

AIR TRAFFIC SAFETY MANAGEMENT IN WARSAW FLIGHT INFORMATION REGION

Daniel KUCHARZEK

Polish Air Force Academy in Dęblin, Poland

Abstract: Polish Air Navigation Services Agency (PANSZA) is the only institution dedicated to manage the air traffic in the Polish airspace. While, fulfilling its' obligations in this regard, PANSZA follows the principle of creating the most secure conditions for the flow of air traffic. What is more, provision of both en route and terminal navigation is aiming primarily at prevention of the incidents, which may contribute to a collision of aircraft. However, in the event of crash occurrence PANSZA is also involved in the actions ensuring the fastest possible assistance to the victims. The indicator of PANSZA effectiveness in the field of continuous improvement of aviation safety is the number of events reported annually to The State Commission on Aircraft Accident Investigation.

Key words: Air traffic safety management, PANSZA, The State Commission on Aircraft Accident Investigation, SAR.

1. INTRODUCTION

Air traffic safety management is one of the most essential project enabling efficient organization of air transportation of persons and goods. Main task connected with such challenge is to ensure safe navigation of the aircrafts.

It allows to maximize the utilization of available airspace by dynamic time-sharing, as well as the segregation of airspace among various categories of users. Moreover, traffic safety management is carried out by appropriately prepared institutions, equipped with specialized devices and highly skilled staff.

2. TASKS AND OBJECTIVES OF PANSZA

Polish Air Navigation Services Agency (PANSZA) commenced its operation on 1st April 2007, as an independent entity, separated from the structures of the State Enterprise "Polish Airports".

It was established under the Act on Polish Air Navigation Services Agency dated on 8th December 2006. [1]

At the beginning of its existence, PANSZA took over the duties of Air Traffic Agency, organization previously responsible for management of Polish air traffic.

What is more, PANSZA establishment was one of the first steps in the organization of the Polish air traffic structures according to the demands of the European Union law. [13]

The nature of activities carried out by PANSZA (largely taking into account aspects related to the safety of air traffic) is defined and determined by Agency mission and the business direction.

The main role of the PANSZA in the Polish aviation includes: "To provide high-quality, user and environment friendly air navigation services". [8]

What is more, Agency emphasizes the desire to undertake the further development, which concerns: "To strengthen PANSZA's position in Europe as an economically competitive air navigation services provider offering top safety and quality services in response to the airspace users' expectations". [8]

Polish Air Navigation Services Agency, as an independently operating entity is a service provider that:

“ensure safe, continuous, smooth and efficient air navigation in the Polish airspace by carrying out the functions of the air navigation service providers, airspace management and air traffic flow management...”. [1]

The essential purpose of the Agency's activities take into account projects related to safety, which allows:

- 1) to maintain high level of air traffic security,
- 2) to ensure required airspace capacity,
- 3) to minimize the negative environmental impact of air traffic,
- 4) to optimize cost efficiency.

PANSA activity is restricted by EU legislation to a large extent.

According to the basic principle of operation of air transport included in the EU regulations, the airport operation services should be separated from the airport air traffic control functions, and even more broadly defined air navigation.

Such principles arise primarily from the legislative package of the Single European Sky and a set of regulations called SES II (introduced in 2010) which clarifies the Agency areas of activity. [12]

3. WARSAW FLIGHT INFORMATION REGION

Polish Air Navigation Services Agency is a public body, which is supervised by the Ministry of Infrastructure and Development. [1] Moreover, the Agency is the only company providing services concerning air navigation in Polish airspace. What is more, PANSA operational area include Flight Information Region (FIR) Warsaw, which covers an area of 334 000 km². [3]

Each particular aircraft, located in the area of Warsaw Flight Information Region, is entitled to take advantage of full air traffic control service. This means that all possible steps are undertaken in order to prevent collisions that may occur both in the air and at an airport. Nevertheless, the main objective of the air traffic control service is to maintain an regular flow of air traffic in a controlled area. Polish controlled airspace includes:

- Airways, where air traffic control is supervised by the Area Control Center (ACC);
- Terminal Control Areas (TMA), where air traffic control is exercised by the Approach Control (APP), providing air traffic control service for arriving or departing aircrafts;
- Controlled Traffic Region (CTR), where air traffic control is provided by the Aerodrome Control Tower (TWR), providing air traffic control service to aerodrome traffic.

The scope of activities performed by PANSA includes all services, which are necessary for safe and precise conduction of Polish and foreign flights. However, in order to ensure that the safety of flight management services will be prioritized, the Act on Polish Air Navigation Services Agency foreclose the possibility of existence of the other companies engaged in similar tasks. According to this Act, the high level of security should be provided by Air Navigation Services (ANS) and other air navigation services, including: [1]

- communication service;
- navigation service;
- surveillance service;
- aeronautical information service.

