actions to be taken in crisis situations);
- an operational airport rescue plan that is necessary for prompt action in case of a demanding situation in carrying out a rescue operation such as an accident or emergency landing at the airport. This plan describes rules on how to proceed in case of emergency situation on board aircraft, composition and competence of the services and staff appointed in the event of rescue operations, a list of minimum rescue and firefighting service equipment, medical equipment, etc., procedures of informing services and public administration bodies involved in rescue operations, diversion of aerodrome operational zones with basic information such as airport's takeoff and landing approaches area, flight zones, visual navigation points assigned to the airport, etc.

The plan for counteracting crisis situations in civil aviation⁵ is a part of the Airport Security Program. It must be consistent with the ICAO regulations, guidelines and requirements. Its contents must include information such as the main principles of conducting emergency actions, the manner of organising entities participating in safeguarding and counterattacking the crisis situation occurring at the airport, procedure of notifying services which should be informed in the occurrence of crisis situations, the composition of the airport's first reaction team, the procedure of cooperation with the media, guidelines for people who are responsible for cooperation with investigative services, the manners and forms of assistance to families, and participants of a crisis situation, etc [5]. Regarding plans to counter crisis in civil aviation, the airport managing authority developed instructions for individual airport services in case of such crisis situations. All instructions must be agreed with the appropriate personnel for a given area, for example, commander of the provincial State Fire Service (in the case of publicly used airports) or the district (or municipal) commander of the State Fire Service (in the case of other, non-publicly used airports) [14].

The activities of rescue and extinguishing services established at the airports are closely related to the relevant crisis situation. The response to a crisis situation means a series of interdependent operations, that has to be planned, organised, managed and controlled. The essence of crisis planning is emphasised by the fact that it is the basic chapter in the Airport Security Program, which is the main document for every airport certified by the Civil Aviation Authority. The exercises and simulations for the event of the occurrence of any act of unlawful interference at airports are helpful in planning procedures and specific actions and preparing in general for any occurrence of such crisis situations against aviation.

Important elements in the civil aviation safeguarding system against acts of unlawful interference are procedures, audits and quality controls. All procedures aimed at safeguarding airports are included in the Airport's Security Program. There are reliable reflections and fulfilment of requirements and restrictions contained in international documents (this document has to be approved by the Civil Aviation Authority). There are many entities authorised to carry out audits in the field of security aspects at airports, for example, representatives of airlines, and Civil Aviation Authority representatives. They can control airports, carriers, etc. At airports, where transatlantic connections to the United States of America are carried out, audits may be carried out regularly by the US Department of Transportation's Security Administration (TSA). Quality controls at airports are very important issues in the context of ensuring and providing protection for civil aviation against acts of unlawful interference, which explains why audits are often carried out in a very detailed manner by ECAC [2].

Law restrictions submitted to ensure safety and security in the airspace, as well as in response to the need to plan and coordinate safe air traffic in the airspace, have outlined air routes. Diversion from the designated route gives the suspicion of a threat, for example, of unlawful seizure of the aircraft. This entails the commencement of appropriate procedures by the relevant services, which are aimed at safeguarding passengers and aircraft. However, it may be difficult to detect such a deviation from the route, because the airspace of each state is intensively exploited by numerous civil aircraft. Large number of aircraft in a relatively small area helps to mask the intention, and even perform an unexpected attack from the airspace [7].

Within the scope of providing and safeguarding civil aviation against acts of unlawful interference, it is also possible to distinguish between many indirect measures that can be

⁵ The obligation of its publishment is specified in article 7 point 1 of *Rozporządzenie Ministra transportu, budownictwa i gospodarki morskiej z dnia 31 lipca 2012 r. w sprawie Krajowego Programu Ochrony Lotnictwa Cywilnego (Dz.U. z 2012 r., poz.912)*.

included as operational solutions, when implemented have an impact on safeguarding civil aviation against acts of unlawful interference. The conducted research has also shown that, among others, there are solutions, when implemented safeguards civil aviation against acts of unlawful interference, such as:

- taking up the fight against the phenomenon of money laundering,
- freezing funds of organisations suspected of terrorism or supporting terrorism,
- detaining (imprisoning) people suspected of terrorism,
- supervising persons suspected of terrorism,
- deportation of foreigners suspected of terrorism,
- failure to provide asylum to suspected terrorists,
- increasing the scope of border control and document control,
- introduction of a harmonised form for third-country nationals applying for a visa and residence permit that will enable the integration of biometric identifiers,
- creating an integrated system of information exchange on lost and stolen passports.

For theoretical reasons, the above-mentioned methods cannot be classified into any of the categories in the division of operational solutions defined by the author, but they have an indirect impact on the effectiveness of safeguarding civil aviation against acts of unlawful interference.

3. SUMMARY

Safeguarding civil aviation against acts of unlawful interference may be taken by applying legal solutions as well as preventive actions. The latter solutions, aimed at ensuring security, and thus securing civil aviation against acts of unlawful interference, can be used and implemented at airports, on board aircraft, and through the use of operational solutions.

Undoubtedly, all the operational solutions mentioned and described in this article aims at safeguarding civil aviation against acts of unlawful interference, increased safety, security and protection of civil aviation against acts of unlawful interference. This research shows that operational solutions focused on safeguarding civil aviation against acts of unlawful interference are implemented mainly by ensuring the functionality of the appropriate organisation of specialised security services. Appointment, among other things, in the Airport Security Service is aimed at ensuring security at the airports, as well as against actions that could create the risk of disturbance or loss of security in the whole civil aviation sector. Other operational services provided and employed within airports also perform tasks that increase safeguarding the airports against acts of unlawful interference. However, to protect whole civil aviation sector against acts of unlawful interference, it is important to implement a combination of the above-mentioned and described solutions, as well as other solutions within airports and on board aircraft. Successful implementation would lead to the creation of sufficient and ultra-secure civil aviation security system against all threats.

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