Additionally, PANSA as an institution providing air navigation services, is committed to provide:

- provide airspace users with meteorological information;
- purchase, maintenance and modernization of equipment and systems for aeronautical communications, navigation and guarded airspace;
- controlling of systems for aeronautical communications, navigation and guarded airspace;
- conducting training and providing consultation in the field of air navigation;
- conduct research and development for air navigation;
- ensure the design of flight procedures.

Polish Air Navigation Services Agency, in the course of performed operational activity, pay particular attention to the existing safety standards. As can be expected, all of those standards are achieved as a result of maintaining and improving the safety of air traffic management system (ATM).

However, every step is undertaken in line with the policy of the international aviation organizations such as: ICAO, EUROCONTROL, as well as, European Union. Principal objective of those associations is to ensure that existing solutions, concerning the requirements of safety-related provision of air traffic management, are implemented at the appropriate level. [11]

In that case, PANSA implemented and continuously improve Safety Management System (SMS). The current management system aims primarily at assessing the possibility of avoiding the risk of air accidents and monitoring the whole phenomenon concerning the safety of ATM.

System also includes the investigation and explanation of the accidents which have a direct impact on the safety of air traffic.

Under this circumstances specific actions are implemented in order to prevent recurrence of such events. [8]

Polish Air Navigation Services Agency's actions undertaken in order to establish and maintain Safety Management System - SMS, are carried out in three main areas: [11]

1) Achieving the required level of utility safety, by: defining and documenting security standards and procedures, staff competency, risk management, collaboration with other internal and external systems.

2) Maintenance of adequate level of security through: reporting and investigating significant events affecting the safety and continuous improvement of services' quality to prevent from recurring of such incidents in the future, security monitoring, safety overview.

3) To promote safety, in particular including the dissemination of information regarding ongoing safety-related investigations, drawing conclusions from the resulting lessons (so called "lesson Learnt") and sharing best practices in this respect.

Another important task performed by PANSA is to coordinate any search and rescue activities in the air spaces of the Warsaw Flight Information Region.

Coordination of the Search and Rescue system (SAR system) by PANSA units allows to conduct air operations using properly trained, equipped and specialized Air Action Groups in the Polish Navy and Air Searching Group in the Polish Air Force. [15]

The main operating task of the SAR system is facilitation and improvement of activities including saving lives and health in the Polish zone of responsibility of Search and Rescue Region. [4]

Other important tasks realized by the aviation rescue forces also includes: evacuation of the wounded and injured, search and rescue, guidance other rescue units to the crash site, indication of the incident area and provision of the necessary equipment assistance. [5]

4. SAFETY LEVEL ASSESSMENT

The primary objective of air traffic safety management is to minimize the effects of incidents on the aircrafts and infrastructure used by PANSA for the provision of services, as well as limiting the negative consequences of events that have a direct impact on safety. According to the Regulation of the Minister of Transport dated 18 January 2007, all operational (ATM) or technical events (CNS - Communications, navigation and surveillance), which are relevant for the safety of air traffic, must be reported to The State Commission on Aircraft Accidents Investigation (SCAAI). [14]

After receiving notification of the occurrence of an air incident requiring the investigation, SCAAI Chairman appoints a committee, which conduct detailed analysis of the arose situation. In case of the circumstances under which safety investigation committee establishment is not required, the SCAAI Chairman inform interested parties, i.e. the user of the aircraft, the state traffic management authority (PANSA) or the aerodrome operator about undertaken decision and orders them to investigate to the event on their own.

However, at the same time Chairman nominates the person who will supervise the whole process on behalf of the State Commission on Aircraft Accident Investigation. [14]

On the other hands, in the event of accidents that do not meet the definition of an incident, but there is a possibility of their impact on the safety of air traffic, it is up to Polish Air Navigation Services Agency whether any steps will be undertaken.

Moreover, the examination of these events is usually performed without the supervisor of SCAAI.

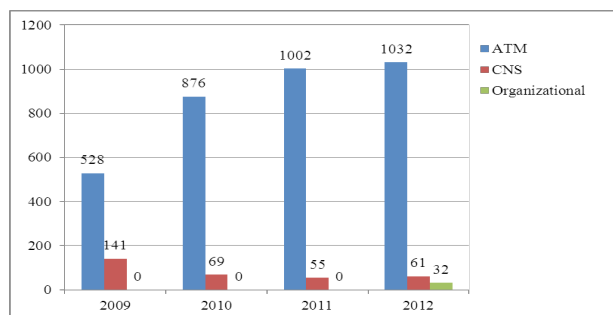


Fig. 1. Number of all ATM/CNS events reported to SCAAI between 2009 and 2012.

Source: Polish Air Navigation Services Agency's annual rapport from year 2012, Warsaw 2013, PANSA, p. 19.

The most common causes of ATM/CNS events, which are related to the safety of air traffic and according to the Regulation of the Minister of Transport dated 18 January 2007 should be reported to SCAAI include: notification of go-around situation, strikes of aircraft with birds and failures of the radio or navigation system supporting landing procedure in the conditions of poor visibility (so called: Instrument Landing system) in the Warsaw Region Flight Information. [12]

In the analyzed period covering the years between 2009 and 2012, the number of ATM/CNS incidents related to air traffic management, reported by PANSA to SCAAI, steadily increased (Fig. 1). In 2012, 1,125 ATM / CNS incidents were reported, and it was almost twice more than the number of accidents passed to SCAAI in 2008, when only 669 events affecting the safety of air traffic were noticed. A growing number of reported situations in the years 2009 - 2012, concerned the operational events (ATM), the number of which has increased from 528 in 2009 to 1,032 in 2012. However, at the same time, the number of technical events (CNS) has been reduced from 141 to 61 cases.

The increasing number of ATM / CNS cases reported to SCAAI, might indicate the declining level of safety of services provided by the Agency. However, it should be noticed that the increasing number of the air incidents reported to the SCAAI does not correspond to a number of events dedicated by the State Commission on Aircraft Accident Investigation to be investigated by PANSA itself.

Moreover, figure 2 clearly illustrates that between 2009 and 2012 number of events and incidents which had to be examined by the Agency decreased. For instance, in 2009, 54 ATM/CNS events and incidents were decided to be studied by PANSA, while in 2012 this number decreased to 20 only, of which 7 were ATM events, 6 were ATM incidents and 7 were defined as a CNS events. Thus, it can be unequivocally stated that the majority of reported cases did not meet the definition of an incident, therefore, SCAAI was not obliged to address requests for their examination to PANSA. Previously described situation is a direct results of the effect of the security system construction and growing awareness of the Agency's employees regarding the importance of creating even more efficient system in order to ensure the safety of air traffic. For this reason, PANSA employees more often report events which can influence the safety of air traffic. As a result, they contribute to the improvement of the existing system.

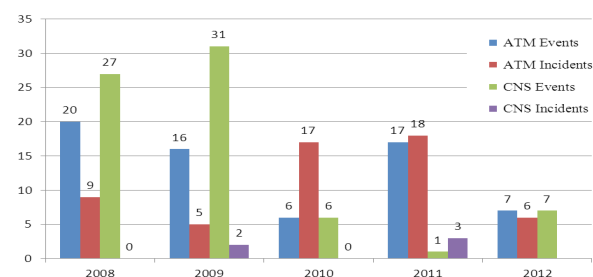


Fig. 2. Number of ATM/CNS events directed by SCAAI to be examined by PANSA between 2008 and 2012.

Source: Polish Air Navigation Services Agency's annual rapport from year 2012, Warsaw 2013, PANSA, p. 18.

While analyzing the frequency of events chosen by SCAA to be studied by PANSA every year, it is important to notice a variety of reasons influencing their occurrence.

Fig. 2 presents ATM and CNS events, which include a significant amount of go-around situations and the collision of aircraft with birds.

Investigating the reasons for the events associated with go-around situations, it is possible to conclude that the main reason for their occurrence were the weather conditions.

Thus, the causes which are fully independent from the air traffic management services.

Fluctuations of the events number was largely conditioned by the intensity of snowfall and temperatures in winter and breaks in the weather during summer and spring periods. [8]

Furthermore, the increase of the air traffic in the Polish airspace influenced the final data to a great extent. During analyzed period of time, the number of registered commercial airline operations, both en-route and terminal, increased from 739 043 in 2009 to 879 126 in 2012. [6, 9]

5. CONCLUSION

To conclude, all aspects of PANSA activity as a provider of air navigation are related to projects improving security.

Thus, ensuring a high level of safety for all airspace users, performing flights in the Warsaw Flight Information Region, is the Polish Air Navigation Services Agency's highest priority.

In order to meet the current requirements certain activities are undertaken. Some of them include continuous efficiency improvement of the services responsible for the provision of air traffic safety.

Other activities allows Polish Air Navigation Services Agency to maintain a high level of safety and consistently raises the competence of personnel.

Moreover, PANSA adjusts its equipment, infrastructure, software and procedures used in air traffic management.

All undertaken steps ensure that Agency provides communication, navigation and surveillance services, which fulfill required standards that have been set by national and international law.

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